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The Determinants of Divestment from Coal Energy: The Case of South Africa

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Abstract

The escalating urgency to address climate change and achieve net-zero emissions as per the 2016 Paris Agreement has placed the spotlight on financial institutions in South Africa divesting from coal. This trend is particularly significant in light of South Africa's heavy reliance on coal for both its economy and energy needs. The country's journey towards an energy transition is fraught with the complexities of ensuring a just transition, considering the dependence of numerous communities and workers on the coal sector. At present, the coal mines in the Mpumalanga province are the main suppliers to Eskom. In addition to this complexity is the inefficiency of Eskom, which has resulted in power shortages and high electricity costs, further entrenching the country's dependence on coal. The study aimed to explore two key research questions: i) what are the drivers and barriers that are influencing divestment behaviour from coal? and ii) what is the extent of divestment from coal by key players in the sector? The study investigated these questions using qualitative data obtained from interviews with experts.

The findings point out several factors encouraging this shift away from coal: the impacts of climate change, inefficiencies in Eskom, concerns about reputation, the shift towards renewable energy, and demands for Black Economic Empowerment (BEE) compliance from Eskom. Conversely, numerous challenges impede this transition, including limited energy availability, the reliability of renewable energy for constant power supply, issues with Eskom's expertise and financial health, constraints on the power grid, political factors, fluctuations in coal prices, and long-term contracts for coal. The study uncovers a slow and only partial reduction in reliance on coal, shaped by a mix of institutional, structural, and commercial factors. Among these, climate change stands out as a key driver for reducing coal use, as agreed upon by all participants in the survey. However, the transition faces significant challenges, especially in Eskom's operations. In light of these challenges, South Africa might focus more on ensuring energy stability rather than fully pursuing its goals to reduce carbon emissions, to safeguard its economy. The country also faces the need for considerable investment in climate finance of approximately R535 billion annually from both public and private sources to fulfill its commitments to the 2016 Paris Agreement on climate change (de Aragão Fernandes, 2023). The findings of this study are crucial for stakeholders seeking to understand the progress and challenges of coal divestment in South Africa as the nation shifts towards a lower-carbon economy.

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List of Acronyms

AUM	Assets Under Management
BBBEE	Broad-Based Black Economic Empowerment
CFPPs	Coal Fired Power Plants
CTL	Coal To Liquids
DFI	Development Finance Institution
DBSA	Development Bank of South Africa
DMRE	Department of Mineral Resources and Energy
ESG	Environmental Social and Governance
ESRB	European Systematic Risk Board
IISD	International Institute for Sustainable Development
IPP	Independent Power Producers
IRENA	International Renewable Energy Agency
IRP	Integrated Resources Plan
JETP	Just Energy Transition Partnership
GDP	Gross Domestic Product
GHG	Greenhouse Gases
GIIN	Global Impact Investing Network
MCSA	Minerals Council of South Africa
MT	Million Tons
MPRDA	Mineral and Petroleum Resources Development Act
MSMEs	Micro Small to Medium Enterprises
MW	Megawatt
NDC	Nationally Determined Contribution
NEMA	National Environmental Management Act
NGOs	Non-Governmental Organisations
OECD	Organization for Economic Cooperation and Development
RBCT	Richards Bay Coal Terminal
REIPPP	Renewable Energy Independent Power Producer Procurement Program
SA	South Africa
SCOPA	Standing Committee on Public Accounts
SOEs	State Owned Entities
TDP	Transmission Development Plan

UNFCCC	United Nations Framework Convention on Climate Change
UNIPCC	United Nations' Intergovernmental Panel on Climate Change
UNSDGs	United Nations Sustainable Development Goals

CHAPTER 1

INTRODUCTION

1.1 Background of the study

The South African coal sector is at a mature stage of growth. Its value chain encompasses several activities such as mining production, electricity generation, logistics, and the creation of synthetic fuels and chemicals. Trade Law Centre - TRALAC (2022) notes that the sector plays a crucial role in employment, providing over 250,000 jobs, both directly and in directly. According to the report, formal employment within the South African coal mining sector accounts for approximately 94% of its workforce, representing 20% of all employment in the national mining sector. The report further states that the coal industry is predominantly situated in the Limpopo and Mpumalanga provinces, regions that experience higher unemployment rates relative to the national average. This concentration of the coal industry in these areas adds to the socio-economic challenges of transitioning away from coal (TRALAC, 2022).

The Department of Mineral Resources and Energy (DMRE) noted that the Minerals Council of South Africa (MCSA) reported a declining net investment trend in the coal sector in 2019. MCSA reported that net investments in the industry fell to R2.5 billion in 2018 from R4.5 billion in 2010, which translates to a 15% mean annual decline (DMRE, 2023). Despite the decrease, South Africa continues to depend significantly on coal for its energy requirements.

In 2019, production of coal reached 258Mt from 253Mt in 2018, an increase of 2.4%. The resulting coal sales amounted to R139 billion for 2019, a 3.6% decline from R144 billion earned in 2018 (MCSA,2019). About 70% of the coal production is used locally and a balance of 30% is primarily exported to India, Europe, USA, and China. Domestically, coal is a critical energy source, providing 90% of the electricity and 30% of the coal-to-liquid (CTL) synthetic fuels and chemicals in South Africa (DMRE, 2016).

The coal production in South Africa is heavily reliant on the Witbank and Highveld resources, which contribute 75% of the total output (DMRE, 2016). However, these coal resources are expected to run out within the next hundred years. Presently, the coal mines in the Mpumalanga province are the main suppliers to Eskom. Future projections suggest that the Waterberg region in the Limpopo province, is expected to become a key contributor to energy supply in South Africa,

aligning with strategic objectives set by the government (Chabedi & Zvarivadza, 2016). There are, however, significant challenges in the Waterberg region, especially the need for infrastructure development, like roads and railways, to transport coal from the mines to its destinations (Burton & Winkler, 2014). Exxaro has the largest coal mining operation from the Grootegeluk mine in the Waterberg region to supply Eskom's Matimba and Medupi power stations (Exxaro, 2023).

Burton et al. (2018) state that coal is a crucial component of the economic structure. National government benefits considerable revenue from coal through royalties and taxes, which in turn benefits local governments and municipalities (Burton et al., 2018). Additionally, earnings from coal exports contribute to the nation's foreign currency reserves, supporting the exchange rate via the current account balance. The coal industry's employment opportunities are essential in addressing the high levels of unemployment and poverty (Burton et al., 2018). South Africa has implemented policies such as BBBEE to promote economic inclusion and growth among its indigenous population, despite some challenges and imperfections in the policy However, a rapid move away from coal dependency, or abrupt decarbonization, could have dire consequences for several major and publicly traded companies, including both private and SOEs such as Sasol, PPC, Eskom, Exxaro, Eskom and Transnet (Huxman, et al.,2019).

In recent times, a trend has emerged among large mining corporations to withdraw from the coal industry in South Africa. A notable example is Anglo American plc, which ring fenced and spun off its South African thermal coal operations by creating Thungela, a separate company, to manage these coal assets. As part of this restructuring, Anglo American invested R2.5 billion in Thungela. According to Anglo American plc this move reflected a wider worldwide transition towards an economy focused on reducing carbon emissions and reflects the ongoing global transition from coal as an energy source (Anglo American, 2022). This was after having completed a sale of all mines associated with Eskom supply in January 2017 to Seriti Resources for R2.3 billion. This was a decision influenced by Eskom's insistence on a 51% black ownership requirement for its coal suppliers (Anglo American, 2023). In a related development, South 32 in August 2019 took a significant impairment (a US$504 million charge) on its thermal coal assets, which was a move aimed at facilitating divestment and increasing black ownership within the company, as reported by the Financial Times (2023).

These actions are noteworthy in the context of Eskom's revised procurement rules, which were designed to encourage the entry of new players (particularly black-owned businesses) into the coal mining sector. This change also aimed to enhance Eskom's security of supply, especially for new generation capacity, among other reasons, as noted by Burton & Winkler (2014). This interplay of finance, infrastructure, and ownership within the coal industry, encompassing both political and economic interests, is known as the "*coal complex*," (Brown & Spiegel, 2019).

Globally, investors managing assets worth USD 2.6 trillion in 43 countries committed to pull-out their investments from energy corporations specializing in non-renewable resources. This figure marks a 50% increase in total assets under management compared to the year 2014, as reported by Arabella Advisors (2015). In a similar trend, local financial institutions in South Africa, predominantly commercial banks that often play a leading role in providing capital and operational expenditure, have announced their own plans to move away from investments in the coal sector.

The South African government faces the challenging task of transitioning from reliance on coal to adopting sustainable energy sources, a shift fraught with various risks, as noted by Huxman et al. (2019). The IRP (2019) is aligned with the UN's 2050 goal to restrict global warming increase to 1.5°C. As per the Paris Agreement, GHG emissions are set to reach its maximum by 2025 and then decline. The IRP (2019) also notes that about 80% of GHG emissions in South Africa originate from the energy industry, particularly from synthetic fuels and electricity generation (IRP, 2019).

Although there have been significant cost reductions in wind and solar renewable energy sources over the past decade, coal is still the dominant source of energy. Mpumalanga province is a critical area for sustainable energy development, as it is home to communities heavily reliant on coal for their livelihoods (Huxman et al., 2019). This situation raises several pertinent questions: Can South Africa utilize international climate finance effectively to support these regions during the transition, or to minimize the challenge of stranded assets during the transition an economy focused on eliminating carbon emissions? What financing strategies will coal industry players adopt in the future? And is there a likelihood of encountering stranded coal assets because of the growing divestment movement? While these questions are increasingly relevant in the context of the push towards coal divestment, they do not form part of this study.

The purpose of paper is to examine the core elements that have either facilitated or hindered divestment in the last decade across the coal sector. Specifically, our aim is to determine the extent of divestment throughout the South African coal value chain. We also note a lack of public recognition by companies affected by the economy's shift towards decarbonization. Additionally, there has been a scarcity of scholarly attention on exploring the drivers and obstacles of decarbonization in South Africa, as well as the actual extent of divestment within the coal sector. This research is crucial from both a governmental and business perspective, considering the potential high costs of unmanaged risks as the transition from coal gains momentum. Despite these shifts, the South African economy continues to rely heavily on coal for power generation and downstream processes. Consequently, GHG emissions from these activities pose challenges to South Africa's aspirations for a carbon efficient economy for the foreseeable future.

1.2 Problem Statement

It is critical for South Africa to adopt a coal phase-out strategy that emphasizes minimizing the transition costs especially for the most vulnerable i.e., communities and workers directly affected (Huxman et al., 2019). This is referred to as the just transition. As discussed by Newell et al. (2011), the practical application of a just transition must directly tackle crucial questions about the political economy, specifically identifying the winners and losers, and understanding how and why these outcomes occur. The inquiry centres on how energy resources are currently distributed and identifies those who are adversely affected by the secondary impacts of energy extraction, production, and generation processes. It also includes determining who will shoulder the social costs of moving to low-carbon energy sources and transforming economies. By tracking divestment trends and its effects, this study aims to tackle the following issues:

1.2.1 The challenges of swift coal retirement in SA

While moving away from coal is a crucial step for South Africa in addressing climate change, other concerns need to be factored in. The primary goal of the global carbon divestment movement is to rapidly phase out coal, often prioritizing speed at any cost (Muttitt & Kartha, 2020). This approach could lead to the creation of stranded assets in South Africa. According to OECD (2015) these stranded assets might change hands in a hasty and unregulated manner, leading to poor management or abandonment. In the South African scenario, this rapid

transition could adversely impact towns, cities, and provinces that rely on coal mining for their economic livelihood, leaving them to deal with the consequences for decades. This approach to environmental progress fails to adequately consider economic and social justice, potentially creating imbalances between environmental gains and socio-economic impacts (OECD, 2015).

As major mining corporations in South Africa face investor pressure to divest from coal, there is a growing trend of smaller, often less reputable companies stepping in to acquire these assets. An example of this trend can be seen in Glencore's disposal of Optimum mine to Tegeta (Financial Times, 2023). These smaller companies may not prioritize Environmental, Social, and Governance (ESG) compliance during their brief ownership of the assets. This lack of focus on ESG standards can have detrimental effects on the most vulnerable groups, including mine workers, local communities near the coal assets, and the environment. This situation poses a challenge to SDGs, particularly those concerning poverty alleviation as well as job creation (UNSDG, 2023). It is anticipated that a controlled shutdown of these assets will be undertaken, considering their ESG impacts, especially from investors who have profited from coal exploitation for many years.

1.2.2 The risks of a late and abrupt coal phase-out in SA

The ESRB (2016) highlighted that a delayed and abrupt transition away from coal could have adverse effects on GDP. In such a scenario, a rapid coal transition would result in a decline in its usage and a consequent increase in energy prices because of limited supply. Without adequate alternative energy sources, like renewables, this transition could prove costly.

South Africa, despite its rich reserves of coal, gas, and potential for wind and solar power that could enhance energy security and meet its energy needs, continues to struggle with ongoing power outages. These power cut issues are expected to persist into the future and may worsen with a delayed and sudden move away from coal. Such a scenario of a late and hasty phase-out of coal could also impact financial institutions significantly due to their investments in coal assets. This in turn could pose systemic financial risks to the broader economy, as pointed out by the ESRB (2016).

1.2.3 Limitations of Previous Research Studies

Scholars have centred their research on the developing renewable energy industry and the importance of financial support for these initiatives in South Africa. However, there has been less emphasis given to studying the factors that are driving or impeding divestments in the coal value chain (Baker, 2015). A major driving force behind the divestment from coal mining and the construction of coal-powered electricity generation plants is attributed to political and policy uncertainties (Burton et al., 2018).

Studies on divestment conducted outside of South Africa have primarily concentrated on universities and financial institutions (Noel Healy & Jessica Debski 2017); Julie Ayling & Neil Gunningham (2017)). This study diverges from the usual focus on divestment commitments by financial institutions. Specifically, the study looks at divestment by companies in the coal industry value chain. It examines transition dynamics of how the transition from coal to alternative energy sources is unfolding. This includes understanding the pace of change, the factors driving it, and the challenges being faced. Moreover, the study gives insight into other sectors with high carbon intensity, such as the steel, petrochemical, and cement industries, indicating that these areas also merit detailed analysis.

Although there is growing attention on divestments and stranded assets from NGOs, financiers, think tanks, and academic researchers, to my knowledge, there has been limited analytical work conducted in South Africa specifically focusing on evaluating the extent of divestment, identifying the key barriers and drivers of this process. Burton et al. (2018) have observed that the move away from coal is already underway. Despite the ongoing coal transition, there is a significant gap in addressing and understanding this shift, especially in terms of engaging various stakeholders. There is a crucial need for more comprehensive and inclusive discussions that involve all the key parties, including government entities, businesses, local communities, and environmental organizations. The aim of such engagement is to ensure that divestment from coal is conducted in an environmentally sustainable and economically practical manner. Given the unique circumstances in South Africa, where there are extensive, untapped reserves, it is crucial to consider the environmental consequences of both using and not using these resources. The overarching goal is to find a balanced approach that mitigates environmental harm while considering the economic impacts.

1.3 Research Questions, Objectives and Scope

1.3.1 Research Questions

The study aims to specifically analyse the following questions using data gathered from interviews:

a.) What are the factors that drive and impede divestment from coal?
b.) What is the extent of divestment in different industries in the coal sector?

The objectives of this research:

- To explore the drivers and barriers that are influencing divestment from coal energy.
- To evaluate the extent of divestment from coal energy

1.3.2 Research Scope

The study focuses on examining divestment trends in two distinct segments of the South African coal market. This includes:

i). upstream market – mining operations of coking coal or thermal coal; and
ii) downstream coal market – construction, financing/ investment, and operation of coal-powered electricity generation plants.

There are two main varieties of coal produced in South Africa which are coking coal and thermal coal, as reported by DMRE (2016). This study primarily focuses on thermal coal, which is the most extensively mined and utilized type in the country. While coal is used widely in the economy in areas such as agriculture, residential, steel and cement manufacturing, and other industrial areas, this study specifically focuses on its application in electricity generation.

1.4 Significance of the Research

This study focuses on the concept of divesting from coal, a critical aspect considering South Africa's transition in energy sources. There is high uncertainty in South Africa concerning the timing and speed concerning reduction in GHG emissions (Burton et al., 2018).

By exploring the extend of divestment, the research can inform decisions that smooth the switch to a more sustainable, carbon friendly energy sources. This is vital in the context of global initiatives to restrict global warming and the specific challenges faced by South Africa in lowering levels of GHG.

The study underscores the risks of both 'soft landing' and 'hard landing' scenarios in the energy transition. Understanding these risks is vital for minimizing negative economic impacts, such as disruptions to energy supply, increased energy costs, and financial risks to sectors dependent on coal (ESRB, 2016).

As institutional investors increasingly move away from coal, understanding the dynamics of divestment becomes crucial. This research can influence investment strategies and encourage more responsible and sustainable investment practices.

The challenges posed by uncontrolled divestment from coal, the resulting transformation of South Africa's economy, its effects on corporate finance, and the effect on the long-term strategies of companies present a significant and novel challenge for the national government, as noted by Huxman et al. (2019). For the broader community, shifting towards an economy with lower carbon emissions that is not equitable could undermine progress in achieving the SDGs, especially in a context where poverty and unemployment are already high. This research can be utilized to inform the creation of government policies and to guide the allocation of financial support from development banks. These actions are aimed at facilitating a fair and equitable shift towards reducing the economy's reliance on carbon-intensive energy sources.

1.5 Organisation of the Research

Chapter 2 focuses on providing a comprehensive overview of the SA coal market, setting out the objectives of the study and exploring the impact of divestment. It proposes four key factors derived from existing literature i.e. structural, commercial, institutional, and policy uncertainty and explores how these factors either drive or hinder divestment among major players in the coal value chain. Chapter 3 focuses on the study’s framework employed to tackle the research problem. Chapter 4 reveals detailed findings. Chapter 5 details a synopsis and findings, including policy recommendations and identifying areas for prospective studies.

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

Chapter 2 outlines an in-depth examination of the theoretical framework and existing research on the study of focus. It elaborates on the definitions of crucial terms and concepts relevant to this study. The chapter highlights three primary factors identified in the literature - structural, institutional, and commercial - that influence divestment decisions among businesses. Additionally, it emphasizes that policy uncertainty also plays a significant role in divestments. This paper aims to investigate these factors thoroughly. Emphasizing these factors is vital for understanding divestment trends within the South African situation. The section also delves into the concept of financial depth, particularly in relation to recent decisions by the South African financial sector to divest from coal.

2.1 Definitions and Conceptualisation

2.1.1 Divestment

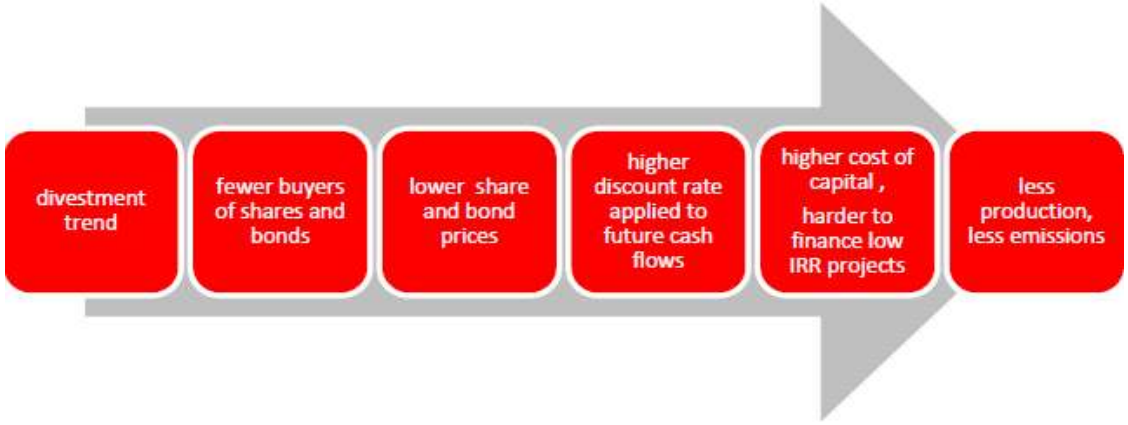
Trencher et al., (2020) described divestment as any measure taken aimed at reducing or completely stopping investment or financial support. Stakeholders with different motives can resolve to withdraw their capital from firms if the companies are engaged in activities that they deem unacceptable for both moral and financial reasons. This definition covers companies that are shifting their focus from coal to those involving renewable energy. According to the Guardian, divestment can be achieved through disposing of shares of the listed companies, withholding debt finance or private equities, or selling subsidiary investments or interests (The Guardian, 2023).

2.1.1.1 Objectives of Divestment

Ansar et al. (2013) suggests that there are three distinct objectives of divestment. Divestment campaigns aim to ensure that there is openness and transparency concerning carbon-related risks for hydrocarbon companies. The end goal of a divestment campaign is to establish the most favorable position of information asymmetry. Considering the above, policymakers have an informational goal to set up standards of disclosure that balance the information needs of investors and the public with the privacy concerns of fossil fuel companies (Griffin & Jaffe, 2018).

Coal and fossil fuel firms are facing high demands to transition towards clean energy supply. These firms are under a lot of pressure to be open to their stakeholders and the public about the implications of how changing to a low carbon energy supply fundamentally alters their business models and operational practices. There is an argument on whether fossil fuel companies provide the public and investors with adequate information on climate change risks (Griffin & Jaffe, 2018). Societies are demanding that coal and fossil fuel companies mitigate GHG emissions. Figure 1 below is a depiction of how he significant impact that extensive divestment activities can have on the production of fossil fuels.

Figure 1: How Substantial Divestment Affect Fossil Fuel Production



Source: HSBC, 2015

From an economic perspective, divestment functions theoretically as depicted in Figure 1. This process involves a decrease in demand for shares and bonds, leading to higher capital costs for companies and restricting their capacity to fund costly projects. This impact is especially detrimental in industries where projects are characteristically long-term.

Governments are pressured to establish laws and interventions that restrict the extraction of fossil fuels and ensure that GHG mitigation targets under the Paris Agreement are achieved. Policymakers are under pressure to perform a balancing act in terms of ensuring ample clean energy supply and at the same time implementing intervention packages that reduce the negative impacts on the poor and the ability of the industry to compete.

2.1.1.2 Approaches to Divestment

HSBC (2015) identified four approaches that investors are pursuing to divest from coal, oil, and gas fuels. The four approaches include full divestment, partial divestment or tilting, supply chain-based, and worst-in-class analysis. The four main approaches and others are discussed briefly below:

(a) Full divestment

The full divestment approach is when investors completely (100%) avoid investing in companies producing coal, oil, and gas (HSBC, 2015). This eliminates downside risks in the portfolio associated with fossil fuel companies. According to HSBC, this type of divestment strategy is very risky as it is excessively concentrated. Fossil fuels account for a large share of the most widely followed indices as shown in Table 1 below. Furthermore, fossil fuels have a higher average dividend yield relative to the overall index dividend yield average. Index companies are designing benchmarks that leave out all fossil fuel assets. There is still no clear consensus on whether fossil-free indices perform better or worse than traditional financial indices (MSCI, 2014; HSBC, 2015).

Table 1: Proportion of Fossil Fuel Companies on Major Indices

World Indices	Oil & Gas		Coal		Dividend Yield (% estimate) Index Overall
	Weight (%)	Dividend Yield (%, est)	Weight (%)	Dividend Yield (%, est)	
FTSE 100	13.1	4.9	0	Na	3.4
MSCI World	7.1	1.6	0.02	0.9	0.8
S&P 500	7.9	2.9	0.03	0.9	2.0

Source: Refinitiv, HSBC, 2015

(b) Partial Divestment

Partial divestment also known as tilting is when investors dispose of shares that they deem to be higher risk from their portfolio (HSBC, 2015). There are three ways of choosing stocks to meet a strategy of partial divestment. The first way is by using the categories of the stock market index classification to exclude all fossil fuel companies. However, this is likely problematic to oversee from a return-on-investment perspective. The second method involves a revenue-based approach, where the investor assesses the revenue, each company earns from fossil fuels and

then decides based on their own criteria of acceptability. The third method is to determine the break-even point of individual projects and evaluate the probability of them becoming stranded assets (HSBC, 2015).

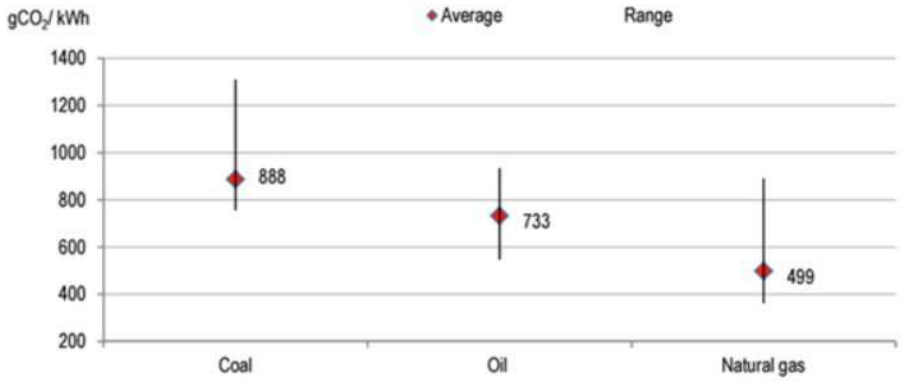
(c) Supply Chain Based Divestment

The investors can utilize the supply chain-based divestment strategy by targeting large consumers of fossil fuels. This not only involves shifting money away from mining companies but also sectors such as power stations. This involves assessing the integrated value chain and excluding sectors that produce high GHG emissions as well as considering sectors that can diversify away to a low or zero-carbon alternative (HSBC, 2015).

(d) Worst in Class

The final approach to divestment focuses on the "worst in class" or "worst offenders." This method centres on identifying the emission levels of projects run by various companies. According to HSBC (2015), this approach involves the exclusion of the highest carbon-intensity emitters in a sector. Generally, in terms of GHG emissions, coal is a worse GHG emitter than oil. Conversely, oil is often regarded as more harmful than natural gas due to varying emission levels among fossil fuels. As depicted in Figure 1, the cleanest coal releases fewer GHGs relative to the dirtiest natural gas. According to HSBC (2015), a viable approach would be to divest from the most polluting natural gas while maintaining investments in the least polluting coal varieties.

Figure 2: GHG emissions in electricity production



Source: HSBC, 2015

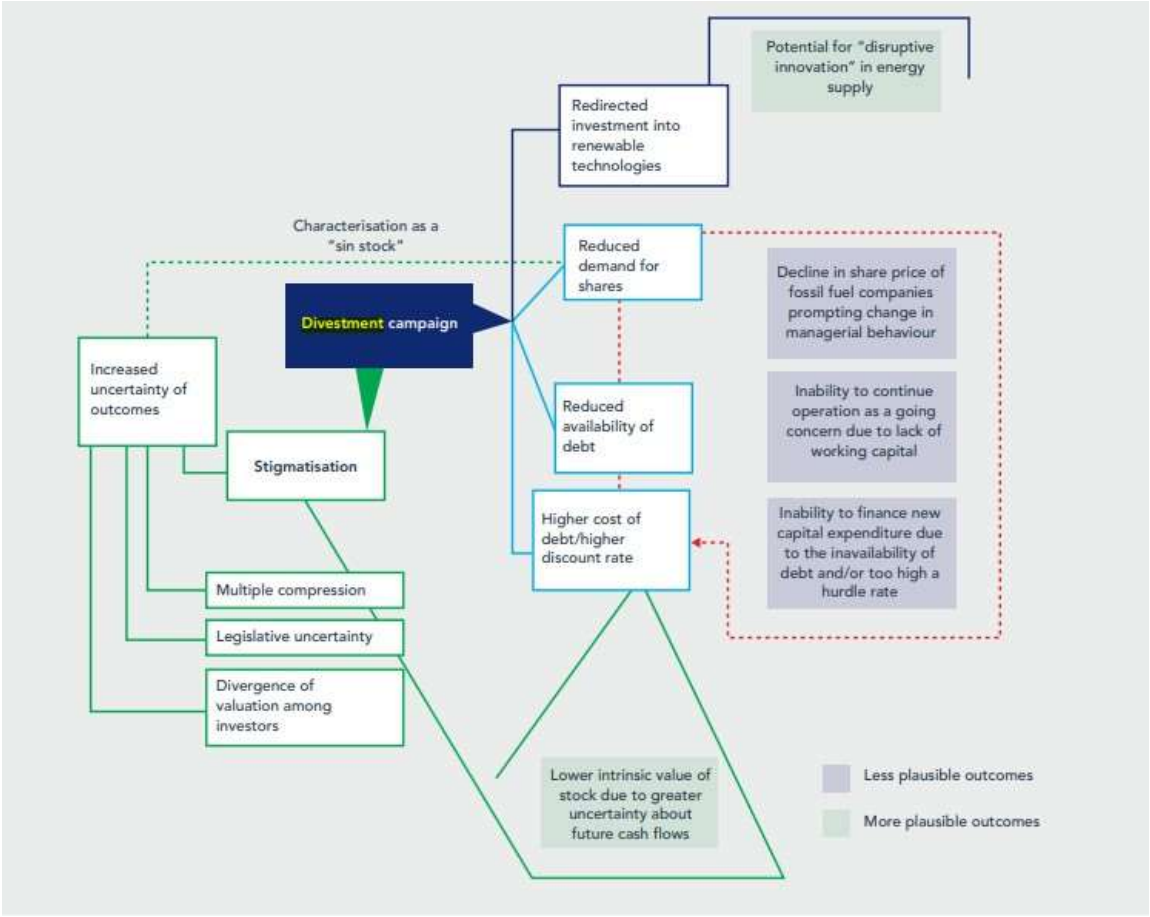
Other courses of action being pursued by investors include engagement, hedging, and active monitoring to minimize the consequence of stranding assets from divestment. Engagement involves regular interaction and engagement with senior management and shareholders of the invested coal companies to actively manage the environmental risks (HSBC, 2015). Investors are hedging to reduce exposure by diversifying portfolios to less carbon-intensive assets for example green bonds, clean energy equities, or low carbon custom indices (MSCI, 2014). Active monitoring involves checking portfolio exposure and auditing company carbon intensity. Portfolio assessment of vulnerabilities can be achieved through stress testing changes in demand for coal or fossil fuels, prices, and carbon dioxide.

2.1.1.3 Impact of Divestment

The impact of divestment can be classified as direct or indirect. Ansar et al., (2013) finds that direct effects are expected to be more on the valuations of coal companies whereas they are limited on debt and equity for oil and gas fuels. They explain that coal companies are a small representation of the market capitalization of oil and gas sector assets and hence are less liquid. Divestment notices are likely to impact coal shares prices because offloaded shareholdings are unlikely to quickly change hands to alternative investors. Ansar et al., (2013) suggest that a shrinking pool of debt finance and a higher minimum rate of return on projects are likely to have the greatest effect on coal relative to oil and gas companies.

The indirect impact of divestment is large because of stigmatization from the divestment campaign and its effects are wide on fossil fuel assets and the energy value chain (Ansar et al., 2013). These include lower intrinsic value of the fossil fuel companies emanating from uncertain future cash flows. The direct and indirect impacts of divestment are depicted in Figure 3 below.

Figure 3: Potential Consequences of a Fossil Fuel Divestment Initiative



Source: Ansar et al., (2013)

2.1.2 Financial Depth

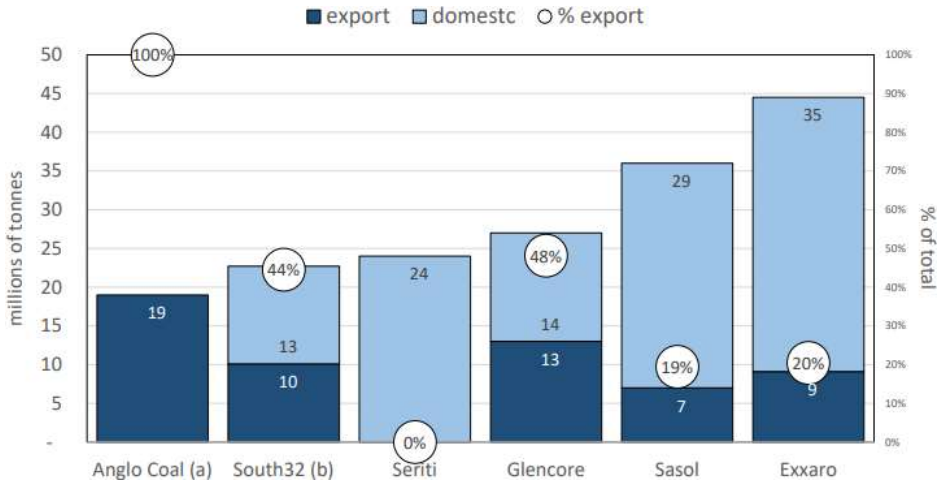
Ansar et al., (2013) posit that any withdrawal or increase in the hurdle rate by some financial institutions is likely to result in serious debt financing problems for coal companies relative to the fossil fuel market. Debt financing for capex or short-run liquidity needs for the coal market. They suggest that this is possible under two conditions. First, transformation in market norms is more common in poorly functioning markets, especially for borrowers in countries with poor financial depth. They argue that borrowers in such countries will encounter limited sources of debt financing should local financial institutions pull out. Second, fossil fuel companies are likely to struggle to raise capex in difficult political and technical environments due to high hurdle rates and low debt financing networks. However, an increase in a hurdle rate is likely to have the least effect on major oil producers on the overall corporate finance relative to coal producers. This is largely due to very liquid markets for fossil fuels relative to coal markets

which are less liquid and fragmented. The World Bank defines financial depth as the size of the financial industry in context of the broader economy. This is measured as private sector credit to GDP Ratio. This metric is important when assessing the impact of divestment campaigns within the financial sector (World Bank, 2023).

2.1.3 Overview of The Upstream Coal Market

The upstream market encompasses the mining of thermal and coking coal. General coal mining companies in South Africa invest in and operate coal mines only. According to the DRME, coal producers do not own and operate any coal-fired power plants. However, they enter contracts to supply coal to coal-fired power plants. The coal mining companies sell coal in the domestic market i.e., electricity, steel, chemical, and cement industries. They are also trading in the export market to Asia and Europe. The bulk of the sales revenue for coal producers predominantly comes from the mining and sale of thermal and coking coal. (DMRE, 2015). For example, Exxaro's coal mining revenues contributed 94% to the total revenue of R46.3 billion for the financial year 2022 (Exxaro, 2023). In 2020, SA had approximately 150 coal mines. 75% of the coal production is produced by five mining companies with half of them being foreign owned. These are Anglo Coal, Seriti, Exxaro, Sasol, South 32 and Glencore. The balance is produced by relatively smaller MSMEs (Makgetla & Patel, 2021).

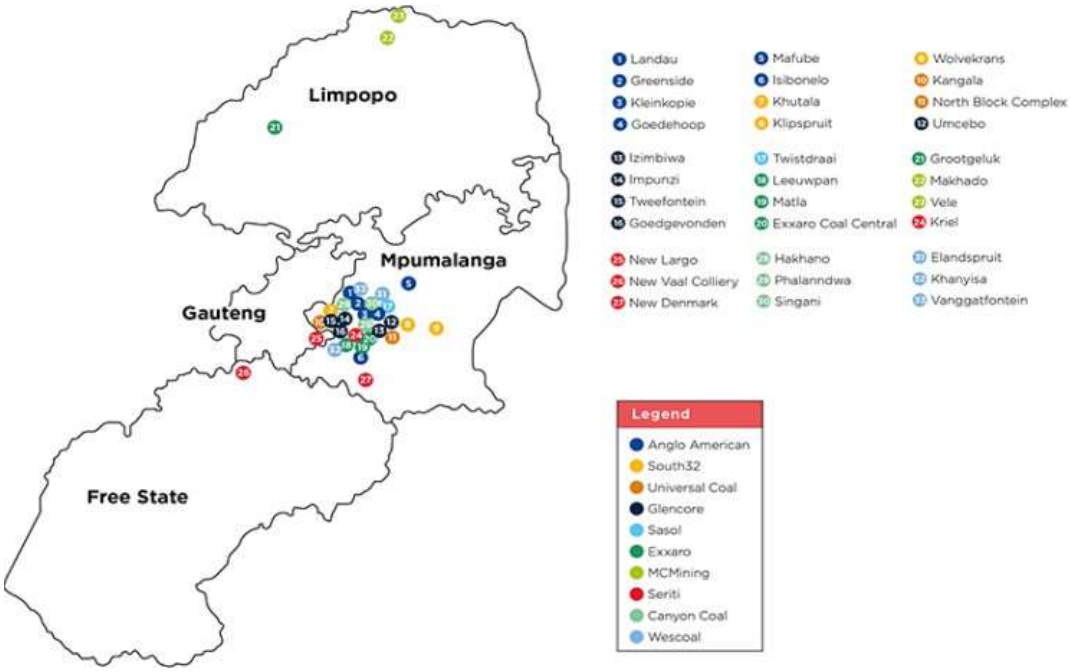
Figure 4: SA's Major Coal Producers 2019-2020



Source: Company Reports, May 2021

Figure 5 below shows the location of SA coal mines. Coal production in SA has averaged below 260 Mtpa over the past 15 years (MCSA, 2016). About 25–30% of the production is exported and 70-75% of production is being used in the domestic market.

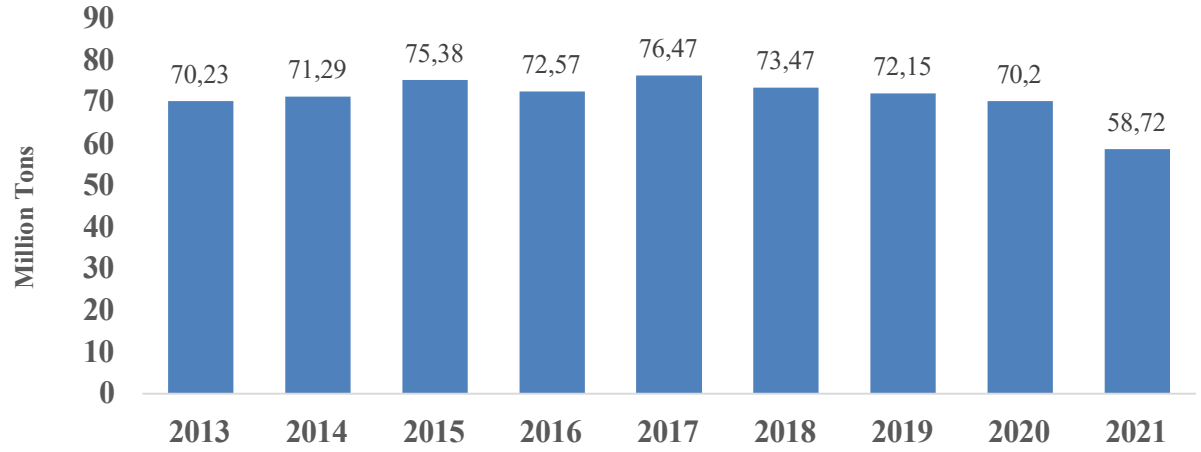
Figure 5: Location of Coal Producers



Source: MCSA, 2019

SA's coal sector is an important low-cost global producer alongside Indonesia and Colombia (Eberhard, 2011). The Richards Bay Coal Terminal (RBCT) is strategically positioned for competitive coal exports to Asia and Europe (RBCT, 2023). RBCT has a large spare capacity (91Mt) to influence the export market but is restricted by rail capacity to move coal from the mine to the terminal. On average SA exports about 72 million tons of coal (RBCT, 2023). Figure 6 below shows the SA's coal exports from 2013 to 2021. Seaborne coal exports from South Africa are made through RBCT. The RBCT has a total capacity of 91Mt and barely achieves the maximum export capacity due to the Transnet railway logistical channel inefficiencies (RBCT, 2023).

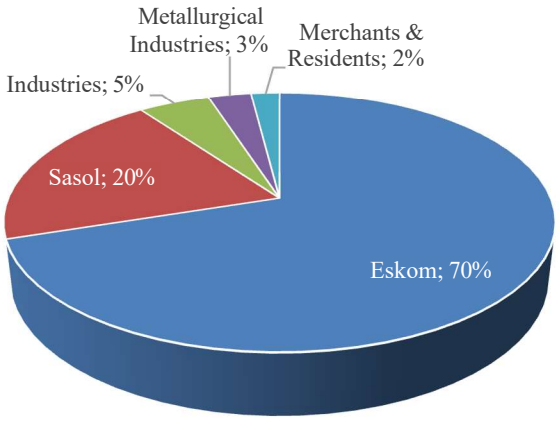
Figure 6: Coal Exports – South Africa 2021



Source: RBCT Media Briefing Report, 2021

Coal consumption is dominated by Eskom (70%) for power generation and Sasol (20%) for CTL (DMRE, 2009). Coal as a reductant and energy source is also used in the industrial and agricultural sectors (3%) in furnaces and kilns. Cement and steel manufacturing sectors, or other metal sectors account for 5%, A small share of the production is utilized in the merchants, small businesses, and residents (2%) (DMRE, 2009).

Figure 7: Domestic Coal Use in South Africa



Source: Provest, 2010

General coal producers are investing in equity for the expansion of power generation infrastructure in renewable energy as IPPs. For example, in 2012, Exxaro established Cennergi, a company focused on renewable energy power generation, and in 2016, constructed two wind

farms (229MW) located in the Eastern Cape. Exxaro's renewable energy business contributed approximately 2,5% (R1,15 billion) to the total revenue of the business for the financial year 2022 (Exxaro, 2023).

Additionally, Exxaro was a lead developer for the Thabametsi IPP project, involving 3.9 million tons per annum of thermal coal to support the 600MW Thabametsi IPP. The capital expenditure required for the project was R3.2 billion (Exxaro, 2018). In 2020, the project was put on hold following the decision of three major South African banks to discontinue their involvement.

2.1.3.1 Regulatory framework governing the SA coal mining

Igbayiloye et al., (2021) state that the regulatory framework governing mining operations in South Africa MPRDA of 2002, the BBBEE Act of 2003, and the NEMA. The MPRDA is designed to guarantee that the state fosters social and economic progress from petroleum and mineral resources. The act stipulates a framework for management plans, audits, environmental assessments, and royalties. The BBBEE forms part of the Mining Charter (2018). The BBBEE seeks to address the ownership and participation in mineral resource production and extraction by black persons. The Mining Charter (2018) states that mining companies must have a minimum 30% BEE shareholding. The objective of the NEMA is to assure that growth integrates social, economic, and environmental aspects, thereby achieving sustainability that addresses the needs of both present and future generations, including previously disadvantaged communities (Igbayiloye et al., 2021).

2.1.3 Overview of the Downstream Coal Market

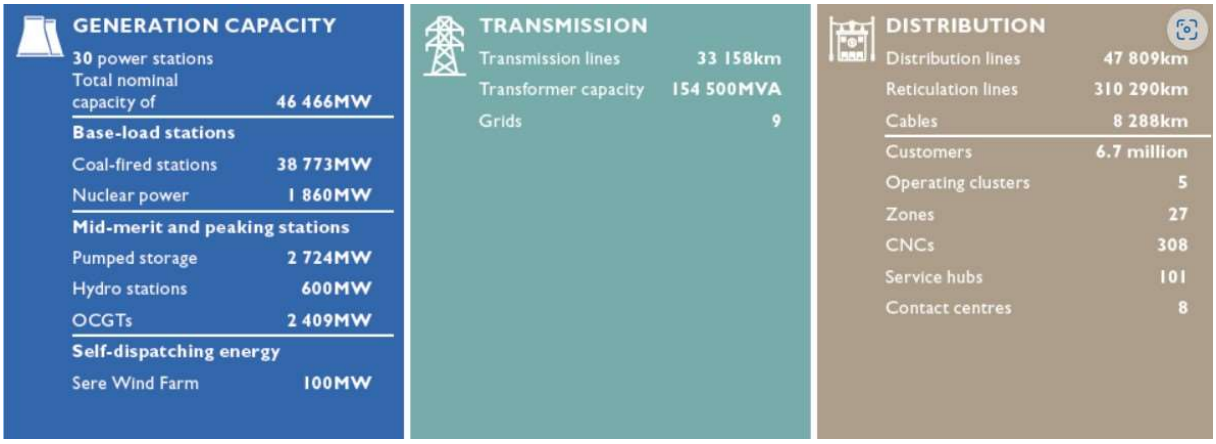
Downstream coal market activities encompass enterprises involved in the development of mines and CFPPs e.g., the energy utility, Eskom, financial institutions, and equipment manufacturers/ suppliers.

2.1.3.1 Eskom

Eskom Holdings SOC Ltd, a state-owned entity and the parent company of its group, is established and based in South Africa. Eskom operates as a vertically integrated unit, responsible for generating, transmitting, and distributing electricity. Its services cater to a diverse clientele, including industrial, mining, commercial, agricultural sectors, redistributors (such as metropolitan and other municipalities), residential customers, and international clients

in the Southern African region. Additionally, Eskom procures electricity from Independent Power Producers (IPPs) and other regional suppliers within Southern Africa (Eskom, 2023). Figure 8 below shows that Eskom generates 38 773MW from coal-fired power stations and manages 33 158km of transmission lines and 47 809km of distribution lines.

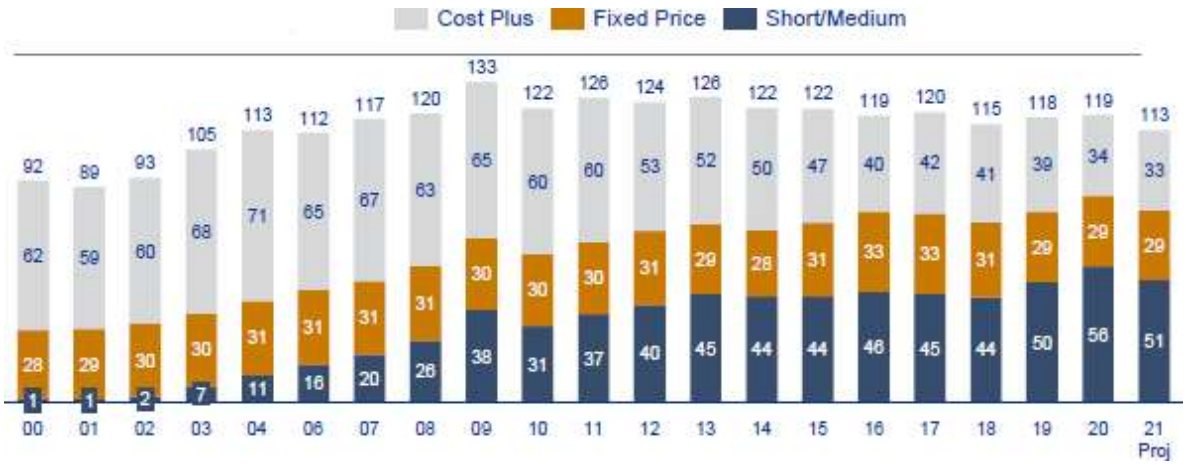
Figure 8: The Role of Eskom



Source: Eskom, 2023

Eskom plays a key role at all levels of the value chain in South Africa's coal power industry. Eskom typically invests in upstream activities which are directly in coal extraction by providing initial and sustaining capital expenditure to ensure the security of coal supply for its coal power stations. Eskom employs the following contracts: fixed price, cost-plus and short-term contracts. Figure 8 below depicts that Eskom buys ~115mt of coal per annum. Eskom spends approximately R50 billion on coal supply per annum. Eskom coal spending increased by 26% to R49 billion in FY17 from R39 billion in FY13 (SCOPA – Eskom, 2017).

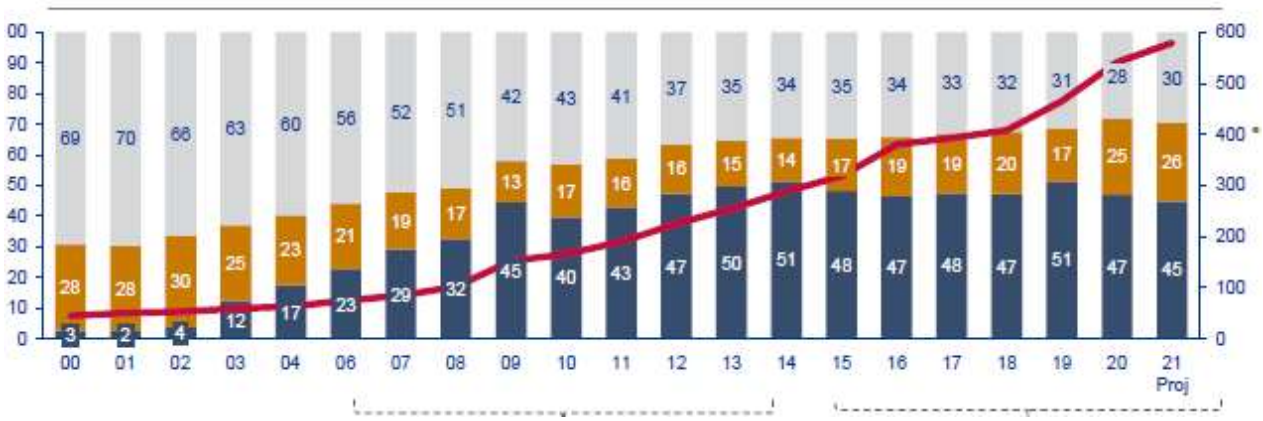
Figure 9: Eskom Coal Supply Volume Contribution in Mt per Annum



Source: Eskom, 2021

As depicted in Figure 9, Eskom's short-term/medium-term contracts comprise about 45% of the total coal cost. Despite producing a comparable output, Eskom is dealing with a significantly more costly coal supply mix.

Figure 10: Eskom Coal Cost Contribution and Average Coal R/Ton



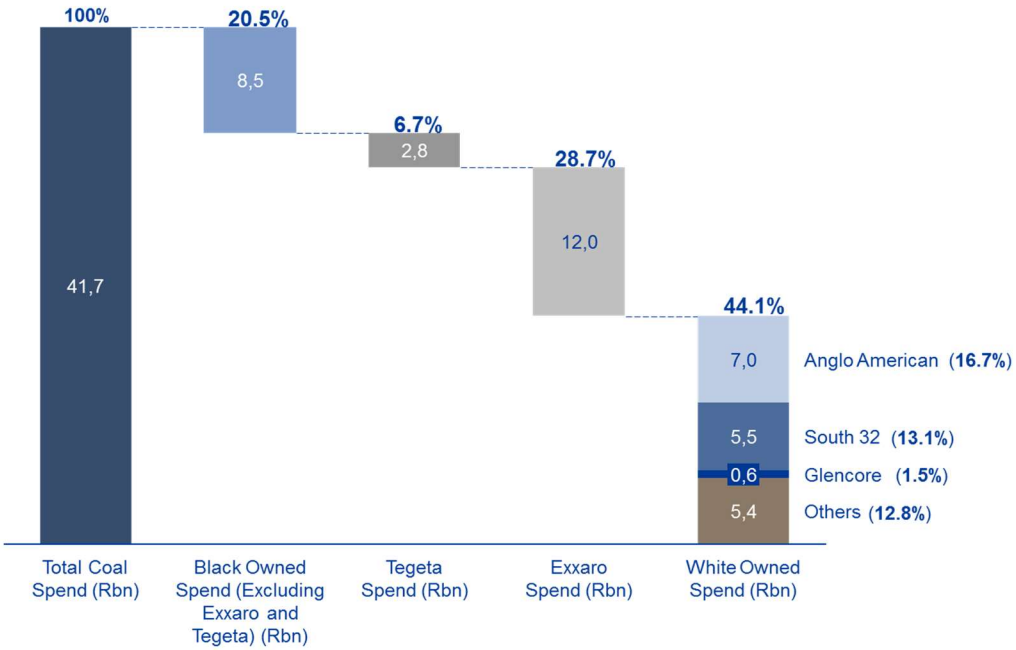
Source: Eskom, 2021

Eskom's CFPPs are responsible for producing roughly 80% of South Africa's electricity. Figure 11 illustrates that approximately 80% of the coal utilized by Eskom comes from six private companies, namely: Anglo American Corporation, Seriti, Glencore plc, Exxaro, and Sasol (Eberhard, 2011).

To ensure the security of supply from the mines, Eskom provides capex as part of the coal supply agreements with the mines. Eskom's coal suppliers, while serving as its major coal

providers, are also significant consumers of electricity and belong to the group of 31 energy-intensive users responsible for a substantial portion of South Africa's electricity consumption. (SCOPA - Eskom, 2017)

Figure 11: Eskom Coal Spend Breakdown FY17



Source: Eskom, 2017

The IRP (2019) which lays out the government's electricity supply strategy, advocates for the development of CFPPs, specifically Khanyile and Thabametsi, with a combined 1500MW output (IRP, 2019). Furthermore, there is the recent commissioning of the Medupi and Kusile power plants. It is crucial to highlight that domestic private banks and NGOs have since spearheaded a campaign to reject the Thabametsi project citing environmental and socio-economic risks. The planned new capacity from Thabametsi and Khanyile seems unlikely that it will come to fruition. Coal burning power plants represent the most significant source of GHG emissions, which contribute to climate change (Yang & Cui, 2012).

2.1.3.2 Private Banks

The financial services sector constitutes 24% of GDP. It is the largest contributor to the economy (Bhorat et al., 2014). According to Ashman & Fine, 2013, within the financial system, private banks with their respective market shares; Standard Bank (25%), ABSA (21.6%), First Rand Bank (18.8%), and Nedbank (17.8%), dominate the private banks landscape. They are

generally known as the *'big four'*. These banks including RMB, Absa Capital and Investec, play pivotal roles as lead project finance providers in the Renewable Energy Independent Power Producer Procurement Program (REIPPP).

Private banks extend financial support to enterprises engaged in coal-related activities. This financial assistance encompasses corporate lending, securities underwriting, capital mobilization for public and private ventures, project-specific or asset-based funding, as well as derivative financial instruments like securitized debt and credit derivatives.

Private banks have become the focus of climate activists and non-governmental organization (NGO) divestment initiatives. This is primarily due to the crucial function that private banks perform in advancing global sustainability. They achieve this by directing their financing efforts toward initiatives aligned with the SDGs and the Paris Climate Agreement. Additionally, private banks seek to mitigate and address ESG risks associated with their operations, as noted by the OECD (2019).

Private financial institutions support renewable energy projects. On the 1st of December 2022, Seriti Resources, through its subsidiary Seriti Green, successfully took complete ownership of Windlab South Africa. In this transaction, Seriti Resources became the majority shareholder in Seriti Green, holding a controlling interest of 54.19%. They are joined by strategic partners: Venn Energy RMB and Standard Bank with 15%, 15.41% and 15.41 shares respectively. RMB has further facilitated ZAR10 billion in financing for various renewable energy projects to date. (RMB, 2023).

In April 2018, South Africa's Nedbank unveiled a comprehensive coal power exclusion policy. Notably, in January 2019, Nedbank took significant steps by discontinuing funding for two planned coal-fired power stations, Thabametsi and Khanyisa. Instead, the bank committed to redirecting its financial support towards energy efficiency and cost-effective renewable energy projects. In a similar move, Standard Bank of South Africa announced in September 2018 its decision to cease financing new coal power plants. Furthermore, FirstRand Bank also pulled the plug on its funding commitments for the Thabametsi and Khanyisa CFPPs (Company Reports).

2.1.3.2 Development Bank

DFIs serve as a state involvement mechanism in the financial sector to correct market inefficiencies and promote social and economic progress by availing finances to underserved segments of the market. (Thorne & du Toit, 2009). In addition to the private sector, government finance also holds a pivotal role in funding. As previously noted, the construction of large-scale CFPPs demands capital amounting to several billion dollars. Given that this surpasses the risk capacity of private banks alone, Development Finance Institutions (DFIs) contribute a significant portion of the financing for CFPP construction (local and international).

DBSA is a 100% government controlled DFI that has a significant role in supporting energy infrastructure programs across South Africa and the African continent. Through various development impact initiatives, the DBSA provides various financial products and services to facilitate the advancement of energy technologies and projects in the region. The DBSA through its support of the IPP office which it set up in 2010/11 has managed the procurement of over R200 billion worth of investments in renewables in South Africa (DBSA, 2023).

2.1.3.3 Equipment Suppliers

Coal fired power plant equipment suppliers in South Africa are mainly Japanese international firms namely Hitachi, Mitsubishi, Itochu, and Sumitomo Corporation. Caterpillar Inc, Komatsu Ltd.

2.2 Conceptual Framework

This paper is anchored in an interdisciplinary framework and sources such as politics, economics, business management, science studies as outlined by Fine and Rustomjee (1996) and Büscher (2009). A central aspect of our analysis is the identification of key factors influencing divestment decisions. While Trencher et al. (2020) highlighted three primary factors – commercial, institutional, and structural – our study introduces a fourth critical element: policy uncertainty. This addition is particularly pertinent in the context of SA.

2.2.1 Commercial Factors

Generally, it is assumed that business behavior is largely driven by commercial interests. This implies that the stakeholders normally look at the distributional impact of a particular policy before adopting the policy (Boddewyn & Brewer, 1994), (Shaffer, 1995). For instance, should the government implement a policy favouring coal production for export purposes, such as offering export subsidies, it is highly probable that firms within the coal sector would endorse this governmental intervention. However, if the government introduces a policy that curtails coal exports such as restricting companies to export without value addition, the firms are likely to not support such a policy. Businesses that are driven by commercial factors are forced to consider the financial losses or gains that the company might incur and how the new policy affects their competitive position (Hess, 2014). Different government policies impact businesses to varying degrees. Those less impacted by a specific policy tend to view it more favorably compared to those that are more significantly affected. Consequently, businesses experiencing minimal impact are more inclined to get behind the government for the application of such policies.

2.2.2 Institutional Factors

Institutional factors primarily internal in nature, significantly influence and shape the behaviour of businesses (DiMaggio & Powell, 1983), (Uzzi, 1997). Organizations are related to practices, standards, and principles that line up with the state, businesses, and the networks they are associated with (Smink et al, 2013). Geels (2014) reveals that there are certain prominent organizations play a pivotal role in establishing and moulding norms and values, which in turn, guide the formulation of business strategies. The composition of these influential organizations differs across various countries and industry sectors (Downie, 2019), (Woll, 2018). Leading organizations in a network of fossil fuels dictate the norms. Standards on fossil fuels investment are largely driven by outside organizations who set the trends for members in their network. On the other hand, recognized standards may restrict the adoption of new business strategies.

2.2.3 Structural Factors

Structural factors are largely internal capabilities of a business or trade. These include technology, business models, human resources, research and development, and knowledge base. Geels (2014) explains that these capabilities impact an organization's ability to modernize and come up with new business strategies (Garud & Nayyar, 1994). An organization's past interests shape the adoption and development of these capabilities. The principle of path

dependency demonstrates that once a company is deeply embedded in a certain trajectory, transformation becomes challenging (Pierson, 2000), (Koch, 2011). For instance, when a company commits significant resources to a business or trade, develops a specific business model, and accumulates extensive knowledge in that area, it becomes deeply entrenched in this chosen path. The acquired knowledge and specialization make it difficult for the business to transform (Newell & Johnstone, 2018), (Pierson, 2000). Hill (2003) explains that in the face of disruptive technology, existing firms are economically inclined to invest more in improvements instead of new technologies.

2.2.4 Policy Uncertainty

According to Al-Thaqeb & Algharabali (2019), the lack of clarity on policies poses economic challenges. This uncertainty is frequently identified as a major hindrance to industry performance, especially in the economy and notably mining sector (SARB, 2015). In 2015, Baker et al., found that elevated policy uncertainty in 12 large economies negatively impact investment, output, and employment. Similarly, Bloom (2009) noted that favourable business conditions spur firms to create jobs and invest, whereas adverse conditions lead to job cuts and divestment. The impact of unclear policies on corporate finance strategies is significant as firms tend to hesitate in making investment or divestment decisions during periods of heightened uncertainty. A pertinent example was the uncertainty surrounding increased BEE shareholding targets proposed by the DMRE as part of the Mining Charter. This has led to a decline in business confidence and investment in the mining industry, prompting several large mining companies to consider divestment from South Africa.

2.3 Review of Empirical Literature

According to Hestres and Hopke (2020), the theory of change can be deployed to examine the assumptions, rational and possible outcomes of campaigns such as the divestment from fossil fuels. Taplin and Clark (2012) define the theory of change as a planning process that is validated by stakeholder consultation on their long-term goals and identifying what is needed to change. Theory of change is borrowed from the field of philanthropy where it was used to analyse the effectiveness of social interventions. In environmental advocacy, the theory of change is not frequently applied (Hestres 2014, 2015). It is comprehensive because it covers the analysis of the strategic objectives of a campaign. Understanding the theory of change underlying a movement helps grasping its objectives, the methods, and techniques it plans to employ to achieve that, and how those methods and techniques fit into strategy. Divestment from fossil

fuels is an approach deployed by the broader social movement to subtly encourage specific industries and firms to change the way they do business (Hopke & Hestres 2017).

Divestment campaigns can be traced to the anti-Apartheid campaign in South Africa which ran from 1980 to 1990 as identified by Teoh et al., (1999). The campaign was aimed at disrupting the economy to debilitate its government. This strategy involved starving the economy of financial support, thereby prompting discussions in companies operating in South Africa and aiming to collapse the government at the time. In contrast, the fossil fuel movement, emerging in 2012 (Howard, 2015), focuses on disrupting investments in fossil fuel extraction, infrastructure, and trade. The objective of the movement is to challenge the license to operate by promoting the non-extraction of fossil fuels. The overarching objective of fossil fuel divestment is to facilitate a just transition to a sustainable renewable energy system. The short-term goal is to publicly discredit the businesses by forcing them to alter their business practices.

Hunt et al. (2017) compared the anti-Apartheid project relative to the fossil fuel movement, noting similarities in raising awareness. However, the study highlighted significant differences in strategy and objectives, concluding that replicating the anti-Apartheid operation's approach in the case of divestment in fossil fuels would be impractical. According to MacAskill (2015), divestment was also deployed to end violations of human rights and geopolitical tensions in Iran, Israel, Sudan and Northen Ireland.

Recent research has focused on the rationale behind fossil fuel divestment, scrutinizing its influence on public policy and investment practices. Proponents of these movements often reference the successful divestment movement against the Apartheid regime as a precedent, highlighting its effectiveness (Ansar, Caldecott, and Tilbury 2013, p. 2). Schwartz et al. (2023) carried out experimental investigations in South Africa, India, and the United States. The goal of their study was to investigate if information exposure could impact people's perceptions on climate change. They specifically investigated the effects of public exposure to divestment related information in three important areas: the absolute and relative concern over climate change and their perception of fossil fuels companies. The study's conclusions showed that there is little evidence to support the claim that information exposure increases public support for climate change policy. All things considered, the push to divest from fossil fuels is not anticipated to have the desired impact on changes to policy.

Trencher et al. (2020) conducted an analysis of divestment trends within Japan's international

coal industry, particularly in the wake of divestment policy announcements made by various companies in 2018. The study revealed that there was a slowdown and not a complete halt in investment flows. Commercial factors largely explained the divestment that occurred in the international coal business for Japan.

Recently, financial institutions in South Africa have been implementing stricter lending criteria for coal sector and the development of CFPPs (Reuters, 2021), reflecting a growing shift away from coal driven by climate change activism. Despite this momentum, it's important to acknowledge that coal extraction has not ceased in coal-producing countries due to divestment campaigns, suggesting a limited effectiveness of these campaigns (Blondeel & Van de Graaf, 2018). Nevertheless, there is an increasing acknowledgment among businesses, governments, and societies of the need to reduce carbon footprint (Jewel, 2019). Burton et al., 2018 argue that this shift raises crucial questions about the future of coal sector in SA and the broader implications of a carbon friendly transition for the country (Huxham et al., 2019).

To my knowledge, there is a gap in the scholarly examination of coal divestment patterns and low-carbon transition approaches among key entities in South Africa. The investigation of divestment trends, whether in upstream or downstream operations, remains unexplored in existing literature. This study aims to analyse the degree of divestment occurring in SA, as well as identifying the driving forces and obstacles influencing these divestment processes.

2.4 Summary

This section describes the meaning and importance of the key term divestment. Motivation for divestment in this study ranges from policy uncertainty to commercial, institutional, and structural factors. It further explains the South African coal upmarket highlighting the key players, size of coal production, exports, and domestic trade. Key downstream activities are discussed with a focus on key players in the CFPP, Eskom, powerful financial institutions, and equipment suppliers. We further discuss the meaning and importance of financial depth in terms of analysing the strength of the financial system in coming up with alternative sources of finances to plug the gap that will be left by financial institutions once they withdraw financial support from coal mining and the development of CFPPs. It is asserted that countries with a low financial depth will impact borrowers from coal companies relative to fossil fuel companies should leading financial institutions pull the plug on debt financing (Ansar, A. et al., 2013). The author emphasizes identifying the main factors that drive and hinder investment in this context and aims to link existing empirical research to the specific research questions addressed in the

study. This approach underlines the importance of contextual and industry-specific analysis in understanding investment behaviours and trends.

CHAPTER 3

METHODOLOGY

3.0 Introduction

Chapter 3 outlines the methodology adopted in examining the study. The study endeavoured to not just focus on the financial sector but extends to an analysis of divestment trends across various sectors. This approach offered insights into the roles and influences of key players throughout the entire value chain. This enabled the identification of specific drivers and barriers on an industry-by-industry basis with important public policy implications.

3.1 Research Approach

In this study, the qualitative research method was selected. Cresswell & Ploth (2016) define qualitative research as a broad term that starts with making assumptions, paradigms, and use of frameworks to examine research problems by investigating perspectives that people attribute to human or social problems. According to Schindler (2019), qualitative research encompasses interpretive techniques aimed at describing, decoding, and translating phenomena to discern their meaning within the natural context of the social world. The techniques that are used to examine the research problems which include interviews, and observations (e.g., case studies, grounded theory, case studies, and ethnography) are deployed and data collection and analysis techniques bring about themes and information. The final deliverable report reflects the opinions of the individuals, and the reflections of the researcher that are explicitly interpreted and ultimately signalling a call to action for the stakeholders (Cresswell & Ploth, 2016).

Qualitative research methods illuminated the research questions for this study. We engaged in qualitative research to get a nuanced and meaningful knowledge of the issue. The rationale for choosing qualitative research methods was that they are holistic and have a common goal of identifying the issues from the participant's perspective and bringing understanding to a complex problem. This is instead of taking a bottom-up approach to measuring events by using data to draw findings (Cresswell & Ploth, 2016). Qualitative research methods draw their origins from multiple disciplines in sociology, psychology, anthropology, linguistics, communication, semiotics, and economics.

Broadly, qualitative research applies a specific set of research open-ended techniques which include interviews, to inquire about the meaning of people's experiences (data collection) and analyze it through nonstatistical techniques. For this study, detailed, multiple diverse insights drawn from individual participants provide useful themes that extend information and pragmatism to applied research about how different organizations in the SA coal value chain are operating (Cresswell & Ploth, 2016).

We undertook qualitative research to comprehend the situations or scenarios in which participants of the study discuss and remedy the issue of divestments in the coal industry (Cresswell & Ploth, 2016). Qualitative research can shed light on the activities underlying statistical correlations, enlighten the creation and expansion of interventions, and demonstrate how interventions function to yield practical outcomes (Cresswell & Ploth, 2016). The advantages above of the qualities of qualitative research underscore the significance of integrating the qualitative method as an approach for tackling practical problems in the coal transition complex problem in South Africa.

3.2 Research Design

This research paper employed an exploratory qualitative research design. Its primary aim was to delve into the personal, professional, and organizational viewpoints of key figures in the coal mining industry. The focus was on observing their outlooks and experience related to the application of divestment policies within own specific environments.

3.2.1 Qualitative Research Approach: Exploratory

An exploratory qualitative research design was selected because the nature of the questions. In this study, we posed open-ended questions aimed at capturing the viewpoints of participants regarding the factors that impact coal mining, expressed in their own words. Following the approach outlined by Cresswell & Ploth (2016), our questioning strategy was dynamic; we formulated and refined questions as we delved deeper into the subject matter. This approach allowed our inquiries to evolve throughout the research process, reflecting a deepening understanding of the issue at hand.

The objective of the qualitative research was s to acquire detailed insights into the coal industry, encompassing both upstream and downstream activities. This involves identifying the factors that affect mining investments or have contributed to divestments in the sector, as perceived by

key stakeholders. Furthermore, the study aimed to categorize these factors by value chain groupings, determining their relative importance within each grouping, and assessing whether these rankings differ across various segments of the value chain, as guided by the methodology described by Cresswell & Ploth (2016).

3.3 Qualitative Sampling, Data Collection and Analysis

The upcoming segment delves into qualitative sampling, data collection and analysis techniques that have been chosen for the qualitative research method. This segment will reveal an outline of how participants were chosen, the methods used to gather data from these participants, and the strategies employed to analyse this data, thereby illustrating the comprehensive approach taken in this qualitative research.

3.3.1 Sampling

For this study, the sample population were experts from players in the coal value chain groupings listed either in upstream or downstream activities. An expert is a top-quality participant who is very knowledgeable about the coal mining and exploitation trends, climate change, and energy development trends in SA (Moustakas, 1994). This includes project funders or investors situated at financial institutions, national development banks and pension funds, senior management of coal mining firms, equipment suppliers, and national utility Eskom. Senior officials from the DMRE and miners' representatives' association also form the list of experts.

The objective of gaining detailed insights into coal mining divestment and the development and contexts of coal-fired power, as opposed to generalizing findings to larger populations, influences the decision on sample size. Consequently, this approach necessitated a thorough and meticulous examination of a relatively small sample size, focusing on the coal industry in depth (Cresswell & Ploth, 2016). A smaller sample was selected partly due to the time constraints on the part of the subject matter experts. A small sample presented opportunities for a quicker turnaround of the findings.

Qualitative research makes use of nonprobability sampling. Selecting sample cases is a subjective procedure and some attempt was made to generate a representative sample. However, we seek a nonrepresentative sample to draw the highest number and the most important insights.

(Schindler, 2019). Purposive sampling, a variant of non-probability sampling, is characterized by the researcher's intentional selection of participants due to their distinct experiences, characteristics, attitudes, or perceptions, distinguishing it from random selection methods (Schindler, 2019).

For this study, we used the nonprobability sampling criteria of purposive sampling, intended to intentionally sample cases that can best tackle the research questions and obtain a greater understanding of the main problem under study. Additionally, purposeful sampling aided in customizing our sample to optimally pursue emerging finding (Cresswell & Ploth, 2016). Snowball sampling and convenience sampling are other types of nonprobability sampling (Schindler, 2019). In addition to pre-selecting interview candidates by creating a preliminary list, we requested the initial interviewees to suggest potential participants for future interviews (snowball sampling). These are individuals who are integrally involved in investment decisions in the firms we are studying. In the context of qualitative research, Guest et al., (2006) argue that participants for qualitative study interviews can be from a minimum of 6 and a maximum of 12 participants. Meanwhile, Baker and Edwards (2012) propose that 15 respondents are enough when consulting experts on a specific subject. The selected companies for the sample are leading and well-established in the coal industry and consist of the following:

- **General miners**: (n=4) This includes leading coal producers. Selection criteria for coal mining producers was based on indicators such as the annual tonnage of coal produced.
- **Electricity Supply and distribution**: (n=1) Eskom
- **Plant manufacturers**: (n=5) Predominantly international companies involved in the manufacturing and distribution of components for CFPPs such as Hitachi, Mitsubishi, Itochu, and Sumitomo Corporation. The selection of these businesses for the sample was guided by market share indicators, specifically in terms of sales volumes.
- **Financial Institutions**: (n=5) This sample encompassed the top five private banks: RMB, Absa Capital, Nedbank, Standard Bank, and Investec. It also includes Development Financial Institutions (DFIs) such as DBSA (n=1). The selection of financial institutions for the sample was based on indicators like the number or amount of financing invested in coal mining capital expenditures and CFPPs.
- **Regulators**: DMRE (n=1).

Miners Representatives: MCSA (n=1)

- **Research institutions** (NGO/university/think tanks) (n=1)

3.3.2 Data Collection

The principal information gathering technique we utilised is interviews. Specifically, we opted for semi-structured interviews to gather data. This implies that when interviewing we begun with a specific question and then followed the individual's tangents of thoughts (Schindler, 2019). Semi-structured interviews were selected due to their efficiency, flexibility, and the ability to facilitate the comparison of responses, as opposed to unstructured interviews, which can be more time-consuming (Schindler, 2019).

Where possible, the participants received the questions in advance and the interviews recorded for transcription. Interviews were conducted onsite where possible and via telephone and online interviews with the obvious benefit of conducting more interviews within the same time frame as well as recruiting participants from a broader geographic area (Schindler, 2019). One of the drawbacks of interviews is that the generalisation of the results is difficult as the findings are drawn from a smaller sample. Nonetheless, participant selection was carried out from each value chain grouping to guarantee that the sample is sufficiently reflective of the population being studied, this permits the findings to be generalizable to the broader population (Krefting, 1991).

Data was drawn from a combination of sources which include representatives of that firm, official documents publicly available such as annual reports and investor materials, third-party publications, and databases. Company official statements were triangulated with interview findings. Data sources were listed separately for each firm to be researched. Gathering data from a smaller sample permitted thorough analysis of a limited number of participant responses, considering their diversity and nuances. For this study, we adopted a measure of divestment activities that range from none, partial, and complete (Trencher et al., 2020). The study's measurement of divestment levels was then showcased separately for each value chain grouping, as outlined in the table below.

Table 2: Level of Divestment

Level (Intensity)	Meaning	Description
None	No apparent transformation in investments in the coal business, whether they pertain to upstream or downstream activities.	For example, a coal mining company might release a strategy aimed at increasing investments in renewable energy. However, the plan does not make mention of disposing of coal-related assets.
Partial	Partial decrease in both greenfield and brownfield investments and conducting business with coal-related enterprises, encompassing activities such as financing, plant manufacturing, and CFPP development.	For example, Bank C might disclose a strategy to no longer fund greenfield mining projects but continue to finance brownfield projects.
Complete	Full termination of greenfield and brownfield investments and conducting business with coal-linked businesses.	E.g. Bank X announces that it will no longer fund any investment in coal-related businesses and will subsequently withdraw from all existing coal investments.

Source: Adopted from Trencher et al, 2020

3.3.2.1 Preparation of Interview Research

In anticipation of the interview, Castillo-Montoya (2016) devised the 4 stages of the Interview Protocol Refinement (IRP) framework. The IRP framework is a guide employed in the creation and improvement of interview protocols before data collection commences. The IRP method is used to improve the dependability of interview protocols employed for qualitative research. The framework, therefore, enhances data quality acquired from research interviews. Jones et al., (2014) indicate that every phase is a step further in the development of a research tool suitable for their interviewees that aligns with the research's intended objectives.

Phase 1 focuses on aligning the interview questions and research questions. Alignment is achieved by developing an interview protocol matrix that plots the interview questions against the research questions. Neumann (2008) directs that those cells are then marked to show that a specific interview question is likely to obtain information pertinent to a specific research question.

During phase 2, the researcher should strike a balance between inquiry and conversation by meticulously crafting and structuring the interview questions. This method guarantees that the interview questions are lucid, succinct, and foster a more fluid and natural conversation.

Phase 3 entails the researcher acquiring feedback on their interview protocol. The feedback is acquired through in-depth analysis and articulation of thinking. The feedback acquired from the above activities permits the researcher to improve the interview protocol.

Phase 4 involves piloting. During this phase, the researcher undertakes a dry run of the interviews under real conditions. This allows the researcher to test how the interview protocol performs live before undertaking a real study. Piloting is made possible by the researcher carrying out interviews with a small sample of people with the same characteristics as the research sample. However, piloting is not possible for all researchers due to constraints related to time, money, and access.

3.3.3 Data Analysis

Qualitative analysis demands a systematic method for scrutinizing the data. Typically, qualitative analysis proceeds inductively, starting with the observations that lead to identifying recurring themes and data patterns. We employed thematic content analysis to analyze both the audio recordings and interview transcripts. This analysis followed the six-step guide outlined by Braun and Clarke (2006) and facilitated using specialized software.

Thematic analysis serves as a qualitative analytical method employed to discover, dissect, and communicate recurring patterns or themes within a dataset. It involves a systematic examination of data, which may be gathered through diverse research methods like interviews or focus groups, with the aim of identifying consistent patterns of meaning, following the guidelines of Braun and Clarke (2006). At its core, thematic analysis encompasses a thorough organization and description of the dataset, and it additionally provides an interpretive framework for comprehending various dimensions of the research topic, in accordance with Boyatzis (1998).

Table 3 below offers a clear and detailed six-step guide to the analysis process, accompanied by illustrative examples. The distinct stages of this qualitative analysis framework are summarized in Table 3. It's important to recognize that these phases serve as guidelines rather than rigid rules. Moreover, adhering to these fundamental principles should be done in a flexible manner to align with the specific research questions and data, as emphasized by Patton (1990).

Table 3: Stages of Thematic Analysis

Stage	Process Description
1. Understanding the data:	Transcribing data when needed, carefully reviewing the information, and writing initial thoughts
2. Creating initial codes:	Coding systematically intriguing data features in the dataset and organizing relevant data for every code
3. Investigating and identifying themes:	Potential themes identified from sorted codes and data collected from a potential theme
4. Assessing the topics/ themes:	Evaluating whether there is theme alignment at 1st and 2nd order concepts and writing a thematic overview
5.Assigning names to topics	Analyse each theme continuously and producing a comprehensive analysis with clearly defined themes
6. Drafting the final report:	Choosing extract examples and analysing the extracts. Linking extracts to research question and existing literature, and in the end writing a report

Source: Braun & Clarke, 2006

3.3.4 Methodology Rigour

In this section, we present the qualitative ways to evaluate the quality of the study. Lincoln & Guba (2018) introduced a comprehensive set of evaluation criteria for qualitative research, aimed at ensuring trustworthiness. These criteria is referred to as the Four Dimensions Criteria (FDC) which includes: confirmability, credibility, transferability and dependability. In this study, we customized these criteria by selecting the strategies that are systematically relevant to our research. Table 4 below illustrates the strategies that we implemented in our study.

Table 4: Four Dimensions Criteria

Criteria	**Goal**	**Unique Strategies**	**Targeted approaches to enhance rigour**
Credibility	To establish assurance in the accuracy, reliability, and authenticity of the	• Extended and varied interactions with each participant and organization	• Each interview typically lasted between 30 to 60 minutes to effectively engage with the participants

	findings, specifically the perspectives of the participants	• Interviewing process and techniques • Ascertaining the interviewer's ability • Accumulation of referential materials	We ensured that the interviewer was equipped with the requisite knowledge and research skills to perform the interviews. Audio recordings, data, and related documents were collected for analysis and storage.
Confirmability	To increase the likelihood that other researchers can replicate and verify the results	• Reflexivity • Triangulation	• Writing down the notes about the perspectives of the participants during the interview. Timely memoing after interviewing • Application of data triangulation technique.
Dependability	To guarantee that the outcomes of this qualitative research can be replicated under identical conditions, involving the same context, participants, and coders.	• Detailed explanation of the methodology • Creating an audit track and trace • Data duplication	• We created a comprehensive research proposal outlining the study's methodology. • We built a strong record for the process of data collection. • We assessed the precision of coding
Transferability	To improve the extent to which the results can be applied various environments	• Purposeful sampling • Data saturation	• Adopted purposive sampling to create a specialists' group. • We computed theoretical and operational data saturation.

Source: Forero et al., 2018, Lincoln and Guba (1986)

Due to the importance of South Africa's transition to low carbon economy, we took care to preserve the validity and reliability of the methodologies chosen and applied in each stage of the study. In qualitative research, reliability assesses whether the method consistently measures what it intends to measure (Gibbs, 2007). Using the interview guide contributed to ensuring consistency across all the conducted interviews. The guide ensured a uniform approach, with the same set of questions or prompts used consistently for each participant. Additionally, we meticulously documented the research procedures employed during the study and the process of reporting findings. This documentation allows other researchers to replicate the same procedures when conducting similar research (Moustakas, 1994).

Validity in qualitative research captures the integrity of the research findings (Creswell & Miller, 2000) The triangulation of data served as a robust validation strategy to avoid bias during analysis. For this study, we incorporated data obtained from various experts along the coal value chain to reduce the risk of drawing misleading conclusions. By combining data from different sources, collected at various times, and originating from different individuals, we enhanced the reliability and credibility of the findings (Denzin,1978). The researcher was equipped with the requisite knowledge and research skills to perform the interviews. Audio recordings, data, and related documents were collected for analysis. To address respondent bias, the researcher took deliberate steps before conducting interviews. These steps included practicing and refining interview techniques. The goal was to avoid leading questions and ensure that the interviews were conducted in an objective manner. By doing so, the respondents felt comfortable and free to engage and express their views openly.

3.4 Research Limitations

This section identifies and describes solutions to address the limitations of the research. The bulk of the major players either in upstream or downstream activities are publicly listed companies and might be reluctant to participate and or give non-public information. This limitation will be overcome by using documents such as annual reports and policy documents to get the information that is required to tackle the research questions. The reliability of data from experts in interviews. To overcome this challenge their opinions will not be independently substantiated and so their views must be accepted at stated value.

3.5 Summary

This chapter describes how we are going to resolve the research problem by gathering information and the tools to be utilised to undertake the investigation. We further provide a detailed explanation of the strategy used and the advantages and disadvantages thereof. The importance of this chapter cannot be undermined given that the quality and reliability of the research findings are determined by the methodology adopted. We elaborate in this chapter on the drivers behind the research methodology deployed which are research scope, objectives, and resources available for the research.

CHAPTER 4

DISCUSSION OF FINDINGS

4.0 Introduction

This chapter is dedicated to presenting the primary findings from each industry, identifying the drivers and barriers to coal divestment as well as specifying the extent of divestment behaviour and strategies being adopted. First, a summary of each industry's drivers and barriers is presented. The drivers and barriers are categorized into first and second concepts, which are further grouped into overarching themes, and then these themes are associated with the literature discussed in Chapter 2 through aggregate dimensions. Subsequently, there will be an analysis of the findings from each industry. Quotes from the interviewees are included as evidence and used to highlight the opinions of the survey participants.

4.1 Demographic Profile of Respondents

The respondents in this research were selected from the pool of businesses operating within the different industries in the coal sector. The five (5) participants were drawn from the two broad categories of the coal market which are the downstream and upstream coal market. Of the 5 participants, one of the participants'organisation is a power utility (20%), two organisations are financial institutions – private banks and development bank making up 40% and one is a mining equipment association (20%) which is part of the downstream coal market. Lastly one participant's organisation is a general mining company (20%) which is categorised under the upstream coal market.

Table 6 below reveals that the gender composition of the participants is made up of 80% male and 20% as female. The ages of the respondents ranged from 30 to 65 years, with the mean age of 49 years and median of 52 years. Approximately 60% were between 40-65 years. The minimum age of the respondents was 32 years and a maximum age of 62 years.

The participants comprised 2 (two) C-suite executives (40%), one Division Head (20%), and 2 (two) at Analyst level (40%). The respondents at the time of this study held diverse roles. The socio-economic status varied among the participants with 80% reporting having a college degree or higher and 20% a diploma. Table 6 below is a summary of the demographic

profile of the participants.

Table 5: Demographic Profile of Research Participants

Respondent	Current Role in the Organisation	Gender	Age	Years of Experience
1	Senior Credit Analyst	M	32	4
2	Head Climate Finance	M	53	18
3	Chief Corporate Finance Advisor	F	44	7
4	Executive: Strategy and Stakeholders	M	55	20
5	CEO	M	62	26

Source(s): Author's own composition

The data has revealed that the average number of years of the respondents in the industry is 13 years. Two of the respondents (40%) had less than 10 years of experience, 40% (2) were between 11-25 years and 20% (1) had more than 25 years of experience in the industry. The diversity within our sample provides a robust framework for examining the divestment trends across the different segments of the coal market.

4.2 Thematic Findings: Drivers of Coal Divestment

The thematic analysis of the responses to identifying drivers of coal divestment uncovered five (5) drivers of coal divestment across upstream and downstream markets. The drivers include climate change, Eskom inefficiencies, reputational risk, renewable energy adoption, and BEE empowerment demands from Eskom. The following section discusses the drivers from different industry perspectives.

4.2.1 Climate Change

Climate change was identified as the leading driver of divestment in the coal industry when the respondents were asked, *'what factors that are driving coal divestment in South Africa'.* According to five (5) interviewees, climate change was the leading driver of divestment from coal, a finding of which was validated by comments from various interviewees:

> "*The goal of achieving net-zero emissions by 2050, as part of global climate change targets, is significantly impacting Eskom's divestment strategy. The adoption of ESG criteria is increasingly guiding investment decisions in energy projects. Investors who*

are committed to ESG objectives are choosing to withdraw their investments from coal energy projects to align with climate change goals. The respondent emphasized, "*Wealthy nations are showing a strong preference to invest in clean assets. It is this emphasis on ESG principles that's primarily driving the move away from coal investments at Eskom" – (Respondent 3).*

"There is growing urgency to address climate change".

The participant expressed doubt that South Africa would construct any new coal-fired power stations. They elaborated, "*there has been a halt in coal exploration in other regions and this attributed to a shift in sentiment against coal, which has consequently decreased exploration activities*. Furthermore, they noted that, "*this shift occurs as the primary coalfield in Mpumalanga is nearing the end of its coal mining life. Additionally, there are no plans for new power plants that would use coal as a fuel source*" – *(Respondent 4).*

"*In South Africa there is a strong commitment to transition to more environmentally friendly energy sources*" *Additionally, attention is increasingly being focused on the social implications and impacts of this transition*". The respondent also noted that, "*globally, investment capital is moving away from the coal sector" – (Respondent 1).*

"*The primary international mechanism for addressing climate change is through the United Nations Framework Conventions on Climate Change. The commitments made in the Paris Agreement are beginning to impact the financial sector. This influence is evident in discussions about ensuring that investments align with the goals set out in the Paris Agreement."* The respondent highlighted that, "*the primary challenges include addressing climate change and adhering to the Paris Agreement by striving to keep global temperature increases below 1.5°C as outlined in the Paris Agreement and subsequent accords*" - *(Respondent 2).*

"Climate change is driving the push to divest from coal" – (Respondent 5).

4.2.2 Eskom inefficiencies

Eskom inefficiencies were cited as a key driver for divestment from coal in South Africa. This finding is supported by the fact that Eskom reported an Energy Availability Factor (EAF) of only 62.02% due to inefficiencies in its power generation operations in its 2022 financial year report. These inefficiencies are largely due to increased unplanned outages and the diminished capacity of power stations the report said (Eskom, 2022). The comments below by Respondent 1 further validated the finding:

> The respondent explained, *"there is a clear gap in the power system, as evidenced by the rise in demand for IPPs. For example, a major company like Harmony Gold recently needed a 30MW renewable energy plant, a small amount compared to its daily energy requirements for plant operations. This situation is driving the shift away from coal investment, as stakeholders seek more reliable and efficient energy sources. The situation is influenced by factors such as large companies needing consistent power supply but also being impacted by load shedding. Even if these companies have their own power plants that supply energy through Eskom, they still face disruptions when Eskom implements load shedding. To improve power system stability, facilitate maintenance, and reduce load-shedding, there is an urgent need for an extra 4,000MW to 6,000MW of dispatchable capacity".* The respondent further emphasized that "*delays in implementing the DMRE's Risk Mitigation Independent Power Producer Procurement Programme are exacerbating these issues." – (Respondent 1)*

4.2.3 Renewable energy adoption

The increasing adoption of renewable energy as a factor in the shift away from coal investments can be explained by the evolving commercial landscape. As the capital costs for renewable energy technologies continue to fall, these energy sources become more economically attractive. The International Renewable Energy Agency (IRENA) projections suggest that the share of variable renewable sources could rise to 60% by 2050, up from 15% currently.

> The respondent indicated, "*the cost reduction in renewable energy technologies is leading to a global increase in renewable energy adoption. Additionally, the potential for IPPs to earn profits through long-term power purchase agreements with Eskom for renewable energy is further incentivizing the move away from coal investments". –* (*Respondent 2).*

> One of the respondents stated, "*Political will is a significant factor influencing divestment from coal. This can be observed in the legal and regulatory frameworks. For example, the recent decision to increase the limit for Independent Power Producers (IPPs) to operate without certain documents from 1MW to 100MW reflects a change in governmental approach. It shows a recognition that the government alone cannot address energy issues and a willingness to permit more IPPs to establish their own generation plants*" – (*Respondent 1)*

On the 10th of June 2021, President, Cyril Ramaphosa made a significant regulatory change where Schedule 2 of the Electricity Regulation Act was amended to extend the limit over which a private power project must apply for a Generation Licence, from 1MW to 100MW. This reform is crucial for enhancing energy security by enabling the private sector to address its own power needs, reduce reliance on Eskom, and maintain employment levels. Given the time required to construct traditional coal-fired or nuclear power stations, it is likely that renewable energy will provide much of this additional capacity (The Presidency, 2021)

As outlined in the report by the DBSA, in a broader effort to transition from coal to cleaner energy sources, the South African government is implementing the Just Energy Transition Investment Plan (JET-IP). This plan, backed by a proposed investment of R1.5 trillion over the next five years from COP26 member countries, aims to support South Africa's shift towards renewable energy and decrease fossil fuel emissions. Key initiatives include decommissioning and repurposing Eskom's coal-fired power stations, generating employment opportunities in the renewable energy sector, and investing in renewable energy infrastructure as part of the fight against climate change DBSA (2022).

4.2.4 BEE empowerment demands from Eskom

Eskom revised its procurement guidelines, mandating that general coal mining companies must have at least 50% Black Economic Empowerment (BEE) ownership to secure coal supply contracts. This policy shift was driven by the realization that a large majority (73%) of Eskom's spending on coal was going to major suppliers without significant black ownership (Eskom 2017, p.3). This move towards greater BEE compliance in coal procurement is influencing the divestment from the international large, diversified coal companies.

> The respondent explained, "*the term "divestment" in this context refers to major coal mining companies transferring their coal assets to local coal operators, essentially shifting ownership. This trend is primarily because these general coal mining companies must engage in additional Black Economic Empowerment (BEE) deals to comply with Eskom's policy requirements*" – *(Respondent 4).*

The divestment from coal in South Africa, influenced by BEE compliance, can be illustrated through key transactions in the mining industry. For instance, on March 1, 2018, Anglo American plc completed the sale of its Eskom-tied domestic thermal coal operations to Seriti. (Anglo American, 2018). Later, on June 1, 2021, Seriti expanded its portfolio by acquiring SA Coal Holdings Proprietary Limited (SAEC) from South32, bringing in mines like Khutala, Klipspruit, Middelburg, and Wolvekrans, which supply coal to power stations like Kendal and Duhva (Seriti, 2021).

This shift in ownership was partly a response to the new mining charter, which required companies to undertake additional empowerment deals to meet increased BEE compliance levels for contractual purposes.

> The respondent highlighted that, "*the challenges faced by general coal mining companies in conducting another round of empowerment deals, despite the principle of "once empowered, always empowered." They pointed out that coal earnings were only a minor part of the overall business for diversified global mining companies and emphasized the complex socio-political environment in South Africa, which made continued operation in the coal sector challenging*" - *(Respondent 4).*

The concept of "once empowered, always empowered" stems from a legal judgment stating that mining right holders can maintain their empowerment status even if their BEE partners sell their shares in the company holding the mining right after the right has been granted. This was a significant issue in the Minerals Council of South Africa v Minister of Mineral Resources and Energy case [Case No. 20341/19], where the High Court examined a challenge to the Broad-Based Socio-Economic Empowerment Charter for the Mining and Minerals Industry, 2018 (Mining Charter III). The central dispute in this case revolved around whether the 26% BEE ownership target needed to be continuously met after a mining right was granted under the Minerals and Petroleum Resources Development Act of 2002 (SAFLII, 2018).

4.2.5 Reputation risk

The growing scrutiny from NGOs and investors over coal financing is prompting private banks to consider the reputational risks associated with such investments. Reputational risk for private banks arises when they lose the trust of consumers or stakeholders.

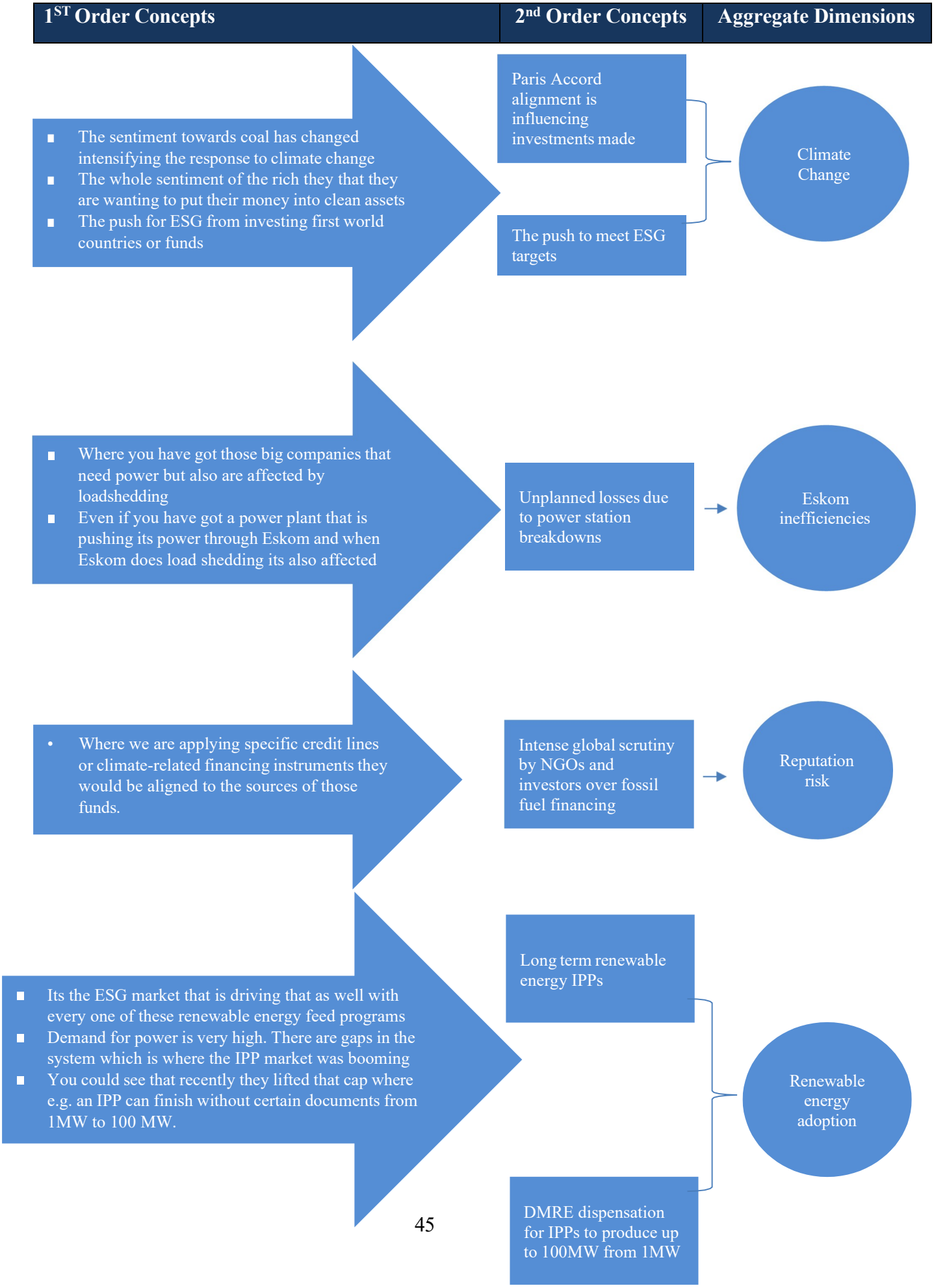
> One respondent explained, *"We have an ESG policy covering the entire bank, aiming to exit fossil fuels by 2050. This goal is largely driven by investor and board demands*." – *(Respondent 1)*

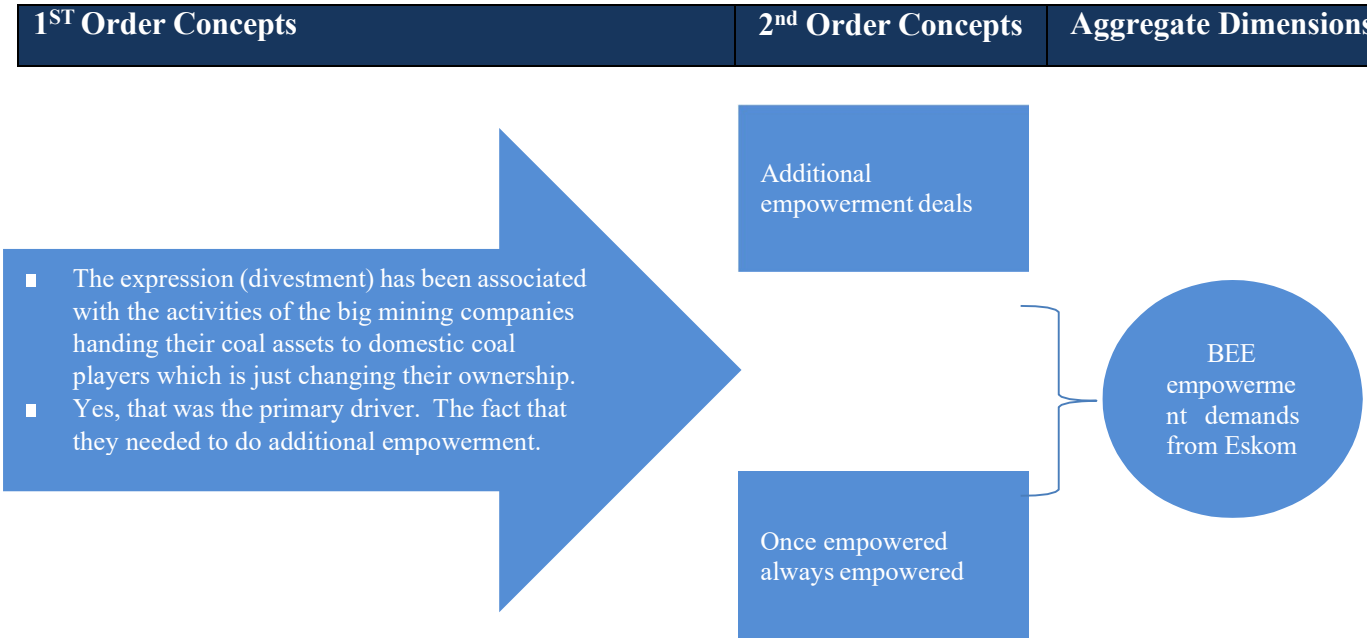
The pressure is mounting from various financing sources against investing in coal. This trend is part of a broader shift towards divesting from fossil fuel-based and energy-intensive activities (IEEFA,2023). By moving away from these investments, banks are not only responding to external pressures but also enhancing their public perception. This positive shift in perception is crucial for improving a bank's access to capital markets, as it aligns the bank with the growing global emphasis on sustainable and environmentally responsible investing.

The increased focus on climate change by activists, global financial markets, and investors is pushing Development Finance Institutions (DFIs) to consider the reputational risks associated with investments in fossil fuel-based, energy-intensive projects. The DBSA primarily funded by the South African government but also reliant on private capital, faces these pressures. This is validated by the following finding from one of the participants:

> *"The DBSA must navigate a delicate balance between aligning with its primary shareholder, the government through the national treasury, and not appearing to act contrary to broader environmental and climate goals. This situation requires nuanced decision-making to maintain a positive image.*
>
> The respondent further noted, *"our financing choices, especially concerning climate-related instruments, are aligned with the origins of their funds. For instance, when utilizing funds from sources like the Green Climate Fund, the DBSA is limited to financing projects that meet specific climate criteria, such as emission reduction or climate resilience, in line with the overarching goals of combating climate change.*" – (*Respondent 2)*

Figure 12: Data structure on the drivers of divestment





Source: Author's design from research adopted from Tayla (2021), Corley and Gioia (2004)

4.3 Thematic Findings: Barriers to Coal Divestment

The thematic analysis of the responses to identify barriers to coal divestment unearthed eight (8) barriers hampering coal divestment across the coal value chain. The following section discusses the identified barriers from the different industries perspective.

4.3.1 Low Energy Availability Factor

A key hindrance to shifting away from coal in South Africa is the low Energy Availability Factor (EAF) at Eskom's coal power plants which continued to deteriorate, reaching a low of 56.03% from 62.02% in 2022, resulting in 280 days of loadshedding (Eskom, 2023). These plants are currently unable to meet the country's need for affordable and reliable electricity due to their poor performance (Eskom, 2023).

> One respondent emphasised, *"There is a substantial unmet demand for power in South Africa, as internal studies have shown."*

Additionally, the drive to divest from coal is influenced by the aging infrastructure of many Eskom power stations, which are expected to reach the end of their functional life by 2035. As these stations get closer to their decommissioning dates, their efficiency and performance are anticipated to decline further (CER,2022). Given the existing electricity supply challenges,

there are considerations, backed by the Minister of Electricity, to extend the operational life of these stations. This situation complicates efforts to transition away from coal as a primary energy source (PMG, 2023).

4.3.2 Eskom Weak balance sheet

Eskom's substantial net debt up by 2% from R389 billion in 2022 to R399 billion as at the end March 2023 (Eskom,2023). This pile of debt is significantly impeding its operations and affecting its ability to divest from coal. This view was supported by one of participants:

> *"The primary issue is a lack of funding. Moving away from coal is an expensive process and adds to the financial burden of the already heavily indebted state-owned enterprise (SOE)." – (Respondent 3)*

This high level of debt restricts Eskom's availability of funds for both operational needs and capital projects due to the substantial costs associated with servicing the debt and making repayments to creditors. The combination of high debt service costs and tariffs that do not fully cover costs has forced Eskom to continue borrowing simply to manage existing debt. As a result, capital expenditures are limited to preserve liquidity. Eskom's financial situation remains tight, constrained by the need to meet debt servicing and working capital requirements, alongside limited opportunities for raising new debt. Moreover, Eskom's credit ratings are still at a sub-investment grade, further complicating its financial position and its ability to transition away from coal (Eskom, 2023).

However, S&P Global Ratings announced their decision to upgrade Eskom's long-term issuer credit rating to 'B' from 'CCC+' with a stable outlook on the Group's senior secured and senior unsecured debt. In addition, S&P Global also upgraded Eskom's South Africa national scale rating to 'zaBBB/zaA-2' from 'zaB/zaB'. According to S&P Global Ratings, South Africa government's R254 billion financial support packages as part of the Eskom Debt Relief Act signed into law on 7 July 2023 will cover Eskom's debt servicing and repayment obligations over the current and coming financial years resulting in an improvement of the company's credit quality (Eskom, 2023).

4.3.3 Eskom utility expertise

Eskom's divestment from coal is impeded by a lack of domestic expertise in constructing large-scale renewable energy projects. The company's engineers and project management teams are

predominantly skilled in coal-related operations, necessitating partnerships with major international renewable energy firms to develop expertise in this still-emerging field in South Africa. Overcoming this knowledge gap in renewable energy is crucial for Eskom, especially in decision-making processes regarding the suitability of renewable energy for baseload supply as supported by one of the participants:

> The respondent argued*, "In South Africa, the Integrated Resource Plan (IRP) has been in place for nearly a decade, and the Renewable Energy Independent Power Producer Procurement (REIPP) program has seen most allocations in the range of about 2000MW per Request for Proposals (RFP). Only in the recent round 6 did this increase to about 5000MW per RFP, a change driven more by Eskom's current challenges than by a response to Environmental, Social, and Governance (ESG) concerns. This shift, while more aggressive, seems to have been compelled by the circumstances Eskom finds itself in, rather than a proactive strategy". – (Respondent 1)*

Historically, Eskom's expertise lies in constructing, operating, and maintaining modular generation thermal power units. According to the Global Construction Review (2019), Medupi (4800MW) and Kusile (4800MW) power plants, initiated in 2007 and 2008, Eskom partnered with international entities like Hitachi and Mitsubishi Heavy Industries from Japan, investing US$5.2 billion (Global Construction Review, 2019). These projects, however, faced significant delays and cost overruns due to technical issues and labour strikes. Eskom lacked the necessary skills in engineering, procurement, project management, and construction for building these supercritical plants (Tshidavhu & Khatleli, 2020). This experience underscores the challenge Eskom faces in transitioning to renewable energy sources, given its historical focus and expertise in traditional thermal power generation.

4.3.4 Baseload supply from renewables

The South African power industry is currently debating the capability of renewable energy sources to provide sufficient baseload power, which is essential for ensuring a constant energy supply throughout the day. This barrier was validated by the following interviewees:

> The respondent pointed, *"Initially, there was a perception that coal power stations could be swiftly replaced by green energy sources. However, it has become evident that replacing coal plants with renewables is a slower process than anticipated, primarily due to the need for a stable baseload supply. Renewable sources like wind farms and*

even hydroelectric power, in some cases, require additional support like battery storage systems to maintain a consistent energy output." – (Respondent 1)

The respondent noted, *"Recent statements from Eskom's CEO indicate a serious commitment to transitioning to renewable energy. This commitment acknowledges the necessity of maintaining baseload power levels, which is currently supported by existing operational power stations." This, highlights the complexity of transitioning from coal to renewable energy sources while ensuring the stability and reliability of power supply." – (Respondent 2)*

However, IRENA (2015) argued that a common critique of renewable power is its unsuitability for baseload supply, suggesting the continued need for fossil fuel power. They proposed that variable renewable power generation could be effectively integrated with smart-grid technologies, demand response, energy storage, and more adaptable generation technologies, such as gas power plants and dispatchable renewable power sources. This approach would allow renewables to be part of a flexible generation mix.

4.3.5 Grid constraints

Grid capacity constraints, particularly in regions with high potential for renewable energy, are a significant obstacle to moving away from coal. These constraints are exacerbated by a lack of funding for Eskom's capital projects essential for the Transmission Development Plan (TDP) implementation. This was validated by one of the interviewees:

The respondent explained, *"For instance, the Northern Cape has abundant solar resources, but it lacks sufficient grid connection capacity to support new renewable energy projects." – (Respondent 1)*

Eskom has identified a need for approximately R141 billion in capital expenditure to strengthen its network capacity. The current limitations in network capacity are hindering the progress of new renewable energy projects, especially in areas like the Northern Cape, where the potential for renewables is highest (Eskom, 2021).

The respondent further clarified, "*This situation presents a challenge for IPPs. When considering a new renewable project, IPPs must factor in additional costs, such as financing the construction of a substation to connect to the grid. Alternatively, they*

could choose locations like Mpumalanga, where grid connection capacity exists, but solar and wind resources are not as abundant. Moreover, if IPPs decide to transmit power through Eskom's network from these less resource-rich areas, they will incur additional charges for using the grid." – (Respondent 1)

This complex web of issues related to grid capacity significantly impacts the feasibility and cost-effectiveness of renewable energy projects and slows the transition away from coal.

4.3.6 Political influences

Eskom's projects, including those related to divestment from coal, are financed by the government, which significantly influences their implementation and timing. This view was supported by comment from one of participants:

"The government, as the shareholder, plays a pivotal role in approving Eskom's borrowing program each year through its Treasury department. This approval process determines the extent of financial guarantees available for Eskom, which in turn influences the company's ability to raise funds." – (Respondent 3)

Eskom secures funding both locally and internationally based on these government-approved guarantees. It issues international bonds, including in euros and U.S. dollars, to finance its spending. This dependency on government funding and approval means that political decisions and priorities directly impact Eskom's ability to transition away from coal. As such, the pace and extent of Eskom's shift from coal to renewable energy sources are largely contingent on government policies and financial support.

The influence of political factors on the divestment from coal is a complex issue, particularly in the context of Development Finance Institutions (DFIs) in South Africa. A critical consideration is how tightening regulations against coal financing align with the current government policy.

The respondent highlighted, "*For DFIs like ours, the challenge lies in aligning with our shareholder, which in our case is the government through the national treasury. It's crucial to define our position in a way that doesn't appear to be opposing government policy." – (Respondent 2)*

South Africa stands out in the African DFI landscape because much of its investment is sourced domestically from institutions like the Development Bank of Southern Africa (DBSA), the Industrial Development Corporation (IDC), the National Empowerment Fund (NEF), among others. This is in contrast to other regions where international DFIs are the primary funders.

These South African DFIs, largely funded or supported by the government, blend the developmental goals of traditional aid agencies with a commercial approach similar to that of private banks and investors. As long as the national government does not entirely prohibit coal-fired power (including construction), DFI investment strategies, which are heavily influenced by government agendas, may vary. These strategies are subject to change, particularly with the arrival of new political leadership, either within the country or in international groups like the World Bank, whose leadership can influence the direction of institutions like the International Finance Corporation (IFC). Such strategic shifts, as noted in the Global Impact Investing Network (GIIN) report of 2016, can lead to unexpected changes in investment focus, including in areas like coal divestment (GIIN, 2016).

4.3.7 Long-term offtake agreements

The existence of long-term offtake agreements between major coal mining companies and Eskom is a significant barrier to moving away from coal energy. These agreements ensure a steady supply of coal to Eskom, making it challenging to shift towards alternative energy sources.

> The respondent explained, *"A strategy has been articulated to maximize the value of existing coal resources by optimizing the quality of products from various mines. This approach is aimed at managing the coal business effectively and preventing assets from becoming stranded". – (Respondent 4)*

For instance, the Matla underground coal mine, owned by Exxaro, is under a 40-year cost-plus contract to supply 10.1 million tonnes of coal annually to Eskom. Under this type of contract, Eskom bears all the financial risks associated with the mining operation (Eskom, 2021). Exxaro's financial statement for 2022 reveals that over two-thirds of its coal production to supply Eskom's coal-fired power stations (Exxaro, 2022). Such long-term contracts tie Eskom to coal supplies for extended periods, making it difficult to diversify or transition to renewable energy sources promptly. These agreements not only provide a consistent revenue stream for

coal mining companies but also create a dependency for Eskom on coal as a primary energy source.

Private banks have a financial incentive to keep funding coal mining operations, especially those backed by long-term power purchase agreements. These agreements often guarantee returns for extended periods, sometimes exceeding 40 years, which is significantly longer than the typical 5-7 years tenor for general capex loans. This longevity makes these investments both profitable and secure for banks.

> The respondent explained, *"The existence of gaps in the energy system, particularly where the IPP coal market is thriving, underscores this point". This situation contributes to the continued interest and investment of private banks in the coal mining sector". – (Respondent 1)*

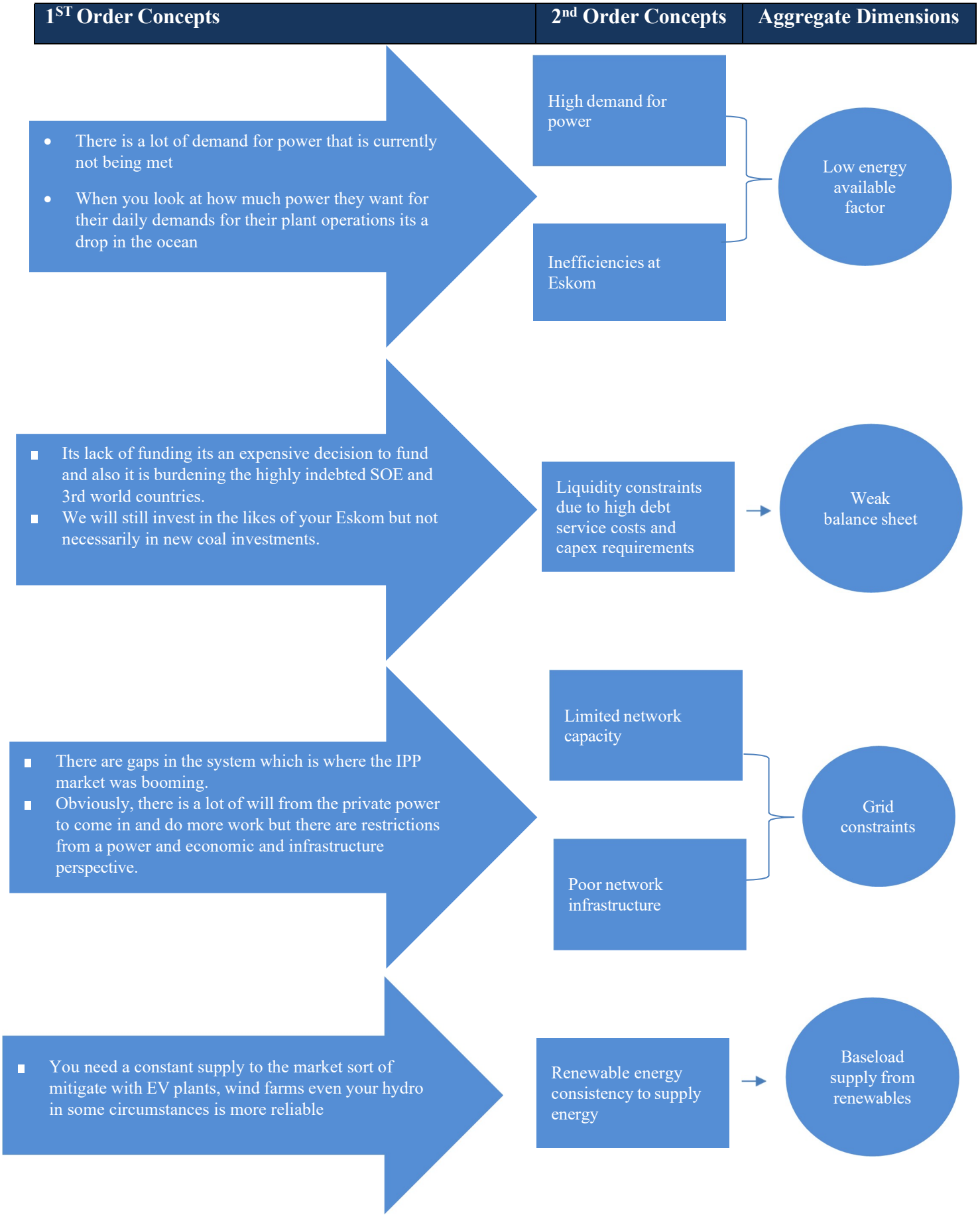
4.3.8 The coal price spike

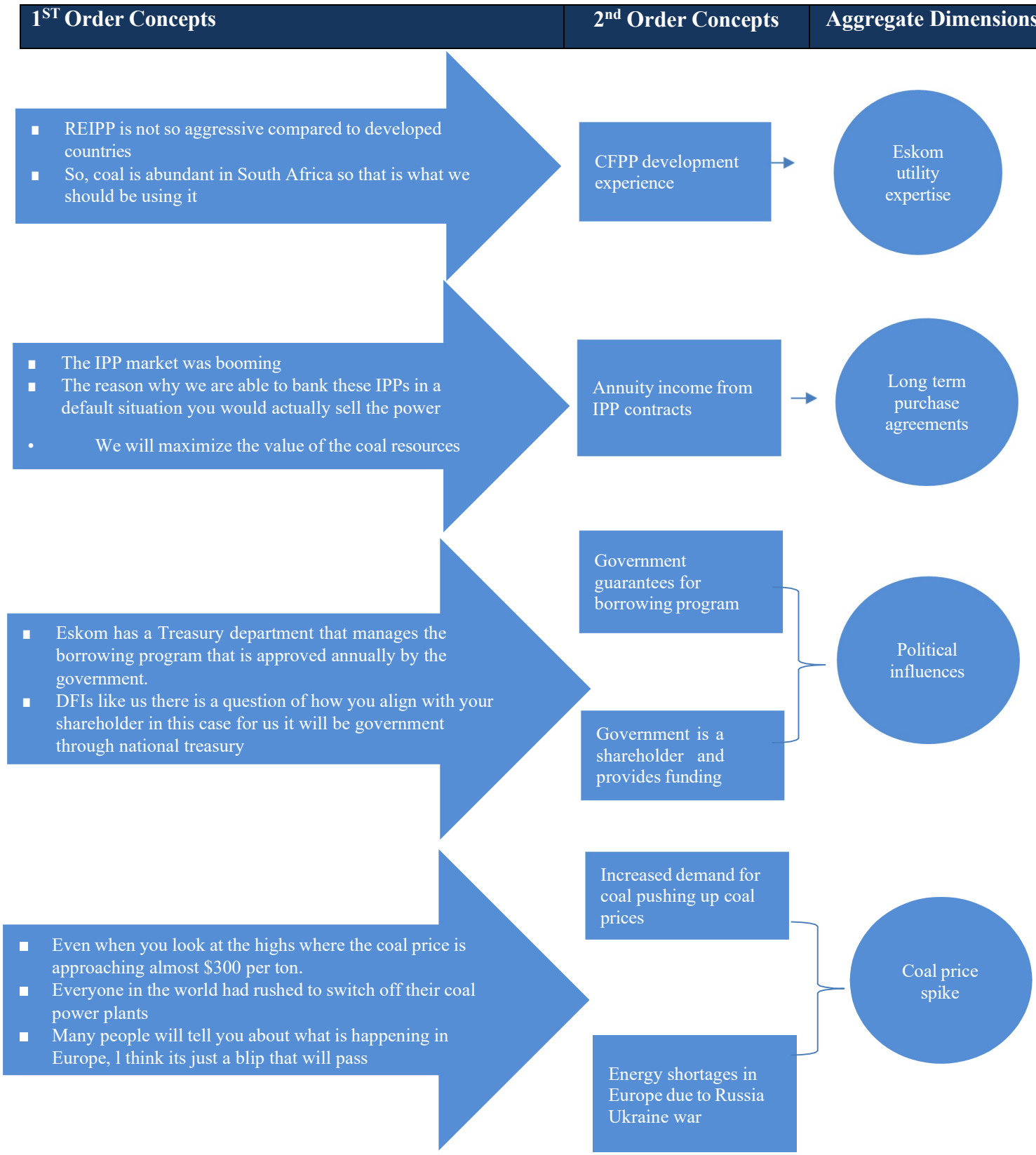
The recent spike in coal prices presents a challenge to efforts aimed at divesting from coal. Higher coal prices can make coal mining more profitable, which incentivizes continued investment and operation in coal production. The spike in coal prices in 2022, which soared to over US$300 per metric ton following Russia's invasion of Ukraine, has impacted the efforts to divest from coal (World Bank, 2023) This price surge led countries like South Africa to increase coal production to capitalize on the high export prices, a move that contradicts commitments to reduce reliance on coal. The situation is seen as closely tied to the ongoing conflict.

> As one of the respondents noted, *"As long as the war continues, this trend might persist. However, once stability is restored, it's likely that many countries will revert to their pre-war stances regarding coal usage." – (Respondent 2)*

Since August 2022, the increased coal exports from countries like South Africa and Colombia, which together accounted for about 35% of total European coal imports, have partially compensated for the decrease in Russian coal exports to Europe (IEA, 2023). This shift in the global coal market dynamics, driven by geopolitical events, is temporarily bolstering the coal industry and impeding the transition to more sustainable energy sources.

Figure 13: Data structure on the barriers of divestment





Source: Author's design from research adopted from Tayla (2021), Corley and Gioia (2004)

4.4 Integrating Aggregate Dimensions to the Conceptual Framework

The analysis of how aggregate dimensions influence coal divestment shows that institutional elements are the primary drivers, as illustrated in Figure 13. A detailed count indicates that seven out of the identified factors across the coal value chain are mainly institutional. Furthermore, climate change emerges as a crucial factor driving coal divestment in South Africa, as unanimously identified by all survey participants.

Table 6: Drivers

Aggregate Dimensions	Linked to Conceptual Framework Factors (Frequency)
Climate Change	Institutional x4
Eskom inefficiencies	Structural
Reputation risks	Institutional x2
Renewable energy adoption	Commercial
BEE empowerment demands from Eskom	Institutional

Source(s): Author's own composition

Structural and commercial factors are the primary obstacles hindering a more widespread divestment from coal, leading to a slowdown in the divestment momentum. These barriers to moving away from coal are particularly evident within the operations of the Eskom utility.

Table 7: Barriers

Aggregate Dimensions	Linked to Conceptual Framework Factors (Frequency)
Low energy availability	Structural
Weak balance sheet	Structural
Eskom utility expertise	Structural
Baseload supply from renewables	Structural
Grid constraints	Structural
Coal price spike	Commercial
Political Interference	Institutional x2
Long-term purchase agreements	Commercial x2

Source(s): Author's own composition

Furthermore, findings revealed that policy uncertainty in particular the BEE shareholding demands by Eskom have resulted in coal assets only changing hands from the international coal mining majors to local companies (South African incorporated) and not necessarily a complete or partial divestment from coal. This we have seen with the formation of Seriti, a 79% black-

owned company that took over three operational coal mines supplying power utility, Eskom from Anglo American as well as four closed mines. Seriti also acquired South 32 coal operations.

> This view was validated by one respondent who clarified, *"The expression divestment has been associated with the activities of the big international mining companies offloading their coal assets to domestic coal players which is just changing their ownership." – (Respondent 4)*
>
> *"The primary driver was the fact that they needed to do additional empowerment. But there are other factors as well from internal within the organisation. The challenge lies in executing another empowerment deal, especially considering the numerous transactions they had completed, despite the "once empowered, always empowered" principle" – (Respondent 4)*

In this respect, policy uncertainty is not shaping genuine divestment from coal which is the subject definition this study is focused on.

4.5 Extent of Divestment

This section aims to examine the degree of coal divestment in South Africa. The responses indicate that a transition away from coal is in progress, albeit at a slow pace, as illustrated by the following responses:

> *"The shift away from coal is occurring, but more gradually than expected. Initially, there was a belief that coal power stations could be swiftly replaced with renewable energy sources. In South Africa, there is a growing commitment to move towards greener energy, with an increasing focus on the social implications and impacts of this transition. The approach being adopted is to make existing operations more environmentally friendly, rather than completely shutting down these operations". – (Respondent 1)*
>
> *"I believe it's too early for a complete shift away from coal, suggesting that the negative consequences outweigh the required investment and anticipated benefits. I have observed that financial institutions are hesitant to fund new ventures in the coal sector.*

However, companies with existing coal investments continue to receive funding, indicating a selective approach to investment in this area". – (Respondent 3)

.

"The urgency to address climate change is growing, and I believe that South Africa is unlikely to construct new coal-fired power stations. At the very least, there seems to be a consensus against investing in new large-scale coal mining operations". – (Respondent 4)

"There is a notable trend in investment repositioning, especially in the context of coal mining. There's increasing pressure from various financial sources to divert funds away from coal. This shift is evident as many commercial banks and institutional investors have announced their plans to cease investing in coal. Overall, there's a significant movement towards withdrawing investments from the coal sector". – (Respondent 2)

In the next section, we will analyze the divestment status (complete, partial, or none) across various industries.

4.5.1 Eskom

To validate the extend of Eskom's coal divestment the respondent clarified that, *"Eskom's policies are guided by the Integrated Resource Plan (IRP) of 2019 and the Just Transition Framework at the government level. The IRP (2019) includes specific plans for divesting from coal, which Eskom follows*". *– (Respondent 3)*

They also mentioned that *"the DMRE is responsible for South Africa's Electricity Plan, embodied in the IRP (2019). This plan aims to direct all new generation capacity developments and has established comprehensive targets to achieve decarbonization, primarily through the large-scale expansion of renewable energy". – (Respondent 3)*

The respondent further explained that *"Regarding the extent of divestment, it is premature and I'm not certain if we can fully achieve it. However, there is a plan or initiative in place addressing this transition. A dedicated department has been established to focus specifically on converting some coal power stations to renewable energy sources". – (Respondent 3)*

The IRP (2019) outlines that Eskom has set a goal to develop approximately 20GW of renewable power by 2031. This ambitious plan involves gradually reducing the proportion of coal power in its electricity generation portfolio, which currently stands at about 70% of its 55 GW cumulative generation capacity. By 2030, the share of renewables in Eskom's electricity generation mix is expected to rise to 35% (up from the current 16% of 60 GW), as detailed below. Additionally, the decommissioning of the existing coal fleet as they reach the end of their design life could allow for a significantly different energy mix compared to what is currently in place. It is projected that around 14,050 MW of Eskom's current coal fleet will have reached the end of its design life by 2031 (IRP, 2019). Table 6 below provides a summary of the projected extent of coal divestment at Eskom.

Table 8: Extent of coal divestment – Eskom

Complete	Partial	None	The current IRP (2019) aims to	Is new CFPP Construction Permitted?
	●		• Half the capacity of coal power in the electricity generation portfolio from the current 38 GW by 2030. • Increase the share of renewables (wind and PV) from 10% (3.7GW, 2018) to around 35% (20GW) by 2031 as part of the decarbonization of CFPP. • Refrain, in principle, from new CFPP development.	No

Source(s): Adopted from Trencher et al., (2020)

4.5.2 Exxaro

Exxaro has implemented a series of plans to clarify its divestment stance:

> The respondent stated, *"In 2020, Exxaro declared that it would cease investing in new coal capital. This marks the beginning of the gradual phase-out of coal, which is now underway at a swift pace. Our initial declaration was twofold: first, to halt further investment and growth in coal; and second, to continue mining our existing coal operations, like those supporting Eskom's power stations (Medupi, Matimba, etc.)". – (Respondent 4)*

Exxaro has been increasing its share in renewable energy over the years, transitioning its business model to become a more diversified energy company. This shift is part of its strategy to *'green'* its operations and reduce its carbon footprint. This was validated by the

comment below.

> *"We ventured into the renewable energy business in 2010, delivering 229MW of renewable energy by 2016. Our plan is to further expand this business, including through mergers and acquisitions". – (Respondent 4)*

Table 9: Extent of coal divestment - Exxaro

Complete	Partial	None	The current strategy aims to	New Coal Mine Construction Permitted?
	●		• Refrain from developing greenfield investment in coal from 2020 while continuing to operate existing coal mines. • Increase share of renewables as part of the decarbonisation of coal mines	No

Source(s): Adopted from research by Trencher et al., (2020)

4.5.3 RMB

RMB has outlined a series of plans to shape its divestment from coal.

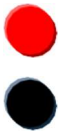
> The respondent shared that *"RMB, under the umbrella of FirstRand Bank, adheres to an ESG (Environmental, Social, and Governance) policy aiming to phase out fossil fuels by 2050. This policy direction is largely influenced by both investors and the bank's board". – (Respondent 1)*

In August 2019, RMB, through FirstRand Bank, introduced a thermal coal financing policy. FirstRand regards financing for new thermal coal capacity (such as greenfield mining or power generation) as highly sensitive and risky. Consequently, they intend to limit new coal financing to less than 0.5% of the total group loans and advances. Furthermore, the total coal portfolio, including new coal financing, will be restricted to less than 2% of total group loans over the next five years. Moving forward, lending to the coal industry is considered non-strategic, aligning with the group's commitment to a long-term thermal coal divestment strategy (RMB, 2019).

Additionally, RMB has implemented policies supporting a just transition. These policies consider the operational practices of potential borrowers as a condition for financing.

The respondent elaborated, *"We also see this as a chance to contribute to a just transition through green loans, where borrowers must meet certain ESG targets by set dates to qualify for a loan. These ESG targets include aspects like environmental rehabilitation. If borrowers fail to meet these targets within the specified timeframe, penalties are applied, making the loan more expensive as long as they don't comply with these ESG standards." – (Respondent 1)*

Table 10: Extent of coal divestment - RMB

	Complete	Partial	None	The current strategy aims to	New CFPP Construction Permitted?
RMB				• Refrain from financing new coal power generation projects • Introduce thresholds when financing new coal projects i.e., coal portfolio limited to below 2% of total group loans by 2024. • For existing coal mining projects, consider ESG, and health impacts when investigating finance by introducing green loans.	No

Source(s): Adopted from research by Trencher et al., (2020)

Notes: Black circles represent upstream financing (coal mining) and red circles downstream (coal-fired power plants)

4.5.4 DBSA

DBSA is realigning its portfolio in response to climate change. DBSA is restructuring its lending and financing activities to prioritize sustainability, aligning them with climate change goals.

The respondent explained, "*the DBSA continues to invest in existing (brownfield) energy projects, like those of Eskom, but is steering clear of new (greenfield) coal investments". – (Respondent 2)*

The DBSA is focusing on stabilizing South Africa's energy grid through the Just Transition, emphasizing significant investments in renewable energy. This includes collaboration with the Independent Power Producer (IPP) Office and the National Energy Regulator of South Africa (NERSA) in evaluating suitable renewable energy bidders.

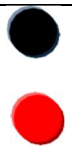
The respondent noted, "*DBSA has played a significant role in promoting renewable energy in South Africa. Since establishing the Independent Power Producer (IPP) office in 2010/11, the DBSA has successfully overseen the procurement of renewable energy investments totalling over R200 billion". – (Respondent 2)*

DBSA's current stance, as outlined by the respondent*, "is to avoid new fossil fuel investments unless there is a clear and definitive plan for transitioning to greener energy sources. This policy specifically applies to coal within the broader category of fossil fuels. While DBSA does not have a stated position on new coal investments, the inclination to pursue such investments is low. The bank will continue to support existing projects like those of Eskom but not new coal initiatives". – (Respondent 2)*

DBSA has committed to achieving net-zero emissions by 2050, establishing significant milestones to be met by 2030. To facilitate this transition, the DBSA has strategically decided to offer transition finance to current fuel infrastructures, under the condition that these projects meet specific ESG objectives as part of their shift towards green energy. The following comments from the interview participant supported the DFI's divestment plans:

"A global trend of moving away from fossil fuel-based energy towards renewables, with major investors worldwide withdrawing funding from fossil fuels. However, South Africa and other African regions still rely heavily on fossil fuels, both for energy and as a source of export revenue. In response, DBSA has adopted a transition finance approach, aimed at facilitating a gradual shift for entities heavily invested in fossil fuels towards green energy solutions over time". – (Respondent 2)

Table 11: Extent of coal divestment - DBSA

	Complete	Partial	None	The current strategy aims to	New CFPP Construction Permitted?
DBSA				• Transition the broader portfolio to respond to climate change. • Increase the share of renewables to align with the global need to decarbonize and mitigate climate change. • Facilitate the Just Transition through increased investment in renewable energy. • Refrain, in principle, from new CFPP development and greenfield coal investments	No

Source(s): Adopted from research by Trencher et al., (2020)

Notes: Black circles represent upstream financing (coal mining) and red circles downstream (coal-fired power plants)

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter will discuss the research findings and analysis presented in Chapter 4 and discuss policy recommendations of the findings. The chapter will present the summary and conclusions of the study, policy recommendations, and avenues for future research.

5.1 Summary and Conclusions

Chapter 4 disclosed the varying degrees to which divestment is occurring on an industry-by-industry basis in the South African coal market. The findings from the study reveal that no industry or firm has completely exited from coal or coal-related businesses.

With no industry or firm completely withdrawing from coal-related businesses, the study has found that the transition is already underway albeit at a slow pace but a complete halt in investment activity and operations for upstream and downstream has not yet occurred. This aligns with the findings from empirical literature reviewed in Chapter 2 presented by Blondeel and Graaf (2018), who argued that despite the momentum behind divestment campaigns, coal extraction persists in coal-producing countries. They raise doubts about the effectiveness of divestment campaigns in reducing coal production.

Predictably, it is the institutional, commercial, and structural factors that are shaping strategy and divestment trends in each of the coal power industries differently.

5.1.1 The Upstream Market

Partial divestment was widely observed in the upstream market. General mining companies have put out policies barring the development of large-scale new thermal coal mining investments. This is significant because a stop in greenfield investments implies a halt in the growth of coal mining.

When mining companies start mining a new deposit, it stands to reason that they will attempt to mine the best parts first. As the years go by, grades drop, and haulage distances increase,

especially with underground mines. Therefore, costs steadily rise. Some mining companies spend significant amounts of expansion capex over many years without growing their overall production volumes. In other words, what they define as volume expansion, is just replacement volumes to offset the then declining production base.

There are no new power plants planned to take up coal as a source of fuel. This is in addition to adopting a policy slowing coal exploration especially when the primary coalfield of Mpumalanga is nearing its end of life. Exxaro will continue its involvement in existing thermal coal operations. Besides, no financial institutions have disclosed plans to cut the flow of finances to the upstream market outside a revocation of support for new thermal coal investments.

Findings show that the partial divestment observed upstream was mainly driven by institutional factors. Particularly, the fact that South Africa as a country is implementing the Paris Climate Change Agreement has triggered divestment from coal, especially by major actors across the value chain.

On the other hand, policy uncertainty is not leading to a genuine divestment from coal, as assets are merely changing hands. Locally owned general coal miners after acquiring coal assets from international coal producers are investing in renewable energies to become diversified energy companies that supply energy to their operations /plants to '*green*' their operations. Moreover, the revenues generated from renewable energies are still a very small fraction (less than 5%) of the total company revenues.

The study identified two barriers hampering a complete coal divestment upstream. The first barrier is commercial which is revealed through long-term power purchase agreements. The existence of long-term power purchase agreements between general coal mining companies and Eskom is widely observed as restricting coal divestment upstream. There is a strong financial incentive to delay the phasing out of coal-fired power station assets mainly because of annuity income. Eskom as an investing utility and the general coal mining companies become wedded through cost-plus contracts and are envisaged to continuously maintain the assets, until the expiry of the long-term agreements. Baseload power carbon lock-in for the next 20 years due to vested interests might be contributing to the perpetuation of coal upmarket.

Institutional factors are however driving divestment from coal. The study found that the financial sector's demands for the alignment with policies to address climate change, especially from their investors and the subsequent plans to tighten lending coal projects have driven coal mining companies to rethink their plans to transition to a low carbon economy. However, coal mining business investors and consumer demands in general are still lagging in this respect.

5.1.2 The Downstream Market

Similarly, partial divestment was widely observed downstream among the electric utility, Eskom; private banks; and the national development bank; DBSA regarding the development of the coal-fired power plants.

The effect of private banks on completely preventing the construction of new coal projects, especially under the IRP (2019) looks as if it is limited. There appear to be exceptions for projects opining South African government policy and technology (use of ultra-supercritical power plants) which makes it difficult for financial institutions to cease to finance coal operations. In terms of government policy, the Energy Minister's 2020 IRP determination includes the investment in a further 1500MW of new coal plants before 2030. According to the Centre for Environmental Rights (2023), private banks, the Public Investment Corporation, the Industrial Development Corporation, and the DBSA eventually pulled out of the planned Thabametsi Coal Power Plant development (1200MW), only after public interest litigation of the project (Centre for Environmental Rights, 2023).

Furthermore, there is a lack of transparency largely emanating from the underreporting of the private banks' support for coal mining companies. Despite having publicized their coal phase-out plans, most of the private banks in South Africa often do not fully disclose the entirety of their financing to coal producers and this does not lead to complete divestments or reduction of emissions.

Signals from the newly appointed Minister of Electricity suggest that policies from Eskom utility have no aspirations to cut CFPP development. The Minister is pushing to not decommission coal-fired power stations but refurbish/ reactivate power plants as a solution to fix the energy deficit the country is currently facing (Bloomberg, 2023). The government's

decision to continue to refurbish coal power plants means the country will not reach the climate change target.

The study identified two factors getting in the way of complete coal divestment downstream. The main factor is structural which includes energy deficiencies, grid constraints, and expertise at the utility that are acting as a structural barrier hampering the complete withdrawal from coal. The second factor pertains to commercial factors, specifically regarding the extended duration of power purchase agreements between coal producers and Eskom. The utility is anticipated to retain these CFPP (coal-fired power plant) assets until the termination of the purchase agreements and make investments in coal mines to guarantee an uninterrupted coal supply. Given the longevity of the power purchase agreements, it is not surprising that the respondent at the utility did not raise any concerns about CFPPs assets becoming stranded.

Global climate-related requirements have influenced the adoption of asset financing restrictions to the coal sector and are shaping the behaviour of the local financial institutions downstream. This has been a key coal divestment driver and has led private banks to publicly communicate commitments to avoid adverse reputational and financial consequences. However, global pressure is yet to trickle downstream to Eskom.

5.2 Policy recommendations of the findings

This research investigated the progression of coal divestment within the South African coal power value chain. The research analysed the behaviour of South African firms in the upstream and downstream coal markets, how they are moving to an economy of low levels of GHG emission, and how their decarbonization targets are evolving. Evidence provided in this paper indicates that there is no complete stoppage of coal exploitation and consumption. The coal price spike due to the energy crisis emanating from the war between Russian and Ukraine has led to an increased reliance on coal and postponed the retirement of coal power plants in several countries, including Germany. However, this is anticipated to end in the immediate term. In coal mining (upstream) there is a complete stoppage of greenfield investments from coal mining majors. However, brownfield investments are anticipated to continue into the foreseeable future. Nevertheless, the government appears to be more in favour of maintaining a coal power program to end intermittent power cuts.

The development of a principal, a comprehensive energy plan is imperative. The non-existence of such a plan is creating policy uncertainty and conflicting subsector plans. It has been found that the IRP 2019 is deemed to be not fit for purpose since it is more costly and does not have the lowest carbon supply and many stakeholders are calling for its revision (Wright & Calitz, 2020).

In the upstream market, new coal power investments have been set aside due to company policies. The respondent indicated that coal exploration activities by coal mining majors have since been shelved. This is anticipated to curtail the future growth of coal. However, existing coal and power plant investments appear to carry on into the 2040s and this extends into the future because of the extended nature of power purchase agreements.

A revision of the 40-year term power purchase agreements in South Africa is needed. However, it is worth emphasizing that in the former decade, Eskom has utilized the shorter-term fixed price contract to fill the balance of coal requirement supplied by cost-plus. However, single-source power stations have outperformed power stations with suppliers contracted in the short-term by EAF of 16% from 2008. This suggests that having multiple sources could result in increased variability and decreased reliability. Despite the flexibility of short contract duration implying a short carbon lock-in period, these mines exhibit elevated cost structures (Eskom, 2017).

Coal mining companies could face reduced earnings, operational disruptions, and increased funding costs in the long run, driven by policy actions and technological changes due to Paris Alignment. A just transition is necessary due to the presence of mining communities and the economy’s dependence on coal. However, the lack of funds to support the shift to an economy with low GHG emissions and implementation thereof perpetuates coal exploitation. An investment of R535 billion annually from both public and private sources is needed for South Africa to climate goals (de Aragão Fernandes, 2023).

Coal mining businesses are reliant on coal power long-term contracts with Eskom since the growth of the international export business is curtailed by rail and RBCT capacity constraints. Structural challenges such as the South African economy's heavy dependence on coal for a significant portion of its exports and employment opportunities, pose significant concerns. The proliferation of coal poses a significant political barrier to the goal of withdrawing from coal-fired electricity generation since more than a hundred thousand jobs (directly and indirectly) in

the economy depends on the coal business. Furthermore, downstream market challenges such as Eskom's inefficiencies, and lack of experience in developing large-scale renewables present significant barriers that perpetuate coal-fired electricity generation. If this is not incentivized by regulation, the momentum to divest from coal is likely to be muted.

This study identifies six further policy recommendations in the downstream coal market. Firstly, the South African government's leadership is required to develop rapid plans to pass wholesale reassessments in the form of energy sector reforms in 2023. This is critical if the government wants to attain the requirements to grow the SA economy which demands the availability of ample energy, particularly electricity. The power crisis demands an accelerated enactment of further legislation and additional efforts to increase the security of supply and reduce dependence on coal.

Second, there is an urgent need to swiftly increase renewable energy capacity by establishing capacity expansion pathways (2050 target) and the ways to accomplish them. Since renewable energy development costs are the lowest, with the shortest development lead times and the least GHG emitting option, it follows that renewables and investment in the accompanying energy storage capacity required must be the foundation for new power generation. This can also alleviate the power shortages.

Thirdly the abolishing of the licensing law on the threshold for embedded generation which was recently set by President Cyril Ramaphosa at 100MW is anticipated to drive further private sector investment in renewable energy (Ramaphosa, C. 2022, July 25). The scrapping of the licensing threshold will drive private sector investment to address the power shortages. However, clarity on feed-in tariffs is needed by the government.

Fourth, short-term priority requires solutions for the structural divestment barriers related to the grid constraints (network transmission capacity upgrades). This can be accomplished by implementing regulations and making investments that will expedite the expansion of the grid, a crucial step in enhancing the nationwide integration of renewable energy sources.

Fifth, it is imperative to create a plan for phasing out coal within the power sector. A comprehensive phase-out plan does not exist yet even though Eskom and stakeholders are engaging on the matter. The IRP (2019) has outlined a phase-out of older coal plants by 2030 with a capacity of 12 GW. Nonetheless, 1.5GW has been earmarked for development by

2030. The bulk of the CFPPs are anticipated to be retired by the 2040s (Climate Transparency, 2022)

Sixth, the plans to reinvest or reactivate coal plants should represent a temporary measure designed to curb the current energy deficit for the next decade. However, measures to accelerate renewable energy will benefit South Africa's shift to low carbon emitting practices.

The inclusion of ESG criteria in investment decisions in the financial sector shows the greater attention investors are putting to addressing climate change. There is a need for the financial sector to reassess and relax its lending policies to support the growth of sustainable projects and drive the redirection of resources towards sustainable projects.

Furthermore, improving data disclosures in the financial sector is fundamental to revealing the real exposure to climate change financial risks. There is a need to standardize climate change financial risks reporting. This is anticipated to improve the capability of market actors and authorities in evaluating and addressing challenges and opportunities. Given the data and tools limitations in measuring climate transition risks, a pragmatic approach to policy considerations is required (OECD, 2021).

According to the extensive literature review, this study recommends two broad areas of possible action (strategies) for policy and practice. The government could implement the following measures:

- prepare for climate change impacts in the pipeline (adaptation)
- lowering as well as stabilising atmospheric levels of GHG emissions (mitigation)

5.2.1 Possible adaptation strategies

- The finalisation of the enactment of the Climate Change Bill which has been in parliament since February 2022. The bill institutes the development of a national effective climate change response determines cross-sectoral mitigation pathways such as emissions targets, and carbon budgets, and revises the national GHG emissions pathways (Climate Transparency, 2022).
- The implementation of the JETP to expedite divestment from coal power and at the same time ensure resources are availed to manage transition risks such as supporting mining communities and creating sustainable jobs. This is dependent on the

funds mobilized (Climate Transparency, 2022).

5.2.2 Possible mitigation strategies

- A sizeable shift in investment patterns is required to achieve extensive reductions in emissions. A change in investment patterns is supposed to increase the investment in technologies that reduce carbon footprint in power generation such as hydrogen, nuclear, renewable energy, and power sources with carbon capture storage. On the other hand, a reduction in the investment in hydrocarbon technologies associated with power supply.
- Providing an enabling environment by minimizing private sector risk can result in the private sector financing the mitigation plans alongside the public sector. In several countries, national and international DFIs encourage private sector climate investments. They intervene by providing public finance where private sector participation is limited. Encouraged by reliable policies and policy tools like power purchase agreements, feed-in tariffs, credit insurance, and concessional rebates or financing, private companies can take the lead and invest in new power technologies (Edenhofer et al, 2014).
- Extending technology support policies in R&D and procurement programs. These are publicly funded and driven by the government, respectively. A technology push and demand-pull strategy can promote investment in technology that will provide affordable and sustainable energy solutions. However, determining the financial efficiency of such a policy is often difficult (Edenhofer et. al, 2014).
- Eliminating subsidies for activities associated with greenhouse gas emissions can lead to emission reductions. Research based on economy wide models suggests that completely discontinuing subsidies for fossil fuels globally can potentially reduce global aggregate GHG emission reductions by mid-century (Edenhofer et. al, 2014).
- Decarbonizing hydrogen to produce green hydrogen at a large scale is a new alternative that reduces GHG emissions. This is anticipated to stimulate the development of low levels of carbon footprint industries and create jobs in the country (Climate Transparency, 2022).

5.3 Avenues for Future Research

Findings from this study have revealed that several subjects within the coal transition in South Africa need to be investigated. A qualitative method for performing a comprehensive study of the measures, policies, and effects of coal transition is needed for the benefit of the South African economy.

Prospective research exists to:

- Research countries with energy transitions already in the pipeline to learn from institutional structures put in place to oversee the shift to low levels of GHG emissions for the benefit of communities and employees. Previous research has shown that rapid transitions led to cliff-edge scenarios which left coal-reliant communities and workers in a worse-off position (Caldecott et al., 2017).
- Investigate whether renewables currently have enough baseload that supply energy all day in South Africa. This research is very important because there is a huge debate on the power systems development pathways. The development of gas was pushed in government circles as a necessary alternative energy source in the long run. According to the IRP (2019), new gas projects of 1000MW and 2000MW by 2024 and 2028 respectively are expected to come on stream. This translates to 9% of total installed capacity by 2030. However, technological developments in renewable energy have changed this view owing to lower costs as well as battery storage costs (Halsey et al., 2022).
- Research into policies and instruments used to support energy infrastructure investments globally.
- Investigate possibilities of luring local institutional investors to invest in energy infrastructure projects.
- Investigate the cost-effectiveness of technology support policies in South Africa associated with providing sustainable energy solutions based on the socio-economic context of South Africa.
- Examine whether the total scrapping of subsidies for GHG-related activities would result in emissions reductions.
- Impact of discontinuing subsidies on fuels in South Africa on greenhouse gas emissions. The increasing cost of these subsidies has become a significant financial burden for the South African public, with expenditures tripling to R172 billion in 2021 from 2018.

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APPENDIX

Appendix 1: Survey Consent Form

Master of Commerce in Development Finance

INTERVIEW/SURVEY CONSENT FORM

Participant name: ……

I volunteer to participate in a research project conducted by Charles Shonayi as partial fulfilment of the requirements for the Master of Commerce in Development Finance Degree at the UCT Graduate School of Business. I understand that the research is designed to gather information about divestment trends in South Africa's coal industry I may use some of your statements in the research report. However, your name will not be mentioned in the report.

Research Title: The Determinants of Divestment from Coal Energy: The Case of South Africa
Name of Researcher: Charles Shonayi
Contact Details: shncha004@uct.ac.za

Name of Research Supervisor
Abdul Latif Alhassan
latif.alhassan@uct.ac.za

Research Overview

- To investigate the drivers and barriers influencing divestment behaviour.
- To investigate the extent of divestment and business behaviour in SA's coal sector.

The ethical clearance for this study was approved by the UCT GSB Research and Ethics Committee on 14 October 2022.

Participation in this survey is voluntary and will take approximately 60 minutes.

Feel free to contact the Research Supervisor should you have any concerns about the survey.

I hereby consent to take part in this survey.

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Respondent Signature Date

Appendix II: Survey Questions

INTERVIEW QUESTIONS

Section 1: Demographic information

1. Gender of respondent:
2. Age of respondent
3. Nature of business
4. Years of experience
5. Current role in business

Section 2: Interview/Survey questions

Topic	Main Questions
Objective 1 & 2	1. What is your view on the extent / level of divestment taking place in the coal industry in South Africa? 2. What factors are acting as drivers or barriers to coal divestment?
Objective 3	1. Does your company have a policy to divest from coal? 2. What strategies has your company put in place to deal to deal with the coal divestment and transition to a low carbon economy? How exactly do you plan to divest? 3. Can you explain the reasoning behind the divestment approach? 4. Where are you reinvesting the money withdrawn from coal? 5. How is the divestment policy integrated into the social realities of the broader South African economy?
Objective 4	1. How effective do you think are the divestment announcements from the leading financial institutions on operations of coal companies or power generation? 2. How easy would it be to for local coal mining companies and power generation utility to find alternative source of finance to fund operations after being cut off by local financial institutions? 3. Do you find that hat local investors are more ESG risk averse compared to international investors? Are international investors still pouring more money into SA coal assets than local investors?
	4. Will divestment strand any of the assets that you financed? 5. How will your company deal with the issue of stranded assets? 6. What strategies do you have in place to deal with the aftermath of the coal divestment i.e., systemic risks to the broader economy following a rapid or late and abrupt coal phase out in SA?