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Assessing the strategy and performance of selected JSE listed mining companies on their contribution to the United Nations Sustainable Development Goals

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Assessing the strategy and performance of selected JSE listed mining companies on their contribution to the United Nations Sustainable Development Goals

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A research report submitted in partial fulfilment of the requirements for the degree of Master of Science: Environmental Sciences by Coursework and Research Report in the Faculty of Science, University of the Witwatersrand, Johannesburg, South Africa

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12 June 2023

DECLARATION

I declare that this research report is my own, unaided work. It is being submitted for the Degree of Master of Science at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at any other University.



(Signature of candidate)

12 day of June 2023 at Braamfontein

ABSTRACT

The Sustainable Development Goals (SDGs) are part of the United Nations (UN) 2030 Agenda for Sustainable Development, which defines an ambitious plan for people, planet, and prosperity. The UN has acknowledged that the SDGs cannot be achieved without the contribution of the private sector. The mining sector is regarded as one of the critical players with the potential to advance the achievement of the SDGs by 2030. The aim of this study was to examine the extent of corporate engagement with the SDGs of 10 selected mining companies in the Johannesburg Stock Exchange's (JSE) Top 100 listed firms in advancing the 2030 Agenda for Sustainable Development. The objectives of this study were based on the recontextualisation of the five steps from the SDG Compass, an international guideline aimed at steering particularly large companies on engaging with the SDGs through integration, appraisal, and reporting of progress on the SDGs. This study was based on the companies' 2019 annual reports for gathering secondary data afterwards semi-structured interviews with sustainability managers of the same selected mining companies. Content analysis coupled with a rating scale were utilised for data analysis to determine the extent of corporate engagement with the SDGs. The results of the study show that only four of the ten mining companies have made considerable progress on engaging with the SDGs, including integrating the SDGs into the core of their strategy and business models. Most mining companies failed on setting SMART objectives to support their priority SDGs, which resulted in inadequate reporting of performance to advance the SDGs. Additionally, the results of the study point to limited involvement of top management for mining companies that lagged behind. Finally, if the mining sector is to significantly contribute towards the achievement of the 2030 Agenda for Sustainable Development, then top management of mining companies must fully embrace the SDGs and provide leadership in steering the integration of the SDGs into strategy and business models of mining companies.

Keywords: Sustainable Development Goals (SDGs); SDGs and Mining; Corporate sustainability; SMART objectives; Top management; SDG integration; SDG reporting

DEDICATION

To Jehovah Yahweh. Soli Deo Gloria (Glory to God alone). Lonke udumo malube kuwe, Jehova Mvelinqangi Simakade. Xikwembu lexi nga tsandzekiki. Here is to:

Advancing God's Kingdom through creating value for eternity!

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TABLE OF CONTENTS

DECLARATION ii
ABSTRACT iii
DEDICATION iv
ACKNOWLEDGEMENTS v
LIST OF TABLES viii
LIST OF FIGURES viii
LIST OF ACRONYMS ix
1 CHAPTER ONE: INTRODUCTION 1
1.1 Mining and the SDGs 2
1.2 Problem statement 4
1.3 Aim and objectives 4
1.4 Assumptions 5
1.5 Significance of the study 5
1.6 Layout of the research report 5
2 CHAPTER TWO: LITERATURE REVIEW 6
2.1 Sustainable Development 6
2.2 The United Nations Sustainable Development Goals 8
2.3 Corporate engagement with the SDGs: A focus on the mining sector 12
2.3.1 Understanding the SDGs 15
2.3.2 Defining priority SDGs 16
2.3.3 Goal setting for priority SDGs 18
2.3.4 Integration of priority SDGs 18
2.3.5 Reporting on priority SDGs 20
3 CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY 23
3.1 Research design 23
3.2 Data collection methods 24

3.2.1 Secondary data 25
3.2.2 Primary data 25
3.3 Data analysis 27
3.4 Validity and reliability 30
3.5 Ethical considerations 30
4 CHAPTER FOUR: RESULTS 31
4.1 Understanding of the SDGs 31
4.2 Defining priority SDGs 34
4.3 Goal setting for priority SDGs 37
4.4 Integration of priority SDGs 40
4.5 Reporting on priority SDGs 42
4.6 Summary of the extent of corporate engagement with the SDGs 44
5 CHAPTER FIVE: DISCUSSION 45
5.1 Understanding of the SDGs 45
5.2 Defining priority SDGs 46
5.3 Goal setting for priority SDGs 49
5.4 Integration of priority SDGs 49
5.5 Reporting on the SDGs 51
5.6 Conclusions 52
5.7 Limitations to the study 53
5.8 Recommendations for further studies 54
REFERENCES 55
ANNEXURE 1: Ethical clearance certificate 64

LIST OF TABLES

Table 1 : The Sustainable Development Goals 9
Table 2: Five step process for companies to engage with the SDGs 14
Table 3: Criteria for evaluating the extent of corporate engagement with the SDGs 28
Table 4: Rating scale for corporate engagement with the SDGs 29
Table 5: Summary of the extent of corporate engagement with the SDGs..... 29

LIST OF FIGURES

Figure 1: The 17 themes of UN Sustainable Development Goals 1
Figure 2: Examples of issues connecting mining and the SDGs 13
Figure 3: Understanding of the SDGs by selected JSE listed mining companies (2019) 32
Figure 4: Defining priority SDGs by selected JSE mining companies (2019) 35
Figure 5: Prioritisation of the 17 SDGs by selected mining companies in 2019 37
Figure 6: Goal setting for priority SDGs by selected JSE listed mining companies (2019)..... 38
Figure 7: Integration of priority SDGs by selected JSE listed mining companies (2019) 41
Figure 8: Reporting on priority SDGs by selected JSE listed mining companies (2019) 42
Figure 9: Summary of engagement with the SDGs by selected JSE-listed mining companies (2019) 44

LIST OF ACRONYMS

CCSI	Columbia Center on Sustainable Investment
CSR	Corporate Social Responsibility
CSV	Creating Shared Value
GRI	Global Reporting Initiative
ICMM	International Council on Mining and Metals
IIRC	International Integrated Reporting Council
JSE	Johannesburg Stock Exchange
KPI(s)	Key Performance Indicator(s)
MDG(s)	Millennium Development Goal(s)
RMF	Responsible Mining Foundation
SDG(s)	Sustainable Development Goal(s)
SDSN	Sustainable Development Solutions Network
UN	United Nations
UNDP	United Nations Development Programme
UNGC	United Nations Global Compact
WCED	World Commission on Environment and Development
WEF	World Economic Forum
WSSD	World Summit on Sustainable Development

1 CHAPTER ONE: INTRODUCTION

The Sustainable Development Goals (SDGs) are a culmination of the United Nations (UN) Summit on Sustainable Development, which was held in New York on 25 - 27 September 2015. The SDGs were unanimously adopted by 193 UN member states as part of resolution A/RES/70/1, 'Transforming our world: the 2030 Agenda for Sustainable Development' (the 2030 Agenda) (UN, 2015; Biermann et al., 2017). They are comprised of 17 goals as well as 169 targets that embody the post-2015 development agenda, which extends up until 2030. The 2030 Agenda is envisaged as a universal plan for the planet, people, peace, partnerships, and prosperity to advance sustainable development (UN, 2015). The SDGs have been resoundingly welcomed as a transformative agenda, encompassing prevalent challenges of the 21st century that must be dealt with to achieve sustainable development by 2030 (UN, 2015; Fukuda-Parr, 2016). Furthermore, they are considered "integrated and indivisible" in the pursuit of balancing the inextricably linked pillars of sustainable development, i.e., environmental sustainability, social inclusion, and sustainable and inclusive economic growth (UN, 2015; CCSI et al., 2016; Moratis and Melissen, 2019; de Jong and Vijge, 2021). Some of the themes covered by the SDGs include the eradication of poverty, gender equality, and taking measures to combat climate change, etc. (see Figure 1).



Figure 1: The 17 themes of UN Sustainable Development Goals (Source: UN, 2019)

The SDGs were established on the foundation of the now-lapsed eight Millennium Development Goals (MDGs) and are expected to accomplish what the MDGs failed to achieve (UN, 2015). It is anticipated that successful accomplishment of the SDGs will rely on coordination between all key role players, with an emphasis on equity, thereby ensuring that no one is left behind (UN, 2015; de Jong and Vijge, 2021; Cole and Broadhurst, 2021). The SDGs are internationally recognised as universal goals for sustainable development for both developing and developed countries, although they are not legally binding (UN, 2015).

Most scholars agree that the SDGs are ambitious, and their achievement would depend on the involvement of the private sector (UN, 2015; Calabrese et al., 2021; Rashed and Shah, 2021). The strength of the private sector, which is considered essential for the advancement of SDGs, includes financial capital, technological advancement, job creation, and skills sets that contribute to economic growth (Sullivan et al., 2018; Ike et al., 2019; Calabrese et al., 2021; Rashed and Shah, 2021). Accordingly, the UN has appealed to the private sector to put forward creativity and innovation in solving the challenges linked to the achievement of sustainable development (UN, 2015).

1.1 Mining and the SDGs

The mining sector has been contributing to global economic growth for decades, providing metals and minerals necessary for technological advancement as well as the development of modern society (CCSI et al., 2016, Frederiksen and Banks, 2023). However, when scrutinising the role of the mining sector on the factors impacting sustainable development, it is also apparent that mining has exacerbated some of the issues sought to be addressed through the SDGs (CCSI et al., 2016; Fraser, 2019, Frederiksen and Banks, 2023). These could be seen along the value chain of mining, which presents salient environmental, socioeconomic, and governance issues (Mancini and Sala, 2018). Examples of common environmental problems due to mining include habitat destruction, water pollution, and air pollution (Kitula, 2006; Frederiksen and Banks, 2023). As the mining sector does not operate in isolation, it also has impacts on host communities, which could trigger various socioeconomic problems. Frequent socioeconomic problems associated with mining include

disruption of host communities as a result of displacement to make way for mining, loss of livelihoods because of displacement, influx of immigrants in search of job opportunities, introduction and spread of new diseases by migrant workers, and increased crime rate (Kitula, 2006; Frederiksen and Banks, 2022). If not addressed, all these impacts have the likelihood of hamstringing the potential positive input of the mining sector in the realisation of the SDGs (Mancini and Sala, 2018; Frederiksen and Banks, 2023).

The Columbia Center on Sustainable Investment (CCSI), Sustainable Development Solutions Network (SDSN), United Nations Development Programme (UNDP), and World Economic Forum (WEF) (2016) have developed a guideline titled 'Mapping Mining to the Sustainable Development Goals: An Atlas' (hereafter also referred to as the Atlas). The central focus of this guideline is to give direction on key intersections between the SDGs and mining as well as provide understanding on the role of the mining sector in advancing the 2030 Agenda (CCSI et al., 2016). An important proposition from the Atlas is that “the mining industry has the opportunity and potential to positively contribute to all 17 SDGs” (CCSI et al., 2016, p. 3). This is important, considering that the mining industry has made a sizeable contribution to most of the problems that the SDGs intend to address (CCSI et al., 2016; Fraser, 2019). While the Atlas could be resourceful in guiding the mining sector to participate in advancing the SDGs, it does not provide guidance on reporting on the SDGs, which is essential for measuring and managing the impacts of mining towards realising the SDGs. This presents a shortcoming of the Atlas because disclosures on the SDGs by mining companies would afford their stakeholders an opportunity to appreciate the impact of the mining sector in advancing the 2030 Agenda for Sustainable Development. One of the early and widely recognised guidelines on 'corporate engagement with the SDGs' is the ‘SDG Compass,' published by the Global Reporting Initiative (GRI), the United Nations Global Compact (UNGC), and the World Business Council for Sustainable Development (WBCSD), which outlines a process with five steps aimed at guiding particularly large companies in the private sector on embedding the SDGs into the core of their strategy (GRI et al., 2015; Calabrese et al., 2021). These five steps formed part of the guiding theoretical framework adopted in this study to investigate corporate engagement with the SDGs.

1.2 Problem statement

Many scholars argue that the achievement of the SDGs by the 2030 deadline depends on the contribution of the private sector (Scheyvens et al., 2016; Sullivan et al., 2018; Ike et al., 2019; Calabrese et al., 2021; Rashed and Shah, 2021; Silva, 2021). In alignment with this claim, it is also argued that the mining sector is well positioned and has the capacity to make valuable input towards the achievement of all the SDGs (CCSI et al., 2016; Yakovleva et al., 2017; Fraser, 2019; Cole and Broadhurst, 2021; Frederiksen and Banks, 2023). However, there is a gap in research on corporate engagement with the SDGs due to a paucity of empirical studies conducted in this field (Ike et al., 2019; Buniamin et al., 2020; Rashed and Shah, 2021; van der Waal and Thijssens, 2020; van der Waal et al., 2021). According to Pedersen (2018), many companies are still grappling with taking the appropriate steps to engage with the SDGs. Furthermore, most companies are still battling with aligning their strategies with the SDGs (Pedersen, 2018; Moratis and Melissen, 2019). Consequently, this affects the measuring, impact management, and reporting on the SDGs (GRI et al., 2015; Blasco et al., 2018; Pedersen, 2018). Concomitantly, Rosati and Faria (2019) and Silva (2021) argue that there is a research gap on SDG reporting due to the scarcity of scholarship on this phenomenon, which is an essential component for measuring progress towards the achievement of the SDGs (Blasco et al., 2018). In addition to the aforementioned research gaps, Silva (2021), argues that there is a research gap linked to the analysis of corporate contributions to the SDGs. Moreover, Endl et al. (2021) claim that there is a dearth of knowledge on the contribution of the mining sector towards realising the SDGs, while Calabrese et al. (2021, p. 4) argue that “best practice on corporate SDG reporting has yet to be established." To address all these knowledge gaps, this study explored the extent to which selected JSE-listed mining companies are engaging with the SDGs.

1.3 Aim and objectives

The aim of this study was to examine the extent of corporate engagement with the SDGs by selected JSE-listed mining companies in advancing the 2030 Agenda for Sustainable Development. The key objectives of this study regarding the selected mining companies were:

a) to determine the level of understanding of the SDGs;
b) to determine the extent of prioritisation of the SDGs;
c) to determine the extent of goal setting in line with the SDGs;
d) to determine the level of integration of the SDGs; and
e) to determine the extent of reporting on the SDGs.

1.4 Assumptions

It was assumed that mining companies in the top 100 Johannesburg Stock Exchange (JSE) firms are resourceful and highly experienced in dealing with sustainability issues. Against this background, it was further assumed that these mining companies would have the necessary capacity to effectively engage with the SDGs and thereby contribute to the advancement of the 2030 Agenda for Sustainable Development.

1.5 Significance of the study

This study was expected to contribute toward increasing the body of knowledge on the extent of corporate engagement with the SDGs by JSE-listed mining companies. Secondly, it was expected that this study could provide insight on the extent of integration of the SDGs into corporate strategy as well as on the extent of reporting on the SDGs. Thirdly, this study could be beneficial to top managers in playing a strategic role in guiding corporate engagement with the SDGs. Finally, this study may be useful to all stakeholders who have an interest in corporate engagement with the SDGs, particularly in the mining sector.

1.6 Layout of the research report

In chapter one, the background and context of the study have been laid out. The aim and objectives are presented, and the significance of the study is explained. Chapter two provides a review of existing literature on corporate engagement with the Sustainable Development Goals. Chapter three details the research design and the methodological approach employed. Chapter four presents the results of the study. Finally, chapter five delves into the discussion, conclusions, recommendations, and limitations of this study.

2 CHAPTER TWO: LITERATURE REVIEW

2.1 Sustainable Development

As early as the 1960s, there were growing concerns about the impacts of development on the environment and human beings. This coincided with the publication of Rachel Carson's book in 1962, titled 'Silent Spring,' which outlined the anthropogenic impacts of indiscriminate use of pesticides, which were causing environmental degradation. Ten years after the publication of Rachel Carson's book, Meadows et al. (1972) published their book titled 'The Limits to Growth', which was part of a computer simulation project conducted at the Massachusetts Institute of Technology to predict the future of the earth under different scenarios. The most concerning prediction was that an increase in human population growth, economic growth, industrialisation, uncontrolled pollution, overproduction of food, and overutilisation of natural resources could result in the collapse of the earth system (Meadows et al., 1972; Michelsen et al., 2016). Both of these books presented a solid case for a paradigm shift from business as usual towards sustainable development.

In pursuit of changing the status quo, the United Nations convened the first 'Conference on the Human Environment' in 1972 at Stockholm, Sweden (UN, 1972; Keong, 2021). This was in response to the growing concerns regarding unprecedented anthropogenic impacts toward the natural environment, subsequent to scientific and technological development (UN, 1972; Keong, 2021). Whilst it was recognised that development has the potential for improved quality of life, there were mounting concerns that if unchecked, human transformation of the environment could lead to irreversible destruction, which is undesirable for current and future generations. The UN, therefore, held this conference to define the collective outlook of what could constitute common principles that would guide the protection and improvement of a suitable human environment. The key outcome of this conference was reaching an agreement known as the 'Stockholm Declaration on the Human Environment', which contains 26 guiding principles on protection of the human environment (UN, 1972).

In 1983, the 'World Commission on Environment and Development' (WCED), was launched by the UN, primarily to critically assess global issues on development and the environment as well as to find sustainable solutions to deal with them by the year

2000 and beyond (UN, 1987). In 1987, the WCED produced a report titled ‘Our Common Future’, widely called ‘The Brundtland Report’ (UN, 1987). Towards the formulation of the term ‘Sustainable Development’ the report states that “Humanity has the ability to make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their needs” (UN, 1987: 24). The Brundtland report subsequently concluded that Sustainable Development is “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (UN, 1987, p. 54). Afterwards, other international engagements on sustainable development were held, such as the 1992 ‘United Nations Conference on Environment and Development’ (UNCED), popularly known as ‘The Earth Summit’, which was held in Rio de Janeiro, Brazil (UN, 1993). This summit produced a document called Agenda 21, which outlined a global series of actions concerning sustainable development, and the Rio Declaration, which consisted of 27 principles for the advancement of sustainable development (UN, 1993; Klarin, 2018).

In 2002, the World Summit on Sustainable Development (WSSD also referred to as Rio +10) was held in Johannesburg, South Africa (Frederiksen and Banks, 2023). At this conference, the mining sector made a notable contribution to the discourse on Sustainable Development. This overlapped with the conception of the Mining, Minerals and Sustainable Development (MMSD) project by a small group of CEOs from the mining sector, which ran from 1999 to 2002 with the aim of determining how the mining sector could contribute to Sustainable Development (Frederiksen and Banks, 2023). The MMSD project conducted consultation and research, which culminated in the release of ‘Breaking New Ground’ report in 2002 that highlighted nine thematic challenges to Sustainable Development. Subsequently, this led to the establishment of the International Council on Mining and Metals (ICMM) in 2002, a global mining governing body, which was charged with the mandate of advancing Sustainable Development in the mining sector (Fonseca et al., 2014).

At the turn of the millennium, the United Nations held a Millennium Summit in New York (UN, 2000). The most important outcomes of this summit were agreement on the Millennium Declaration and the Millennium Development Goals (UN, 2000). The Millennium Development Goals were primarily focused on eight areas, which were:

"(1) eradicate extreme poverty and hunger; (2) achieve universal primary education; (3) promote gender equality and empower women; (4) reduce child mortality; (5) improve maternal health; (6) Combating of HIV/AIDS, malaria and other diseases; (7) ensure environmental sustainability; and (8) develop a global partnership for development" from 2000 until 2015 (Lomazzi et al., 2014). Subsequent to the lapse of the MDGs, deliberations on the next global agenda for sustainable development were held, which ushered in the Sustainable Development Goals (Sachs, 2012).

2.2 The United Nations Sustainable Development Goals

The conception of the Sustainable Development Goals (SDGs) began at the Rio+20 conference in 2012, through multistakeholder engagement (Pedersen, 2018; Gusmão Caiado et al., 2018; Calabrese et al., 2021). The SDGs were developed on the underpinnings of the MDGs, taking into consideration the outcomes of major previous conferences and summits as well as established international treaties of the United Nations (UN, 2015; Cole and Broadhurst, 2021). On 25 September 2015, 193 UN member states adopted resolution, A/RES/70/1, 'Transforming our world: the 2030 Agenda for Sustainable Development' as an outcome document of the United Nations Summit on Sustainable Development, in New York (UN, 2015). The 2030 Agenda is distinguished by 17 Sustainable Development Goals (SDGs) together with 169 targets, which commenced on 1 January 2016 and will lapse in 2030 (UN, 2015). The 2030 Agenda provides an aspirational action plan for "people, planet, prosperity, peace, and partnership" (UN, 2015, p. 2).

According to Szennay et al. (2019), the SDGs are to date, the most thorough and inclusive approach to sustainable development. The key themes covered by the SDGs have a strong focus on addressing prevalent social, environmental, and economic development issues of the 21st century (see Table 1) to shift the world toward a resilient and sustainable path (UN, 2015; Fukuda-Parr, 2016; de Jong and Vijge, 2021). The SDGs are regarded as 'integrated and indivisible' and encompass the elements of sustainable development, i.e., environmental sustainability, social inclusion, and (sustainable and inclusive) economic growth (UN, 2015). There is consensus amongst the majority of scholars that the SDGs are inextricably linked in that taking measures to address one SDG theme will have an impact on the outcomes

of the other themes (CCSI et al., 2016; Barbier and Burgess, 2017; Moratis and Melissen, 2019; Beyne, 2020; Mio et al., 2020; de Jong and Vijge, 2021). Therefore, in this regard, Barbier and Burgess (2017) argue that a systems approach is required to achieve the SDGs, which could also contribute to fostering equity by ensuring that no one is left behind by 2030 (UN, 2015; de Jong and Vijge, 2021; Cole and Broadhurst, 2021).

Table 1 : The Sustainable Development Goals (Source: UN, 2015, p. 14)

Goal	Description of the goals
Goal 1	End poverty in all its forms everywhere
Goal 2	End hunger, achieve food security and improved nutrition and promote sustainable agriculture
Goal 3	Ensure healthy lives and promote well-being for all at all ages
Goal 4	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
Goal 5	Achieve gender equality and empower all women and girls
Goal 6	Ensure availability and sustainable management of water and sanitation for all
Goal 7	Ensure access to affordable, reliable, sustainable, and modern energy for all
Goal 8	Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all
Goal 9	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
Goal 10	Reduce inequality within and among countries
Goal 11	Make cities and human settlements inclusive, safe, resilient, and sustainable
Goal 12	Ensure sustainable consumption and production patterns
Goal 13	Take urgent action to combat climate change and its impacts
Goal 14	Conserve and sustainably use the oceans, seas, and marine resources for sustainable development

Goal	Description of the goals
Goal 15	Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
Goal 16	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable, and inclusive institutions at all levels
Goal 17	Strengthen the means of implementation and revitalize the global partnership for Sustainable Development

The SDGs are part of an emerging trend in global governance that places inclusive goal setting at the center of strategy (Biermann et al., 2017; de Jong and Vijge, 2021). Notably, adoption of global goals through this approach to governance is not legally binding and, therefore, allows governments to set their own level of ambition for implementation, considering their national realities (Biermann et al., 2017; de Jong and Vijge, 2021). This line of policy development was cordially received, as it signaled a breakaway from the UN's conventional, top-down approach towards a more inclusive policy development that incorporates the views of multiple stakeholders (Fukuda-Parr, 2016; van Zanten and van Tulder, 2018).

A comparison of the MDGs and the SDGs brings to light remarkable differences. The MDGs were lauded by some for their simplicity (Sachs, 2012; Lomazzi et al., 2014), however, they were also criticised for oversimplifying and reducing the complex global challenges of Sustainable Development (Fukuda-Parr, 2016). This was due to the narrow scope of the MDGs and limited consultation, which led to the omission of some of the key pressing issues for global sustainable development, such as climate change, decent work, access to sustainable energy, and fostering innovation (Fukuda-Parr, 2016). Furthermore, the framework policy for development through the MDGs was dependent on developed countries providing aid to developing countries, whereas the SDGs provide a universal agenda for Sustainable Development, which promotes partnership between developed and developing countries (UN, 2015; Biermann et al., 2017; van Zanten and van Tulder, 2018).

While the 2030 Agenda for Sustainable Development has been hailed as transformative, it has also received backlash from critics who argue that some of the goals and targets are too ambitious, vague, and riddled with inconsistencies emanating from economic development needs and the responsibility for maintaining ecological system integrity (Bali Swain and Yang-Wallentin, 2020). Furthermore, Dang and Serajuddin (2020) add that some targets are misaligned, which creates complexity for implementation. Nonetheless, the 2030 Agenda is still considered far more transformative than the MDGs to advance sustainable development (Fukuda-Parr, 2016). This is due to the inclusive nature of the SDGs, attributable to the extensive consultative processes applied by the Open Working Group during the formulation of the SDGs (UN, 2015; Pedersen, 2018; Gusmão Caiado et al., 2018). This paved the way for the incorporation of key pressing global issues from multiple stakeholders, including government, business, academics, and civil society organisations. Accordingly, the SDGs are expected to accomplish what the MDGs failed to achieve (UN, 2015).

The United Nations admitted that without support from the private sector, achieving the SDGs would be arduous or even impossible (UN, 2015; Calabrese et al., 2021). It is for this reason that the UN has requested the private sector to demonstrate "creativity and innovation" by bringing solutions to the global challenges of sustainable development (UN, 2015, p. 29). The private sector is deemed integral to achieving the SDGs by providing capacity, financial capital, technology, job opportunities, and skills that contribute to economic growth (UN, 2015; Scheyvens et al., 2016; Sullivan et al., 2018; Ike et al., 2019; Calabrese et al., 2021; Rashed and Shah, 2021). The SDGs present a universal framework with long-term global priorities, which is conducive to long term business planning and the sense of policy certainty required by business for capital investment (Pedersen, 2018). Additionally, the private sector can use the SDGs to design business models that would be publicly acceptable (Pedersen, 2018) by taking an outside-in approach to solving the wicked problems of Sustainable Development (Dyllick and Muff, 2016).

2.3 Corporate engagement with the SDGs: A focus on the mining sector

According to Frederiksen and Banks (2023), while the mining sector has been labelled a “pariah industry” as a result of contributing to the degradation of environmental and social systems, the SDGs present a new opportunity for the mining sector to redeem itself by contributing to the 2030 Agenda. Similarly, Fraser (2019) argues that the SDGs present mining companies with the prospect of rebuilding trust in their host communities by contributing to their welfare. In consideration of how the mining sector can advance the SDGs, CCSI et al. (2016) produced a white paper titled ‘Mapping Mining to the Sustainable Development Goals: An Atlas’. This guideline is particularly beneficial for mapping the SDGs into the value chains of mining companies, which is an imperative step toward embedding the SDGs in mining. Examples of issues that connect mining and the SDGs taken from the Atlas are presented in Figure 2 (CCSI et al., 2016). These issues could be attributable to the value chains of mining, which typically begin with the preparatory phase, the operational phase, rehabilitation and closure, and post-closure mining.

The Atlas has made a bold statement that the mining industry has the capacity to support the success of all the SDGs (CCSI et al., 2016). This view is supported by several scholars, with renewed hope for the mining sector to make inroads toward sustainable development (Yakovleva et al., 2017; Fraser, 2019; Frederiksen and Banks, 2023). Furthermore, Frederiksen and Banks (2023) are of the view that the mining industry is crucial to the attainment of the SDGs, particularly through the supply of the minerals necessary for the transition into a low carbon economy. However, Endl et al. (2021) argue that there is a scarcity of empirical research on the mining sector’s contribution to advancing the SDGs.



Figure 2: Examples of issues connecting mining and the SDGs (Source: CCSI et al., 2016)

Key: "EID= emerging infectious diseases; OHS= occupational safety and health; TVET= technical, vocational, and educational training; CCS= carbon capture and storage; IFFs= illicit financial flows; FPIC= free, prior, and informed consent; PPPs= public private partnerships" CCSI et al. (2016, p. 5).

Fraser (2019) argues that a clear strategy is needed for the mining sector to make a significant impact toward achieving the SDGs by 2030. This requires the mining sector to take a deliberate and systematic approach to effectively engage with the SDGs (Barbier and Burgess, 2017). While several guidelines have emerged that are aimed at corporate engagement with the SDGs (Haywood and Boihang, 2021), most of them

are more focused on reporting on the SDGs than on the overall process of engaging with the SDGs. An early and widely recognised guideline on corporate engagement is the 'SDG Compass' (2015), published by the 'Global Reporting Initiative (GRI), United Nations Global Compact (UNGC), and the World Business Council for Sustainable Development (WBCSD)', which provides a practical five-step process aimed at guiding particularly large companies in the private sector on embedding the SDGs into the core of their strategy (GRI et al., 2015; Calabrese et al., 2021). According to García-Sánchez et al. (2020), the SDG Compass provides a comprehensive approach, which is essential in the process of creation, implementation, and communication of corporate strategies relating to the SDGs. The key emphasis of this guideline is on ensuring that sustainability stems from the core of business strategy (GRI et al., 2015). Furthermore, the SDG Compass provides guidance for companies on assessing and managing contributions to the SDGs (GRI et al., 2015; Calabrese et al., 2021), which is an essential component of corporate sustainability reporting to advance the 2030 Agenda. It is for this reason that the SDG Compass has been adopted in this study as a suitable theoretical framework for assessing corporate engagement with the SDGs. The five steps outlined in the SDG Compass include "(1) understanding the SDGs, (2) defining priorities, (3) goal setting, (4) integration, and (5) reporting and communicating" (see Table 2).

Table 2: Five step process for companies to engage with the SDGs (GRI et al., 2015)

Activity	Objective
1: Understanding the SDGs	• To ensure that companies have clear understanding of the SDGs, the responsibility to comply with relevant legislation, and the business case for the SDGs.
2: Defining priorities	• To evaluate (existing and possible) impacts that the SDGs present along the value chain. • To define priorities across the SDGs, in consideration of risks and opportunities identified with the participation of all key stakeholders.
3: Goal setting	• To set SMART goals in line with the priorities defined in step 2.

Activity	Objective
4: Integration	• To ascertain that the SDGs are embedded into the core of business strategy, and company culture across all functions of the company, with active participation of top management to provide leadership.
5: Reporting and communicating	• To ensure that companies monitor and report performance on the SDGs as well as communicate progress with their stakeholders. • Companies are to report both positive and negative performance to ensure balanced reporting.

2.3.1 Understanding the SDGs

The initial step in the process of effective engagement with the SDGs requires an understanding of the SDGs (GRI et al., 2015; Beyne, 2020). The SDGs framework calls for a fundamental change in corporate sustainability from an inside-out to an outside-in approach, which requires understanding the influence of the mining sector in solving global challenges (Dyllick and Muff, 2016; Beyne, 2020). Taking an outside-in approach is beneficial for companies to contextualise the business case for partaking in the SDGs as well as their baseline responsibilities by appreciating several factors, including the risks and opportunities presented by global challenges (Beyne, 2020). Some of the baseline responsibilities include adhering to mining-related international standards and principles as well as complying with national and local regulations (CCSI et al., 2016; Yakovleva et al., 2017; Frederiksen and Banks, 2023). In terms of the business case, Pederson (2018) argues that the SDGs represent a framework that outlines global key focus areas suitable for long-term investment. This understanding is crucial for the mining sector, which is capital intensive, therefore, investing in mining technologies aligned with the SDGs would be supported by most stakeholders (CCSI et al., 2016).

In driving the understanding of the SDGs, a concerted effort from top management is required to ensure that all key stakeholders are conscientised about key sustainability issues pertaining to mining and the SDGs (Kaffashi and Grayson, 2022; Manes-Rossi and Nicolo', 2022). Top management must show leadership to ensure that all key stakeholders are presented with opportunities to understand the SDGs (Beyne, 2020;

Kaffashi and Grayson, 2022). Paul Polman demonstrated this kind of leadership during his tenure at Unilever by creating awareness about the SDGs among Unilever's key stakeholders (Beyne, 2020). This is an essential step toward embedding the SDGs into the core of corporate strategy and thereby creating a suitable business environment that is effective for advancing the SDGs (Fleming et al., 2017; Beyne, 2020).In driving the understanding of the SDGs, a concerted effort from top management is required to ensure that all key stakeholders are conscientised about key sustainability issues pertaining to mining and the SDGs (Kaffashi and Grayson, 2022; Manes-Rossi and Nicolo', 2022). Top management must show leadership to ensure that all key stakeholders are presented with opportunities to understand the SDGs (Beyne, 2020; Kaffashi and Grayson, 2022). Paul Polman demonstrated this kind of leadership during his tenure at Unilever by creating awareness about the SDGs among Unilever's key stakeholders (Beyne, 2020). This is an essential step toward embedding the SDGs into the core of corporate strategy and thereby creating a suitable business environment that is effective for advancing the SDGs (Fleming et al., 2017; Beyne, 2020).

2.3.2 Defining priority SDGs

The UN resolution on the 2030 Agenda for Sustainable Development is explicit in that the SDGs are integrated (UN, 2015), which is crucial for their adoption, integration, and implementation. Ike et al. (2019) argue that most companies are still grappling with the process of prioritisation of the SDGs due to the scarcity of literature with empirical evidence on undertaking the prioritisation of the SDGs. According to Moratis and Melissen (2019), most companies have adopted materiality analysis to define their priority SDGs. Materiality analysis can be defined as an inclusive and consultative process. The UN resolution on the 2030 Agenda for Sustainable Development is explicit in that the SDGs are integrated (UN, 2015), which is crucial for their adoption, integration, and implementation. Ike et al. (2019) argue that most companies are still grappling with the process of prioritisation of the SDGs due to the scarcity of literature with empirical evidence on undertaking the prioritisation of the SDGs. According to Moratis and Melissen (2019), most companies have adopted materiality analysis to define their priority SDGs. Materiality analysis can be defined as an inclusive and consultative process that is driven by the private sector for the identification of

sustainability issues that are regarded as material by key stakeholders (Ike et al., 2019). Whilst materiality analysis is widely used in practice to define sustainability objectives, Moratis and Melissen (2019) contend that prioritisation of the SDGs through materiality analysis without due consideration of the integrated and indivisibility nature of the SDGs could breed the practice of 'SDG cherry-picking' in favour of the SDGs that are regarded as material, whilst neglecting those deemed 'immaterial' to the company. Consequently, this would slow down progress towards the attainment of all the SDGs and thereby leave behind some of the challenges of Sustainable Development.

The SDG Compass recommends that in defining priority SDGs, companies should map their entire value chain in consultation with internal and external stakeholders (GRI et al., 2015). Careful consideration should be taken during this process to evaluate both the impacts of mining companies on the SDGs as well as the potential impacts of the SDGs on mining companies, considering both positive and negative impacts along the value chain (GRI et al., 2015; CCSI et al., 2016; Dyllick and Muff, 2016; Beyne, 2020). This would help mining companies identify the SDGs that could be addressed, considering the significant risks and opportunities allied with those SDGs. Furthermore, this is consistent with an outside-in approach to ensure that a company's strategic priorities are aligned with global goals (GRI et al., 2015; Dyllick and Muff, 2016; Beyne, 2020). Whilst this process may seem daunting and laborious, it is aimed at being inclusive by capturing all the pillars of Sustainable Development. The outcomes of the process of defining priority SDGs are vital for goal setting to ensure the setting of appropriate goals for the 2030 Agenda.

In a study conducted by van Zanten and van Tulder (2018), it was found that most multinational enterprises (MNEs) within Financial Times Global 500 companies chose to engage with the SDGs, which were deemed internally actionable. It was further noted that the prioritisation of the SDGs along this pattern led to weak engagement with the SDGs deemed outside of the sphere of influence of these companies (van Zanten and van Tulder, 2018). Kaffashi and Grayson (2022) argue that prioritisation of SDGs in accordance with this practice has resulted in a category of SDGs called 'orphan SDGs', which are deemed immaterial.

Studies conducted by the Columbia Center for Sustainable Investment (CCSI) and Responsible Mining Forum (RMF) in 2020 found that prioritisation of the SDGs by most of the mining companies was based on retrofitting the SDGs to previously undertaken materiality analyses. This is an emerging practice in the prioritisation of SDGs that demonstrates superficial engagement with the SDGs (CCSI and RMF, 2020), which is likely to exacerbate business as usual and hamstring the transformational agenda of the SDGs.

2.3.3 Goal setting for priority SDGs

The 2030 Agenda requires the setting of bold and ambitious goals by all role players (UN, 2015). Goal setting is an important driver of organisational performance, which is aimed at effective implementation of strategic priorities as part of corporate sustainability (GRI et al., 2015). The process of setting company goals in line with the SDGs must be aligned with the strategic planning process to ensure that the SDGs are embedded in the strategic objectives of mining companies. An international best practice for goal setting includes employing the SMART principle to ensure that goals set are 'specific, measurable, attainable, realistic, and timebound' (Blasco et al., 2018). Concurrently, mining companies are urged to set clear baselines, relevant targets, and key performance indicators (KPIs) to effectively evaluate their progress on the SDGs (GRI et al., 2015; CCSI and RMF, 2020). This should be done in support of the short-term, medium-term, and long-term objectives of mining companies (CCSI and RMF, 2020). Following this approach ensures the collection of relevant and accurate data to inform management decisions on continual improvement toward advancing the SDGs (GRI et al., 2015; Blasco et al., 2018; CCSI and RMF, 2020).

2.3.4 Integration of priority SDGs

The 2030 Agenda calls on all actors, including the private sector, to integrate sustainability approaches into the advancement of sustainable development (UN, 2015). This creates a legitimate expectation by stakeholders for the mining sector to partake in the SDGs (Silva, 2021). Integration of the SDGs within an organisation requires a fundamental change in corporate sustainability and value creation, through alignment of purpose, values, business models, and corporate strategy (Fleming et al., 2017; Moratis and Melissen, 2019; Haywood and Boihang, 2021). Dyllick and Muff

(2016, p. 161) argue that there is consensus among scholars who are studying the phenomenon of ‘sustainability integration’, that it becomes effective when sustainability considerations are embedded into “strategies and operations, governance and management processes, organisational structures and culture, as well as auditing and reporting systems.” Additionally, it could be argued that integration of the SDGs would require a paradigm shift from short-termism and profit maximisation to business models geared toward sustainable and long-term value creation (Izzo et al., 2020). Pursuing this change would further require top management to lead in driving inclusive integration of SDGs into strategy and steer strategic priorities, commitments, actions, and programmes aligned with the SDGs across all organisational functions (Manes-Rossi and Nicolo’, 2022). In addition, Manes-Rossi and Nicolo’ (2022) argue that top management has the power to direct an organisation towards the sustainability path by influencing corporate culture, and reconsidering strategies and operations in line with the SDGs.

The SDGs present the mining sector with an opportunity to review current business models and transition into sustainable business models to advance the 2030 Agenda (Pedersen, 2018; CCSI and RMF, 2020; Izzo et al., 2020; Manes-Rossi and Nicolo’, 2022). Looking into SDG 12, which appeals for “sustainable consumption and production patterns," clearly a need arises for decoupling economic development from degradation of environmental and social systems during value creation (Rashed and Shah, 2021). In taking this approach, the mining sector could unlock new opportunities through innovation, provide better value proposition, and subsequently realize new customer segments (Rosati & Faria, 2019; Calabrese et al., 2021).

In pursuit of advancing the SDGs through creating shared value (CSV) by mining companies in Ghana, Kumi et al. (2020) found that this attempt resulted in low benefits to host communities. CSV is a business strategy whereby economic value for business is derived from addressing challenges faced by society (Porter and Kramer, 2011). In this way, there is a realisation that business is connected to society, and thus does not operate in isolation (Dyllick and Muff, 2016). Fraser (2019) motivates that mapping the SDGs to societal and business needs results in several points of intersection, which could create a win-win situation. For example, both mining companies and society derive benefits from having healthcare facilities that can serve mine employees and

their host communities. Whilst this has the potential to contribute to SDGs 3 and 17, Dyllick and Muff (2016) argue that CSV strategies inherently have limitations in resolving sustainable development challenges comparable to those espoused by the SDGs, as CSV is primarily focused on societal issues that have a potential economic value for business. Therefore, SDGs that are considered unlikely to contribute to the financial bottom line of mining companies would not get enough attention (Kaffashi and Grayson, 2022).

The involvement of the private sector in the formulation of the SDGs created an expectation that the private sector, particularly large and transnational companies, would move swiftly to integrate the SDGs into their strategies (Scheyvens et al., 2016). However, Moratis and Melissen (2019) argue that research on embedding SDGs into corporate strategy shows that most large companies have not integrated the SDGs into their strategies. Additionally, a study by Haywood and Boihang (2021), which investigated the extent of early disclosure of SDGs in annual reports by South African top 100 JSE-listed companies, found that very few companies have made progress on the integration of the SDGs. This is an indication of a slow uptake of the SDGs, which could lead to little progress in the advancement of sustainable development by 2030.

2.3.5 Reporting on priority SDGs

The UN has urged the private sector to advance the 2030 Agenda by incorporating sustainability information when reporting on corporate performance (UN, 2015). This necessitates the disruption and transformation of business-as-usual in sustainability reporting through embedding disclosures on SDGs. The SDGs present a framework with a universal language that could help mining companies communicate their progress on advancing the SDGs. (GRI et al., 2015; CCSI et al., 2016). According to Rosati and Faria (2019, p. 1313), “SDG reporting can be defined as the practice of reporting publicly on how an organisation addresses the SDGs." Calabrese et al. (2021) add that SDG reporting entails public declaration of commitment to contribute to the 2030 Agenda by corporations. It demonstrates accountability and transparency to all stakeholders, which could be a driver toward responsible and sustainable mining practices (CCSI and RMF, 2020). Rosati and Faria (2019) argue that, without

accountability and transparency, the realisation of the SDGs would not materialise. Therefore, it is in the interest of the mining companies to report progress on the SDGs because mining companies cannot operate sustainably without addressing the challenges outlined by the UN SDGs (GRI et al., 2015; Frederiksen and Banks; 2023).

There are several frameworks that have been advanced globally to support corporate sustainability reporting. One of the globally recognised frameworks is the GRI standards, which are commonly used by mining companies to produce an annual sustainability report (Ivic et al., 2021). A GRI-based sustainability report typically contains disclosures on material topics regarding the environment, social, and governance (Ivic et al., 2021). Another framework that provides information on financial and non-financial disclosures of an organisation is the International Integrated Reporting Framework (Framework) which is used internationally for integrated reporting (to publish an annual integrated report). The Framework was developed by the International Integrated Reporting Council (IIRC) and was first published in December 2013 (Dumay et al., 2016). Key aspects of the Framework entail the guiding principles which include the 'Strategic focus and future orientation; Connectivity of information; Stakeholder relationships; Materiality; Conciseness Reliability and completeness; and Consistency and comparability.' Furthermore, integrated reporting focuses on the impacts of the reporting organisation on the six capitals categorised as 'financial, manufactured, intellectual, human, social and relationship, and natural capital' (Dumay et al., 2016). Annual reports produced following both the GRI and the <IR> Frameworks have been used extensively to study how organisations advance Sustainable Development. Haywood and Boihang (2021, p. 2) argue that corporate annual reports contain useful information on a "company's strategy, governance, performance and prospect towards their value creation as well as current disclosure of the SDGs of companies."

Reporting on the SDGs provides mining companies with an opportunity to improve their management efforts by appreciating progress on the SDGs (Rosati and Faria, 2019; CCSI and RMF, 2020; Calabrese et al., 2021). This paves the way for reviewing corporate strategy on sustainability objectives. Furthermore, mining companies get an opportunity to realise which actions are effective and which ones are not effective in contributing towards the achievement of the SDGs (Rosati and Faria, 2019). Best

practices can then be adopted, and new and improved actions can be implemented. However, Izzo et al. (2020) argue that there is a knowledge gap on the practice of reporting on the SDGs by companies. Getting an understanding of the extent of reporting on the SDGs by JSE-listed mining companies would contribute to bridging this gap.

Companies without clear goals, proper baseline studies, targets, and KPIs are likely to resort to greenwashing/ SDG-rainbow washing, which provides a deceptive picture of their performance towards achieving the SDGs (Izzo et al., 2020). This is usually seen in organisations that focus more on making unsubstantiated claims of their contributions to the SDGs (Beyne, 2020). It is, therefore, important for companies to invest adequate time and resources to ensure effective engagement with the SDGs, and to report credible information that would be useful to stakeholders (van der Waal and Thijssens, 2020).

In terms of reporting on the SDGs by mining companies, research by the Responsible Mining Foundation (RMF) (2020) found that, although mining companies are including the SDGs in their sustainability reports, there is no balanced reporting as more emphasis is placed on the positive impacts whilst omitting the negative impacts. Accordingly, RMF (2020) contends that this practice conceals challenges faced by mining companies in engaging with SDGs and therefore, perpetuates SDG-washing.

3 CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY

The purpose of this chapter is to outline the research design and methodology that was followed in this study. The sampling procedure, data collection, and data analysis details are provided. Furthermore, details on ethical considerations, validity, and reliability as well as ethical considerations are also discussed.

3.1 Research design

This study was based on a qualitative research design, which can be described as a form of scientific inquiry applicable to a variety of disciplines, useful to uncover essential aspects about a particular phenomenon to produce new insights (Curry et al., 2009). Concomitantly, the study followed pragmatism as an appropriate philosophical stance. According to Saunders et al. (2019, p. 151), pragmatism "strives to reconcile both objectivism and subjectivism, facts and values, accurate and rigorous knowledge, and different contextualised experiences." Furthermore, Creswell and Plano Clark (2018) assert that pragmatism presents an opportunity for flexibility through the utilisation of a variety of resources and approaches available at the disposal of researchers to understand a phenomenon under study. Additionally, due to a lack of scholarly research, an exploratory approach was used to study the phenomena of corporate engagement with the SDGs.

In order to gather appropriate data for an in-depth understanding of the engagement with the SDGs by the selected JSE-listed companies, annual reports were reviewed and semi-structured interviews were conducted. The SDG Compass (GRI et al., 2015) was adopted as a befitting theoretical framework to guide this study, as it was one of the earliest international guidelines published in 2015 to assist companies on their journey of engaging with the SDGs. The five steps outlined in the SDG Compass were recontextualised into five categories to design appropriate instruments for soliciting relevant data to answer the research questions. This included designing the assessment criteria for the collection of secondary data through document analyses of annual reports. Secondly, using the same categories, an interview guide was developed to collect primary data, which were used to corroborate the findings of data analyses from annual reports.

3.2 Data collection methods

Data collection was through content analyses of annual reports and semi-structured interviews. The population for the study included only mining companies in the top 100 JSE-listed companies in 2019. At the time of the study, there were nineteen mining companies. However, four of the mining companies were subsidiaries of holding mining companies within the top 100 JSE-listed companies, and, therefore, they were excluded. Of the remaining fifteen mining companies, ten were selected using purposive sampling, wherein annual reports were to be collected as well as suitable participants. According to Curry et al. (2009, p. 1445), purposive sampling is useful to "identify information-rich participants who have certain characteristics, detailed knowledge, or direct experience relevant to the phenomenon of interest." The researcher, therefore, applied the following criteria to ensure the collection of appropriate data: firstly, caution was taken to ensure that mining companies selected for this study were not related by being part of the same holding company; secondly, only sustainability managers (with 15 years of experience and more) were included as suitable participants for semi-structured interviews with the assumption that they would be able to engage adequately on corporate engagement with the SDGs; and thirdly, only companies with participants who were available for interviews were included. Finally, only mining companies that had readily available 2019 annual reports (Integrated/ Sustainability/ESG report) on their websites were considered for this study (Ike et al., 2019). The study focused on 2019 reports as the interviews were conducted between June 2020 -October 2020, when it was expected that all 2019 annual reports would be readily available on the websites of JSE-listed companies.

Annual reports were the initial sources for data collection, followed by semi-structured interviews. The rationale behind this sequence was to allow the researcher to first gain insight into the strategy of each of the selected mining companies. This approach was necessary to allow the researcher to be well acquainted with each company under study for effective engagement with the selected participants. Furthermore, having two data sources was deemed necessary for data analyses to triangulate the results and corroborate the findings, which is vital to increasing the rigor of the study (Silverman, 2010).

3.2.1 Secondary data

Annual reports for the year 2019, which included sustainability and integrated reports, were downloaded from the websites of the respective mining companies. The downloaded reports were utilised as sources of secondary data. Haywood and Boihang (2021, p. 2) argue that annual reports are a useful source of information on a "company's strategy, governance, performance, and prospect towards their value creation", additionally, they contain "current disclosure of the SDGs of companies." The researcher exhaustively read through downloaded annual reports, searching for any reference to the SDGs in accordance with each company's corporate strategy (Buniamin et al., 2020; Izzo et al., 2020; Haywood and Boihang, 2021). Attention was paid to keywords such as strategic objectives, company goals/ priorities/ commitments, programmes, initiatives, business models, action plans, key performance indicators, top management (CEO/Chairperson of the Board and executive management), 2019 performance/ reporting on the SDGs, and SDG disclosure (Izzo et al., 2020; Haywood and Boihang, 2021). This was done to effectively assess the extent of corporate engagement with the SDGs against the five study objectives, which are aligned to the five categories adapted from the SDG compass.

3.2.2 Primary data

In collecting primary data, semi-structured interviews were conducted using an interview guide to maintain consistency and fairness by ensuring that all participants were asked the same questions. Additionally, the rationale for using semi-structured interviews was to ensure flexibility through asking open-ended questions as well as to make follow-ups whenever clarity-seeking was necessary (Ike et al., 2019).

Participants (sustainability managers) were secured prior to undertaking the study through confirmation by emails from the respective selected companies to ensure the successful collection of primary data. As part of the planning process for interviews, all the research questions were sent with invitations to provide participants with ample opportunity to prepare accordingly. Additionally, only senior sustainability managers who are well experienced in corporate sustainability issues were interviewed. Ten interviews were conducted virtually between June 2020 and October 2020, one for

each respective company. The communication technologies that were utilised to conduct interviews included telephone, Skype, Zoom, Microsoft Teams, and WhatsApp video call. The following key questions were asked to all participants using an interview guide, which is linked to the five categories recontextualised from the SDG Compass (GRI et al., 2015):

- **Category 1 (Understanding of the SDGs):** "What is your company's understanding of the United Nations Sustainable Development Goals (SDGs)?" (Additionally, elaborate on the business case for the SDGs, the responsibilities, and the opportunities the SDGs present to your company).
- **Category 2 (Defining priority SDGs):** "Does your company have priority SDGs? (If yes, which SDGs have you prioritised and what methodology did you employ in defining priority SDGs?)."
- **Category 3 (Goal setting):** "What are your company's short-term, medium-term, and long-term objectives for your priority SDGs?" (Additionally, elaborate on your baselines and KPIs for your priority SDGs)
- **Category 4 (Integration of the priority SDGs):** "What commitments and actions has your company embarked on to embed the SDGs into your business strategy, business model, priorities, and programmes."
- **Category 5, (Reporting on priority SDGs):** "Is your company reporting on the SDGs? (If yes, can you describe your company's progress on your priority SDGs?).

On average, the duration of each interview was about 45 minutes. All interviews were recorded with the participant's permission to allow maximum engagement between the interviewer and the participants. The recordings for the interviews were transcribed manually, and afterwards, transcripts of the interviews were dispatched to each respective participant to ensure that his/her views were captured correctly during the transcription process. Finally, the data collected were analysed as described in section 3.3.

3.3 Data analysis

The approach used for data analyses in this study was content analyses, which also encompass document analyses. This entailed textual analyses of transcripts for data attained via semi-structured interviews, and document analyses for data obtained from annual reports against the study objectives. According to Bryman (2012), content analyses can be explained as a method suitable for analyses of textual data through a systematic, and repeatable approach to interpretation of predetermined categories. In the same vein, Bowen (2009) describes document analyses as a systematic process for thorough reviewing of documents, to gain insights on a particular phenomenon, which is useful for the development of empirical knowledge.

A common presupposition for using content analyses is that textual data contain important information regarding a particular researchable phenomenon (Kleinheksel et al., 2020). A key advantage of content analysis is versatility, which could be liberating for the researcher to tailor-make a method of analysis in a way that would be suitable for the collected data (Bryman, 2012; Camprubí and Coromina, 2016). However, a commonly cited criticism of content analysis is the lack of a standardised approach in a form of a recipe for application (Moldavska and Welo, 2017). As a result, this necessitates that the researcher provide clarity on the methodology employed for data collection as well as analyses to ensure the credibility of the study.

The analytical framework used in this study was recontextualised from the five steps of the SDG Compass into five categories listed in Table 3. Embedded into Table 3 is a rating scale of zero to three, which was applied for scoring each company on the five categories to determine the extent of engagement with the SDGs. Supplementary information on the rating scale for corporate engagement with the SDGs is presented in Table 4. Both Table 3 and Table 4 were applied to score the selected mining companies based on information obtained from both annual reports and interviews in each category. Additionally, triangulation was applied to corroborate both findings.

Table 3: Criteria for evaluating the extent of corporate engagement with the SDGs

	RATING SCALE FOR ASSESSING CORPORATE ENGAGEMENT WITH THE SDGS			
CATEGORIES	**0= Poor**	**1= Inadequate**	**2= Good**	**3= Excellent**
1. Understanding of the SDGs	The interview/ Annual report provided no information to demonstrate understanding of the SDGs.	The interview/ Annual report provided insufficient information on: a) Comprehension of the SDGs. b) The business case for the SDGs. c) The responsibilities and opportunities the SDGs present for the company.	The interview/ Annual report provided adequate information on: a) Comprehension of the SDGs. b) The business case for the SDGs. b) The responsibilities and opportunities the SDGs present for the company.	The interview/ Annual report provided in-depth and clear information on: a) Comprehension of the SDGs. b) The business case for the SDGs. c) The responsibilities and opportunities the SDGs present for the company.
2. Defining priority SDGs	The interview/ Annual report provided no information on priority SDGs.	The interview/ Annual report provided insufficient information on: a) Priority SDGs. b) The methodology for defining priority SDGs.	The interview/ Annual report provided adequate information on: a) Priority SDGs. b) The methodology for defining priority SDGs.	The interview/ Annual report provided in-depth and clear information on: a) Priority SDGs. b) The methodology for defining priority SDGs.
3. Goal setting for priority SDGs	The interview/ Annual report provided no information on goal setting.	The interview/ Annual report provided insufficient information on goal setting due to: a) Limited and unclear scope of goals. b) inadequate targets and KPIs for priority SDGs.	The interview/ Annual report provided adequate information on: a) The scope of goals including "short-term, medium-term, and long-term objectives" aligned with the SMART principle. b) Alignment with the UN targets.	The interview/ Annual report provided in-depth and clear information on: a) The scope of goals including "short-term, medium-term, and long-term objectives" aligned with the SMART principle. b) Alignment with the UN targets.
4. Integration of priority SDGs	The interview/ Annual report provided no information on the integration of the SDGs into strategy and business model.	The interview/ Annual report provided insufficient information on integration due to inadequate information on: a) Commitments and actions on the SDGs. b) Description of embedding the SDGs into strategy, business model, priorities, and programmes.	The interview/ Annual report provided adequate information on integration including: a) Commitments and actions on the SDGs. b) Description of embedding the SDGs into strategy, business model, priorities, and programmes.	The interview/ Annual report provided in-depth and clear information on integration including: a) Commitments and actions on SDGs from top management. b) Description of embedding the SDGs into strategy, business model, priorities, and programmes.
5. Reporting on priority SDGs	The interview/ Annual report provided no information on the company's performance on the SDGs.	The interview/ Annual report provided insufficient information on: a) Performance on "short-term, medium-term, and long-term targets" with baselines. b) Balanced reporting on SDG performance.	The interview/ Annual report provided adequate information on: a) Performance on "short-term, medium-term, and long-term targets" with baselines. b) Balanced reporting on SDG performance.	The interview/ Annual report provided in-depth information on: a) Performance on "short-term, medium-term, and long-term targets" with baselines. b) Balanced reporting on SDG performance.

Table 4: Rating scale for corporate engagement with the SDGs (adapted from: Daub, 2007, p83)

Rating	Scoring	Description
Poor	**0**	No information was presented for the corresponding category.
Inadequate	**1**	Insufficient/limited information was presented against the category evaluated.
Good	**2**	Adequate presentation of information against the category evaluated.
Excellent	**3**	Comprehensive presentation of information against the category evaluated.

The summary of the extent of corporate engagement with the SDGs is outlined in Table 5 based on the sum of scores achieved on both the annual reports and interviews, respectively, for all five categories per mining company. Upon evaluation, the minimum score that could be assigned per category was 0, and the maximum score was 3. The total minimum score that could be assigned for all categories to each of the mining companies was 0, and the maximum score was 15. The study employed four levels of engagement with the SDGs, which correspond to the four ratings presented in Table 4. A numeric range has been assigned to each level of engagement by dividing the highest score that could be obtained by four. Therefore, a poor level of engagement is assigned when a company's overall score is within the range of 0–3.74; inadequate: 3.75–7.44; good: 7.5–11.24; and excellent: 11.25–15.

Table 5: Summary of the extent of corporate engagement with the SDGs

Levels of engagement with the SDGs	Numeric range
Poor	0- 3.74
Inadequate	3.75- 7.44
Good	7.5-11.24
Excellent	11.25-15

3.4 Validity and reliability

In qualitative research, trustworthiness is primarily concerned with the validity and reliability of the methods utilised for data collection and analysis. These are important indicators of the rigour of the methods of inquiry. Validity is focused on providing a true account of what was intended to be studied (Bengtsson, 2016). Reliability is about the repeatability of the study, with the expectation that replication of the study would yield the same results (Bryman, 2012; Bengtsson, 2016). To ascertain validity and reliability, the researcher meticulously collected primary data through the consistent use of the interview guide. Additionally, member checking was applied by sending transcripts to each respective participant to ensure that responses were captured correctly during the transcription process. In the case of the secondary data collected, the researcher only used annual reports for the year 2019 from the selected companies. Furthermore, the researcher consistently applied the criteria presented in Table 3 and Table 4 to reduce any potential bias during data analyses by triangulating data from both annual reports and interviews and thereby increasing the credibility of the results by corroborating the findings of the study.

3.5 Ethical considerations

An ethical clearance, Protocol number: HA2001 was attained from the University of Witwatersrand's Human (non-medical) Ethics Screening Committee to maintain ethical conduct. Interviews were conducted in a manner that follows ethical principles including honesty, integrity, competence, informed consent, confidentiality, vulnerability, and risk to prevent any harm because of the study to both the participants and their organisations of employment.

4 CHAPTER FOUR: RESULTS

The objective of this chapter is to present the findings of the study. Details of corporate engagement with the SDGs by the selected JSE listed mining companies are provided. This entails insight on 1. Understanding of the SDGs, 2. Defining priority SDGs, 3. Goal setting for priority SDGs, 4. Integration of priority SDGs, and 5. Reporting on priority SDGs. Finally, a summary of the extent of corporate engagement with the SDGs is presented.

4.1 Understanding of the SDGs

The first objective of this study was to determine the level of understanding of the SDGs by the selected JSE-listed mining companies. This was a build-up toward the goal of understanding the phenomenon of corporate engagement with the SDGs by the selected JSE-listed mining companies. The main indicators that were assessed on this objective for both annual reports and interviews included information on (a) comprehension of the SDGs, (b) the business case for the SDGs, and (c) the responsibilities and opportunities the SDGs present for the company.

The results of the study show that most of the selected mining companies have a good understanding of the SDGs, with four of ten mining companies (2, 3, 6, and 8) rated ‘excellent’ (see Figure 3). It must be noted that interviews provided further clarity on some of the above-mentioned indicators, particularly, the business case for engaging with the SDGs and the responsibilities and opportunities presented by the SDGs, which was lacking from the annual reports. As a result, the scores for interviews are slightly higher than those awarded for annual reports.

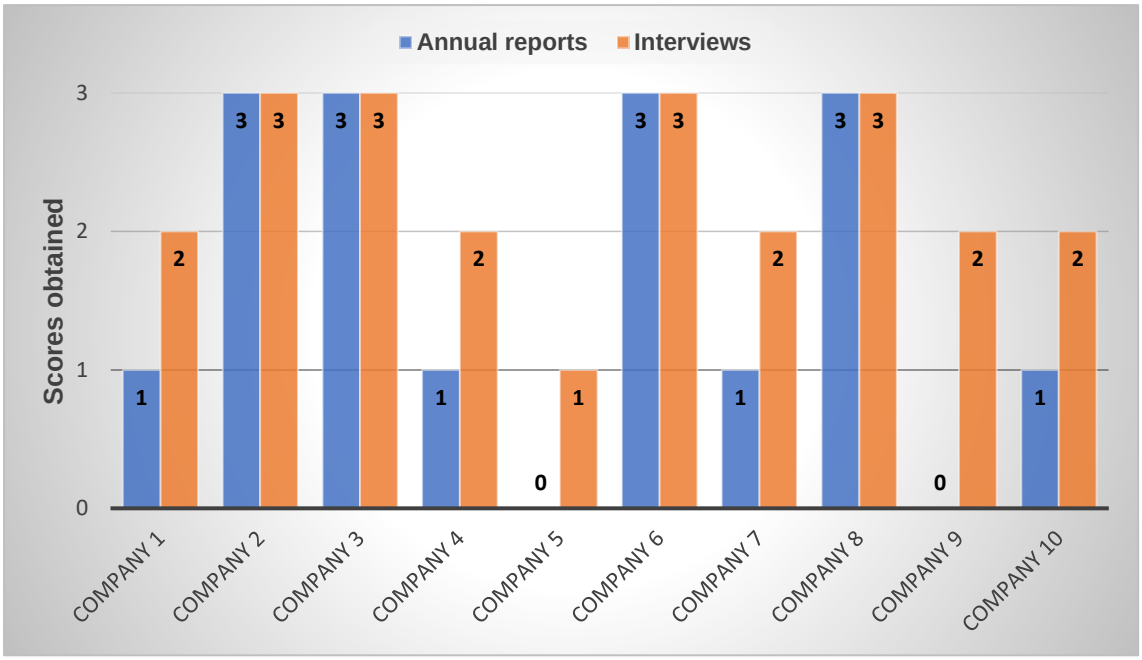


Figure 3: Understanding of the SDGs by selected JSE listed mining companies (2019)

An example of a company that was rated excellent for their understanding of the SDGs presented the following information:

Company 2 (interview):

> *"The SDGs are global priorities set by the United Nations as part of vision 2030 to end poverty, protect the environment and ensure prosperity for all. There is a business case for engaging with the SDGs. Businesses cannot succeed in communities that are failing. There is a symbiotic relationship between business success and community success. The challenges and priorities outlined by the SDGs are in line with what we are trying to achieve in terms of our social and environmental agenda. This is also in line with our goal of being a good corporate citizen and maintaining our social license to operate."*

Company 5 achieved a score of 0 for annual reports and 1 for interview. The annual reports for Company 5 did not present any information on the SDGs, hence the score of zero. Furthermore, the participant from Company 5 responded as follows on the question on their company's understanding of the SDGs:

"The SDGs are a set of global goals developed by the United Nations primarily for governments to implement and to develop strategies for contributing to global sustainable development."

This response suggests that Company 5 has an inadequate comprehension of the SDGs, as there was no acknowledgement of the role of the private sector, which, in addition to governments, the UN has also called on to act in addressing the SDGs. Furthermore, the participant did not provide any information on the business case for engaging with the SDGs, as well as the responsibilities and opportunities the SDGs presents, hence, the score given to Company 5 based on the interview was 1.

Company 9 provided a unique scenario as it was scored 0 and 2 for annual reports and interviews, respectively. The annual reports for Company 9 provided no information on understanding of the SDGs. However, the participant from Company 9 provided adequate information on their understanding of the SDGs, albeit at the initial phase of engaging with the SDGs. Therefore, no information has been communicated yet on their annual reports on the SDGs. The participant from Company 9 responded as follows:

"The SDGs are a set of 17 international goals with targets that were set by the United Nations with a purpose to create a better future for everyone. They have been specifically designed to promote prosperity in our communities, to uplift poverty-stricken communities whilst protecting the environment. We acknowledge that there is a broader business case. There are global challenges which include hunger, climate change and poverty. Building from the Millennium Development Goals, we see that there is a mindset shift towards a long-term sustainable planning, specifically climate change and getting big companies on board and holding them accountable for the work that they are doing, particularly mining companies. We know that there are limitations to the resources that we have. Coal will eventually runout. How do we leave a sustainable legacy is probably to most important question that we have to answer. Within our company, we have aligned the SDGs with our strategic intents/objectives."

4.2 Defining priority SDGs

The second objective of this study was to determine the extent of prioritisation of the SDGs by the selected JSE listed mining companies. The main indicators which were assessed for this objective included disclosure of information on (a) the SDGs which have been prioritised, and (b) the methodology employed in defining priority SDGs (including mapping of the value chain and the participation of internal and external stakeholders).

The results of the study show that most of the selected mining companies have set priority SDGs. Four of the ten mining companies (2, 3, 6, and 8) were rated 'excellent' (see Figure 4) as they presented in-depth and clear information on their priority SDGs, including an outline of the methodology employed in defining their priorities.

All four mining companies clearly indicated the SDGs which they have prioritised in their annual reports. According to these mining companies, mapping the SDGs along their value chains occurred between the years 2016 and 2018. Furthermore, all four mining companies indicated that their process of defining priority SDGs was linked to materiality analyses (assessments). This led to the identification of material issues aligned with the SDGs. Additionally, all four mining companies claim in their annual reports that their process of defining priority SDGs included rigorous or extensive stakeholder engagement, consisting of internal and external stakeholders.

Information gathered from interviews with participants from each of these four mining companies corroborated the findings from their annual reports. For example, the participant from Company 8 responded as follows:

> *"Our priority SDGs are divided into three categories, which include our main focus SDGs (3, 5, 8, 10, 12, 13, 17); SDGs we directly affect (1, 2, 4, 9 &11); and SDGs we indirectly affect (6, 7, 14 & 16). We have undergone an extensive process of mapping the SDGs to our value chain. This entailed identification of material issues in our value chain as part of the process for embedding the SDGs to our business strategy. Additionally, rigorous consultation with our internal and external stakeholders was undertaken to ensure that the process is inclusive."*

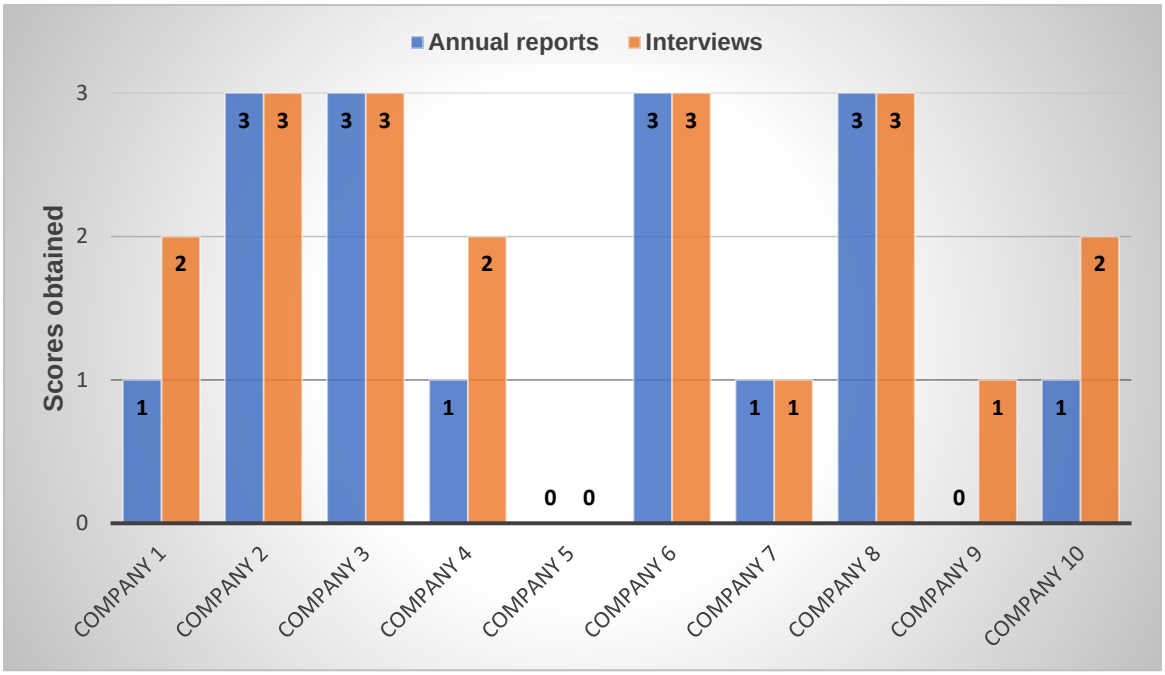


Figure 4: Defining priority SDGs by selected JSE mining companies (2019)

Of the remaining six mining companies, three mining companies (1, 4 and 10) were rated as 'good' for defining priority SDGs. This was due to the absence or lack of information on certain elements of the criteria for this category in their annual reports, which was only presented during interviews for all three mining companies. All three mining companies presented information on their priority SDGs in their annual reports, however, no information was presented on the methodology employed in defining their priority SDGs. Additionally, no information was presented on stakeholder engagement in deciding on priority SDGs. For example, the annual report for Company 1 states that they have committed to prioritise the following ten SDGs (3, 4, 5, 7, 8, 11, 12, 13, 15 and 16). Moreover, Company 1 conceded that more work will be done in the coming years to map and align the SDGs with their corporate strategy. Furthermore, Company 1 did not provide information on the methodology employed in defining priority SDGs in their annual reports. In the interview with the participant from Company 1, the following statement was made:

> *"We have 10 priority SDGs that we are currently focusing on, which are SDG (3, 4, 5, 7, 8, 11, 12, 13, 15 and 16). Our priority SDGs are primarily linked to our top risks and opportunities, which have been identified through internal and external stakeholder engagement."*

It was only in the interview that Company 1 presented further information on the prioritisation process of the SDGs.

Two mining companies (7 and 9) were rated 'inadequate' as they presented insufficient information on defining priority SDGs. Company 7 did not present clear information on prioritisation of the SDGs in the annual report. Company 7 only presented a table on all the SDGs with limited and, to a certain extent, generic information on how each of the 17 SDGs is linked to their business. No information was presented on the method applied to the assessment undertaken in the process of linking the SDGs impacts along their value chain. In the interview, this was elaborated on as follows:

> *"Our company aligns with all the SDGs. In terms of health, safety, communities, and natural resources, these also resonate with our material matters. Our strategy is based on material matters, impacts and our values. While our strategy did not originate from the SDGs, it is totally aligned with the SDGs and therefore, by implementing our strategy, we contribute to the SDGs."*

Company 9 did not present any information on their priority SDGs in the annual reports but only attached the icons of the SDGs next to the material issues on which they were reporting. No explanation was provided on how the SDGs link to their material issues. Furthermore, no information was presented about the type of assessment that was undertaken, and which stakeholders were involved. It was only in the interview that an attempt was made to provide clarity on their approach to the SDGs, however, the information presented was inadequate, with no clear declaration of priority SDGs. Furthermore, it was mentioned that Company 9 has conducted baseline studies on some of the SDGs with their key stakeholders and that they intend to contribute to all SDGs, however, their approach is not clear.

Company 5 is the only company which was rated 'poor', scoring zero on both annual reports and interview as no information was presented on defining priority SDGs. This was confirmed in the interview with a participant from Company 5, where it was clearly stated that Company 5 does not have priority SDGs and has not engaged with any stakeholders on participating in the SDGs.

Materiality analysis emerged as the methodology of choice, applied by most mining companies. Most mining companies indicated that this is based on GRI and Integrated Reporting frameworks, which they have followed in compiling their annual reports. The frequency of prioritisation of the 17 SDGs by the selected mining companies in 2019 is presented in Figure 5. SDG 3, “good health and wellbeing” emerged as the most prioritised goal, with seven of the ten mining companies including it in their priority SDGs.

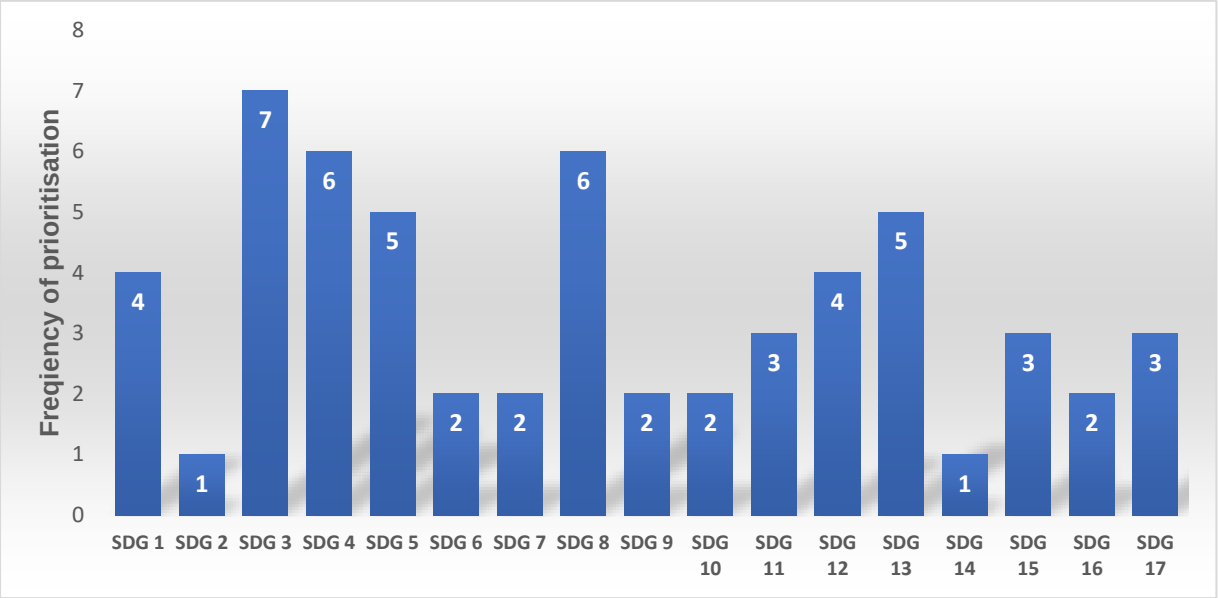


Figure 5: Prioritisation of the 17 SDGs by selected mining companies in 2019

SDG 4 “quality education” and SDG 8, “decent work and economic growth” emerged as the second most prioritised SDG with six of the ten mining companies including them in their priority SDGs. SDG 5 and SDG 13 were prioritised by five of the ten mining companies. These were followed by SDG 1 and SDG 12, prioritised by four of the ten mining companies, whilst SDG (2, 6, 7, 9, 10, 11, 14 15 and 16) were the least prioritised goals.

4.3 Goal setting for priority SDGs

The third objective of this study was to determine the extent of goal setting for priority SDGs by the selected JSE listed mining companies. The main indicators that were considered for this objective included information on (a) the scope of goals, including “short-term, medium-term, and long-term objectives." Additionally, alignment with the

SMART principle to ensure that objectives are “Specific, Measurable, Attainable, Realistic, and Time-bound” was considered, as well as (b) alignment of objectives with the UN targets.

The results of the study show that goal setting for the SDGs prioritised by the selected mining companies was inadequate for most companies (see Figure 6). None of the mining companies received an ‘excellent’ rating on goal setting. Only three of the ten mining companies were given a ‘good’ rating on goal setting. Most mining companies presented limited information on their scope of priority SDGs. This was due to sketchy information on their objectives. Additionally, most mining companies failed to align their priority SDGs with the SMART principles and the UN targets, which adversely affected their efforts in setting KPIs.

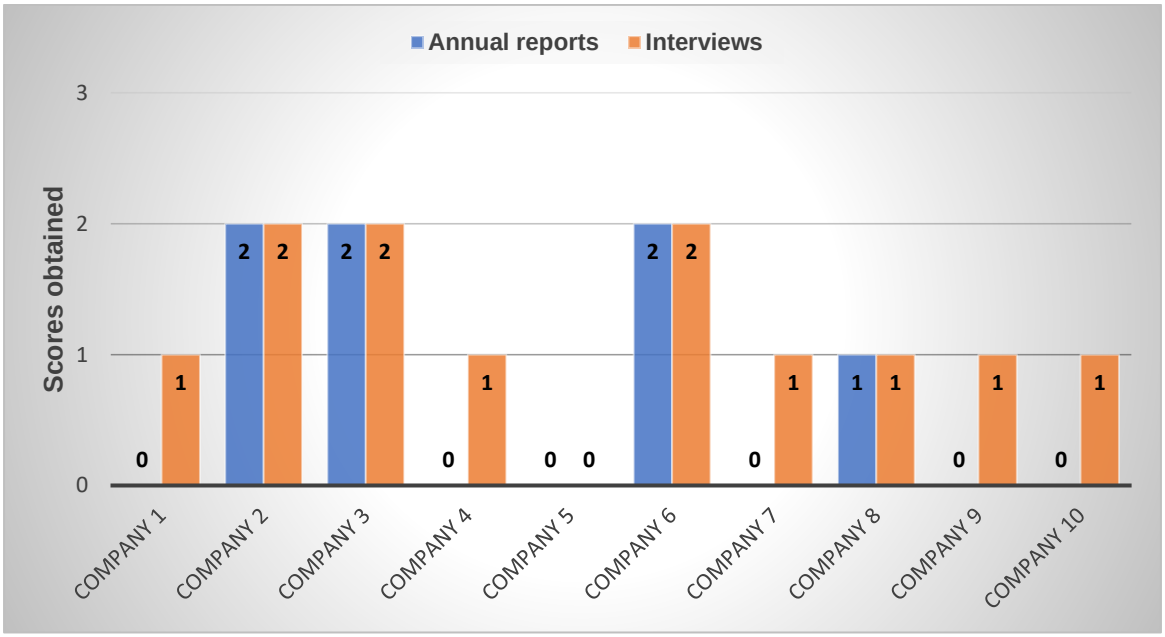


Figure 6: Goal setting for priority SDGs by selected JSE listed mining companies (2019)

Three mining companies (2, 3, and 6) presented adequate information on their goal setting, which resulted in a ‘good’ rating. All three mining companies had clearly defined priority SDGs, albeit with shortcomings on alignment with the SMART principle and ensuring that all priority SDGs have clearly communicated objectives. Moreover, some of their objectives were not aligned with the UN targets.

Additionally, the determination of baselines for some goals was in progress. Findings from Company 3 are presented below as an example of one of the three mining companies rated ‘good’.

Company 3 presented an adequately defined scope of goals and targets in their annual report which are aligned to the United Nations SDGs targets. Furthermore, Company 3 had clear objectives for the SDGs for most of their priority SDGs. According to their 2019 annual reports, Company 3 has advanced to define most of the baselines and KPIs for measuring performance on most of their priority SDGs in line with the SMART Principle. The participant from Company 3 gave the following response on goal setting:

> *“We have set clear targets for the SDGs in line with our Sustainability Plan, which are to a certain degree aligned to the UN Targets, however, they are not the UN Targets. These targets are continuously revised and developed to determine what is feasible. Each mine (site) is required to develop a five-year implementation plan in line with the business unit and local priorities. Each site can adjust the targets as set on the Sustainability Plan to local context in terms of environmental and socio-economic aspects. Some of the goals have a clearly defined baseline, whilst the determination of the baseline for some goals in is in the advanced stage.”*

The response of the participant from Company 3 is consistent with the information presented in their annual reports. Therefore, the overall goal setting for Company 3 in line with the SDGs was rated ‘good’, as there is still room for improvement on finalisation of baselines for measuring performance on priority SDGs. The rest of the mining companies (7 of 10) presented poor or insufficient information on goal setting regarding priority SDGs in their annual reports, leading to a rating of ‘inadequate’ in consideration of information from interviews, without which they would have been rated ‘poor’. This emanated from insufficient information on their scope of goals on their objectives. Furthermore, most of these companies failed to present information on their baselines, with little alignment to the UN targets and the SMART principle. For example, when asked about goal setting, a participant from Company 1 gave the following reply:

"Our goals and targets are currently focused on our material issues. Linking our goals to the SDG targets is still work in progress. We have, however, set certain targets and KPIs that are associated with the SDGs, which form part of our Annual Integrated Report and our Annual Environmental, Social and Governance Report."

4.4 Integration of priority SDGs

The fourth objective of this study was to determine the level of integration of the SDGs into strategy and business models of the selected JSE-listed mining companies. In assessing this objective, attention was paid to the disclosure of information regarding (a) commitments and actions on the SDGs from top management, and (b) the description of embedding the SDGs into the strategy, business model, priorities, and programmes of the selected mining companies.

Only two of the ten selected mining companies (3 and 6) were rated 'excellent' (Figure 7), as they presented information demonstrating considerable progress on the integration of the SDGs into their strategy and business model. For example, in assessing Company 6 annual report, the following information emerged: The CEO and the Chairperson of the Board of Company 6 endorsed the SDGs in a manner that demonstrated commitment toward the attainment of the SDGs. According to the Chairperson of the Board for Company 6, they have made considerable progress in integrating the SDGs into their business model, including setting KPIs for each of the SDGs prioritised as their main focus area. In terms of their annual report, from 2016 to 2019, Company 6 embarked on revising its approach to sustainability, including its policy statement, by embedding sustainability at the core of their strategy. This culminated in the alignment of their strategy with the SDGs, including developing a system for tracking and monitoring the performance of their material issues, including the SDGs. Furthermore, Company 6 is involved in several initiatives and programmes, which are aligned with the SDGs in their host communities. Similarly, the interview with the participant from Company 6 confirmed the findings from their annual report.

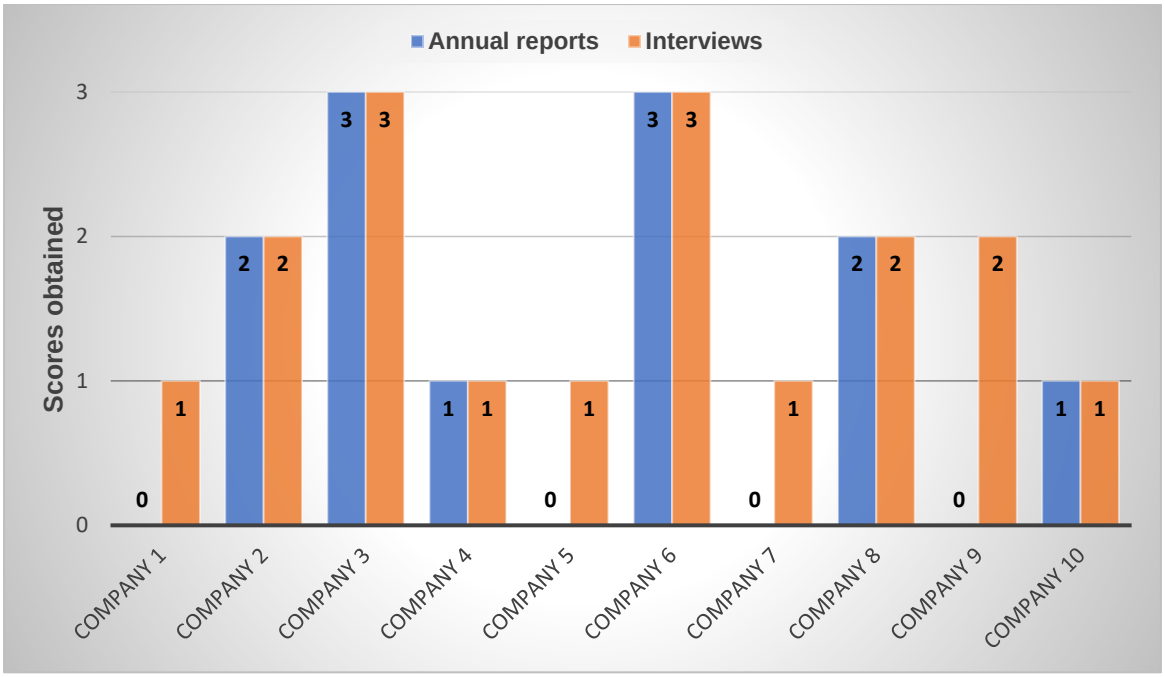


Figure 7: Integration of priority SDGs by selected JSE listed mining companies (2019)

Moreover, two mining companies (2 and 8) were rated ‘good’, excluding company 9, which scored zero on annual reports and two on the interview. Company 9 during the interview presented information which suggests that they have been involved in carrying out work that could be rated as good towards advancing the SDGs, however, that information was not included in their annual reports, which created a discrepancy. Additionally, there was no communication by both the Chairman of the Board and the CEO of Company 9 that endorsed or committed Company 9 to taking any action on advancing the SDGs. Consequently, Company 9 is ruled out from a 'good' rating to an ‘inadequate’ rating. Effectively, six of the ten selected mining companies (1, 4, 5, 7, 9, and 10) were rated ‘inadequate’, due to insufficient information on their efforts in integrating the SDGs into their strategy and business model. A key finding in these companies is the lack of information on commitment to advance the SDGs from top management (Chairman of the Board and the CEO). Furthermore, there is a lack of clarity on the integration of the SDGs as part of the strategy or business model of these mining companies.

4.5 Reporting on priority SDGs

The fifth objective of this study was to determine the extent of reporting on the SDGs by the selected JSE listed mining companies. The main indicators considered for this objective included disclosure of performance on (a) “short-term, medium-term, and long-term targets” with baselines and (b) balanced reporting on reporting performance on the SDGs. Reporting performance on the SDGs in line with the above criteria proved challenging for most mining companies. None of the ten selected mining companies were rated ‘excellent' for reporting on the SDGs. This was due to shortcomings on providing clear information on performance regarding objectives for accomplishment of the SDGs by the year 2030. Only three of the ten mining companies (2, 3 and 6) were rated ‘good’ for reporting on the SDGs (see Figure 8).

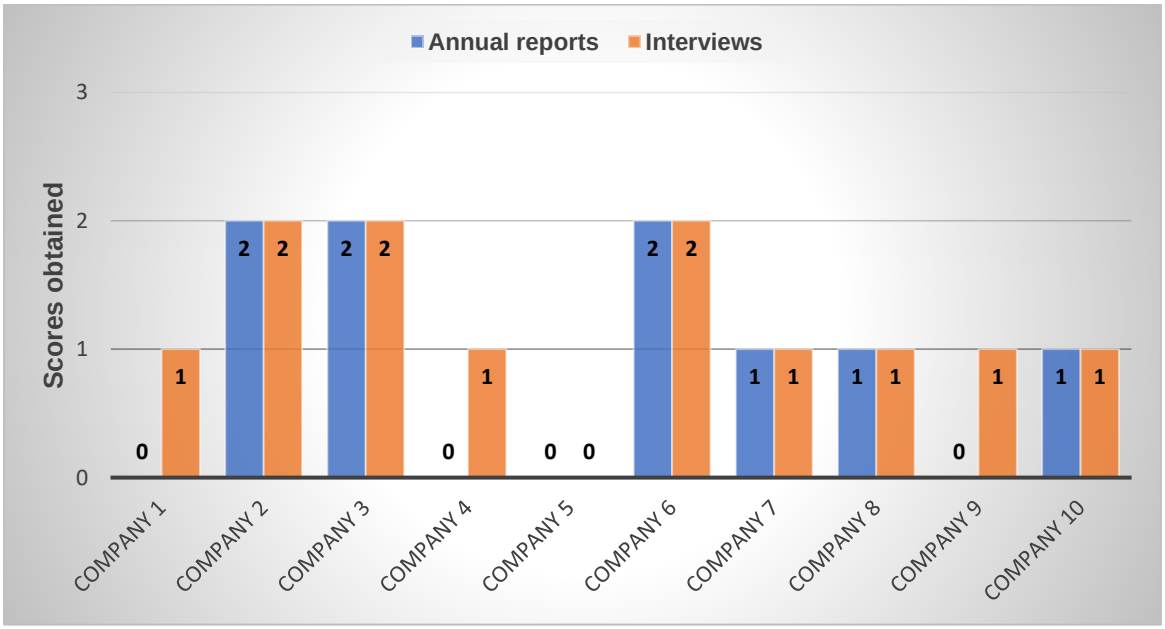


Figure 8: Reporting on priority SDGs by selected JSE listed mining companies (2019)

Company 3 incorporated reporting on the SDGs into their annual sustainability reporting. This included reporting on a wide range of programmes to measure performance on their sustainability objectives. This company managed to report performance on most of their objectives, with a few shortcomings on baselines in some of the goals. According to their 2019 report, Company 3 launched a global series of accountability dialogues in 2018, which provided a platform for reporting progress on the SDGs to a wide range of stakeholders. This approach by Company 3 to reporting their performance on the SDGs is progressive and demonstrates accountability and

commitment to the SDGs. Company 3 incorporated reporting on the SDGs into their annual sustainability reporting. This included reporting on a wide range of programmes to measure performance on their sustainability objectives. This company managed to report performance on most of their objectives, with a few shortcomings on baselines in some of the goals.

In terms of balanced reporting between positive and negative impacts on the SDG performance, Company 3 tried to strike a balance in reporting on their performance, however, there is still room for improvement to report transparently in some of the areas where they did not perform well on the SDGs. In their interview, they stated:

> *"We have begun reporting on the SDGs. However, we are still at the early stages of implementation of our Sustainability Plan. Therefore, we have only managed to provide high level reporting on annual report, which will improve and expand as more data is collected in line with our SDGs. We are also accounting publicly through hosting accountability dialogues for our external stakeholders."*

The rest of the mining companies (7 of 10) presented insufficient information when reporting on the SDGs, including Company 5, which presented no information on the SDGs. The reporting of these mining companies was focused on reporting on traditional sustainability issues in terms of the GRI and <IR> Framework. Moreover, reporting was focused on traditional material issues with no alignment with the SDGs.

The annual reports of Company 1 only listed the ten SDGs that they had committed to prioritise. According to their annual reports, they had not yet done any work to map and align the SDGs with their strategy. Therefore, there were no disclosures on the SDGs. Similarly, Company 9 presented no information on their annual reports, but gave the following response on reporting on the SDGs:

> *"We have a centralised reporting system. Not all the work that we do on SDGs at local business unit level gets reported on the annual sustainability report as we are a multinational company."*

4.6 Summary of the extent of corporate engagement with the SDGs

The five objectives of the study provide information on the extent of corporate engagement with the SDGs in accordance with the SDG Compass (GRI et al., 2015). The aggregate scores for each respective mining company on the five categories assessed are presented in figure 9 for both the annual reports and interviews, respectively. In terms of the criteria established for assessing the extent of corporate engagement with the SDGs, 'poor' is attributed to a score of 0–3.74; 'inadequate' 3.75–7.44; 'good' 7.5–11.24; and 'excellent' 11.25–15.

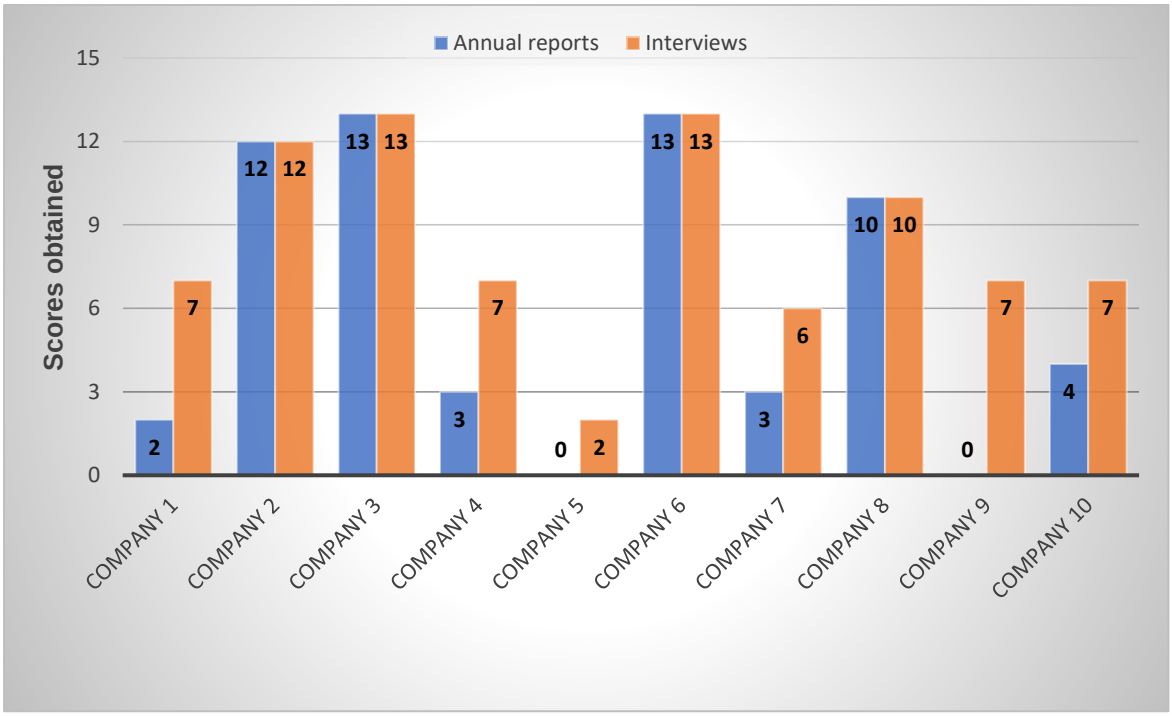


Figure 9: Summary of engagement with the SDGs by selected JSE-listed mining companies (2019)

According to figure 9, only three of the ten selected mining companies (2, 3, and 6) were rated as 'excellent', while only company 8 was rated 'good' for the extent of engagement with the SDGs. The rest of the mining companies did not demonstrate effective engagement with the SDGs. Company 5 was the worst performing company, with a 'poor' rating. Company 9, on the other hand scored zero on annual reports while scoring 7 on interviews, which raises a concern regarding its communication regarding engagement with the SDGs in their annual reports. The overall performance suggests that four of the ten mining companies are effectively engaging with the SDGs, which are companies 2, 3, 6, and 8.

5 CHAPTER FIVE: DISCUSSION

The purpose of this chapter is to discuss the findings of this study in line with the five research objectives outlined in Chapter 1 associated with the SDG Compass, which were used as the theoretical framework for this study. Furthermore, this chapter will provide conclusions in line with the study aim, which was to "examine the extent of corporate engagement with the SDGs by selected JSE listed mining companies in advancing the 2030 Agenda for Sustainable Development."

5.1 Understanding of the SDGs

Most of the mining companies were able to present adequate information, which suggests good comprehension of the SDGs. This finding is consistent with several studies on corporate engagement with the SDGs, including Izzo et al. (2020), who found that the understanding of the SDGs by Italian listed companies was high. However, without consideration of interviews conducted in this study, only four of the ten mining companies presented information on their annual reports in a manner that earned them an 'excellent' rating. Information gathered from interviews provided further clarity on the business case for engaging with the SDGs, as well as the responsibilities and opportunities the SDGs present to mining companies, which was lacking from the annual reports of some of the mining companies. In line with the above, a participant from Company 2 shared the following interesting view when elaborating on the business case for the SDGs:

> *"Businesses cannot succeed in communities that are failing. There is a symbiotic relationship between business success and community success."*

This demonstrates deeper consideration of the need for mining companies to embrace and advance the SDGs, with an understanding that mining companies cannot be regarded as successful if they only derive economic success in their host communities while destroying the other two other pillars of sustainable development (environment and social). Consideration of both information from annual reports and interviews improved the overall rating on the level of understanding of the SDGs for the selected mining companies. Therefore, more effort is required to ensure that mining companies communicate better in their annual reports in a manner that demonstrates a comprehensive understanding of the SDGs.

5.2 Defining priority SDGs

The SDG Compass recommends that companies should map their full value chain in consultation with internal and external stakeholders to identify significant current and potential negative, and positive impacts the company has on the SDGs. (GRI et al., 2015). Importantly, this helps companies to identify which of the SDGs they can address, considering the significant risks and opportunities associated with those SDGs. The results of the study show that most of the mining companies have defined their priority SDGs following a materiality assessment, without conducting a mapping of their value chain. Furthermore, most mining companies used rhetorical statements such as, “we consulted our internal and external stakeholders in the process of selecting SDGs which are linked to our material issues.” Bebbington and Unerman (2018) contend that, while there is a perceived increase in the uptake of the SDGs in the private sector, there is a potential risk that some companies may be concealing their business-as-usual practices by using SDG aligned rhetoric. Moreover, a study by CCSI and RMF (2020) found that most mining companies took advantage of traditional sustainability issues by defining their priority SDGs through retrofitting them into previously conducted materiality analyses, leading to shallow engagement with the SDGs. A possible reason for this pattern in this study is that most mining companies compiled their annual reports in accordance with the GRI and frameworks, which are geared toward materiality analyses in prioritising sustainability issues. Nonetheless, this does not exonerate any company from undertaking a comprehensive mapping of their value chain in defining priority SDGs.

The utilisation of materiality analysis without taking an outside-in approach can adversely affect progress on achieving the SDGs by 2030 (Moratis and Melisse, 2019, Beyne, 2020). According to Moratis and Melissen (2019), the SDGs reveal a fundamental flaw of dominant sustainability approaches such as materiality analysis in prioritising sustainability issues, as materiality analysis is mainly geared towards selecting the SDG challenges which have a significant impact on a company by focusing on an inside-out approach, whilst leaving behind those deemed ‘immaterial’. Consequently, this breeds the practice of ‘SDG cherry-picking’. Although the UN resolution on the SDGs emphasises that they are interlinked, it has emerged in practice that most companies are prioritising goals which are considered to have an

impact on creating value for their shareholders and those that they have control and influence over, instead of implementing all the SDGs (van Zanten and van Tulder, 2018; Moratis and Melissen, 2019). Moreover, this could be due to consideration of the company's ability to deploy the necessary resources to measure and monitor progress on the SDGs. In contrast, Kaffashi and Grayson (2022) argue that most companies only prioritise the SDGs which fall in their comfort zone.

It was found that SDG 3 "good health and wellbeing" was the most prioritised goal, considered by seven of the ten mining companies as a priority SDG. According to participants from companies which prioritised this SDG, they have prioritised SDG 3 to also conform with the industry standard 'zero harm'. Moreover, any serious injuries or fatalities due to mining operations could lead to significant legal implications, as well as financial and reputational damage, which could further affect their 'social license to operate' in host communities (Fraser 2019; Frederiksen and Banks, 2023). This finding is aligned with the outcomes of a study by Haywood and Boihang (2021), which is not surprising because health and safety issues receive more scrutiny in the mining sector.

SDG 4 "quality education" and SDG 8 "decent work and economic growth" emerged as the second most prioritized SDGs, with six of the ten companies listing them under their priority SDGs. According to participants from mining companies that prioritised SDG 8, there is a consensus appreciation of the need for mining companies to create employment as well as stimulate economic growth in their host communities, which has resulted in the prioritisation of this goal. This view is also supported by several scholars, including Deveci et al. (2022). On the other hand, it has emerged from the interviews with participants from these mining companies that one of the key reasons for prioritisation of SDG 4 is because most of their mining operations are in rural communities where access to quality education is a serious challenge. The remaining four mining companies did not pronounce SDGs 4 and 8 as priorities; however, it was found that some have indirectly contributed to these SDGs through their Corporate Social Responsibility/Investment (CSR/I) programmes. Some scholars argue that both SDG 4 and SDG 8 address key issues which have long been in the domain of key non-financial sustainability issues reported by companies (Silva, 2021). This makes it easier for mining companies to retrofit them to previously conducted materiality

analyses (CCSI and RMF, 2020). Furthermore, this perpetuates the practice of SDG cherry-picking (Heras-Saizarbitoria et al., 2021).

SDG 13 (climate action) was listed as a priority by five of the ten selected mining companies. It was expected that most mining companies would prioritise SDG 13 and outline decisive measures to deal with climate change impacts resulting from unprecedented anthropogenic release of greenhouse gas emissions. Concomitantly, this would see most mining companies deploy climate change mitigation and adaptation measures to transition to sustainable mining. As more stakeholders, including investors, are beginning to demand more disclosures on climate change, it was expected that SDG 13 would feature among the top prioritised SDGs to enable stakeholders to make informed decisions (van der Waal and Thijssens, 2020) on the performance of mining companies with regards to addressing climate change.

SDG 12, which calls for "sustainable consumption and production patterns", has been prioritised by only four of the ten selected mining companies. Mining companies which seek to fully embrace SDG 12 would require a fundamental change from dominant business-as-usual models to sustainable business practices (Manes-Rossi and Nicolo', 2022). Furthermore, this would require decoupling economic growth from overexploitation of natural resources to sustainable and efficient business models such as the circular economy. Kaffashi and Grayson (2022) argue that this kind of change is likely to require substantial capital investment, which is the antithesis of profit maximisation under a business-as-usual scenario. Another possible reason for the non-prioritisation of SDG 12 could be a lack of policies aligned with this SDG (Kaffashi and Grayson, 2022).

SDGs 2, 6, 7, 9, 10, 14, and 16 emerged as the least prioritised goals. These goals fall within the category of SDGs called 'orphan/ immaterial SDGs' as they are not getting enough attention (Kaffashi and Grayson, 2022), and are likely not to be achieved by 2030. An emerging argument for why these goals are usually not prioritised, as stated by most companies, is that their achievement depends on collaboration and factors which are outside their control (van Zanten and van Tulder, 2018; Kaffashi and Grayson, 2022).

It comes as a surprise that only two of the ten JSE listed mining companies have prioritised SDG 6 i.e., “ensure availability and sustainable management of water and sanitation for all”. This is because most mining activities impact water quality and quantity (CCSI and RMF, 2020; Frederiksen and Banks, 2023). Furthermore, South Africa is classified as a water scarce country, and therefore, concerted efforts are required from all sectors of the economy that are water intensive, to transition toward sustainable water use (Broadhurst, 2019).

5.3 Goal setting for priority SDGs

The findings of the study show that only three of the ten mining companies presented adequate information on goal setting. This implies that there is still a long way to go towards effective engagement with the SDGs by the selected mining companies. Most mining companies failed to define appropriate baselines and objectives (short, medium, and long term) for their prioritised SDGs, with inadequate KPIs. These findings are consistent with those of Haywood and Boihang (2021), who found that most companies in the top 100 JSE-listed companies have not set targets to contribute to the SDGs in the 2016/2017 and 2017/2018 financial years. Similarly, a study by Izzo et al. (2020) found that most Italian listed companies in 2018 did not have clear KPIs associated with the SDGs which they reported on. Therefore, goal setting was not aligned with the SMART principle. Without effective goal setting, it is most likely that mining companies will continue with business-as-usual and miss out on the transformational agenda of the SDGs.

5.4 Integration of priority SDGs

The findings of the study revealed that six of the ten selected mining companies have not effectively integrated the SDGs into the core of their strategy. This emanated from insufficient information in communicating what has been done to integrate the SDGs into strategy, business models, programmes, and initiatives. This finding is in line with findings by CCSI and RMF (2020), which found that most mining companies did not provide substantive information on the integration of the SDGs. This is not surprising, considering that seven of the ten selected mining companies failed to set SMART objectives for their priority SDGs. Blasco et al. (2018) argue that setting SMART goals allows companies to progressively engage with the SDGs. The findings of this study

align with those of Izzo et al. (2020), who found that Italian listed companies provided limited information on the integration of SDGs into corporate strategies. Similarly, a study by Haywood and Boihang (2021) found that only a few companies in the top 100 JSE-listed companies have made considerable progress in integrating the SDGs into their strategy and business models.

For most of the mining companies that failed to demonstrate effective integration of the SDGs, it was noted that there was no communication on endorsement of or commitment to the SDGs in the segment dedicated to top management (Chairperson of the Board and the CEO) in the annual reports. Blasco et al. (2018) and Manes-Rossi and Nicolo' (2022) argue that the inclusion of clear commitments to contribute to the SDGs in the Chair and CEO segments of corporate communication provides a positive signal to stakeholders that top management is on board with advancing the 2030 Agenda. Without top management support, it would be arduous for mining companies to engage meaningfully with the SDGs. Top management must provide leadership and set the tone to influence organisational culture and strategy implementation in line with the SDGs (Rashed and Shah, 2021; Manes-Rossi and Nicolo', 2022).

Reasons for the pattern of limited information on the integration of the SDGs could be due to the infancy of the phenomenon of SDG integration, as this study is part of research related to early disclosures (Izzo et al., 2020; van der Waal and Thijssens, 2020). On the other hand, it must be appreciated that effective integration of the SDGs requires a fundamental change from short-term value creation for shareholders to embracing long-term value creation for all key stakeholders (Pedersen, 2018). Additionally, commitment and action on the SDGs would require high capital investment for the transition to sustainable business practices, such as energy and water efficiency and innovation through research and development (CISL, 2017). However, in the long run, this could lead to high returns on investment. This could be one of the reasons that are deterring mining companies from making public commitments to the SDGs, due to the financial implications associated with some of the transitions to sustainable practices (CISL, 2017). Furthermore, there could be increased public scrutiny to hold mining companies accountable for their commitments.

5.5 Reporting on the SDGs

Reporting on the SDGs provides mining companies with an opportunity to publicly communicate their progress/performance regarding their commitments and actions in contributing to the attainment of the SDGs. Concomitantly, the SDGs have introduced a framework with a common language that could be operative for mining companies to advance the 2030 Agenda (GRI et al., 2015; CCSI et al., 2016; CISL, 2017). This would promote transparency and accountability to all key stakeholders, which could be a catalyst for mining companies to advance responsible and sustainable mining practices (CCSI and RMF, 2020). When done correctly, it could be likened to an opportunity for an organisation to present itself before a mirror. This would result in a report depicting a true reflection of where the organisation is with regards to progress on goals, targets, commitments, and actions towards achieving the SDGs by 2030.

Effective reporting on the SDGs has proven to be challenging for most of the selected mining companies, with only three of the ten mining companies being rated ‘good’. This implies that most of the selected mining companies have failed to communicate their performance in a manner that discloses clear progress on contributing to the SDGs. Most companies grappled with communicating their progress on ‘short-term, medium-term, and long-term’ performance toward the achievement of the SDGs. This is linked to the failure to set SMART goals by most of the mining companies in this study.

Some mining companies, which were rated ‘inadequate’ on their disclosures on the SDGs, only attached the symbol for a particular goal in their annual reports without discussing how that SDG relates to the section where it has been inserted. In addition, there were some instances of reporting that was biased towards positive impacts while neglecting negative impacts. These practices perpetuate the phenomenon of SDG-washing, as no context is provided for those SDGs (Beyne, 2020; Heras-Saizarbitoria et al., 2021). Furthermore, by mere juxtaposing SDG logos along aspects deemed material when reporting, mining companies create the impression that they are doing something to address the SDGs to enhance their reputation (CCSI and RMF, 2020; Manes-Rossi and Nicolo’, 2022). This practice represents a ‘cosmetic’ or symbolic engagement with the SDGs to appease stakeholders with an interest in the SDGs

(CCSI and RMF, 2020; Manes-Rossi and Nicolo', 2022). Consequently, this breeds the phenomenon of SDG-washing, which means that stakeholders with an interest in how mining companies are advancing the SDGs cannot rely on their SDG disclosures for decision making (van der Waal and Thijssens; 2020).

5.6 Conclusions

This study found that most mining companies have a good understanding of the SDGs. Understanding of the SDGs is the most important step toward meaningful engagement with the SDGs. It must be noted that mining companies that have eloquently communicated their understanding of the SDGs by analysing the business case for engaging with the SDGs; taking into consideration an outside-in approach; taking into consideration the responsibilities and opportunities presented by the SDGs, were able to demonstrate substantial progress on engaging with the SDGs.

In terms of defining priority SDGs, the study found that most mining companies were able to define their priority SDGs. Whilst in theory, it was envisaged that mining companies would adopt all 17 SDGs, regarding them as interlinked, by mapping their entire value chain to enable effective integration and implementation. However, the findings of this study revealed that the selected mining companies chose to prioritise only a few SDGs. Therefore, in this regard, most mining companies applied the materiality analysis approach, without mapping their full value chains. Consequently, the findings strongly suggest that most mining companies retrofitted the SDGs into their existing sustainability projects and programmes based on previously conducted materiality analyses, without taking sufficient time to engage with their internal and external stakeholders in mapping their value chains and determining impacts. SDG 3 emerged as the most prioritised SDG followed by SDGs 4 and 8, with SDG 13 prioritised by only five of the ten mining companies. SDGs 2, 6, 7, 9, 10, 14, and 16 were the least prioritised goals, and would therefore, receive insignificant contribution from the selected mining companies by 2030. Concerning the prioritised SDGs, most mining companies failed to set SMART objectives, which adversely influenced their level of integration and reporting on the SDGs. In this regard, most mining companies made inadequate disclosures about their contribution toward the achievement of the SDGs. This poses a serious risk for most mining companies to

resort to SDG-washing, which would render their annual reports useless for their stakeholders. The overall performance on the extent of corporate engagement with the SDGs by the selected mining companies revealed that only four of the ten mining companies have made considerable progress on the integration of the SDGs into the core of their strategy and business models, including reporting on the SDGs. Lastly, the findings of this study strongly suggest that top management involvement was inadequate for mining companies that did not perform well. This is because top management sets the tone and direction of the organisation in terms of integration and implementation of SDG-related priorities across all company operations.

5.7 Limitations to the study

The declaration of a lockdown in March 2020 in South Africa because of the Covid-19 pandemic prolonged the study due to certain adjustments which had to be made. Interviews which were scheduled long in advance to take place in-person had to be rescheduled for later dates and moved to virtual platforms. Moreover, this kind of change added another complication in terms of approval, as some companies introduced stringent policies on virtual meetings, including bureaucratic processes for approval to protect their image, which delayed the conducting of interviews and consequently the transcription of data.

The study was limited to a sample of 10 mining companies within the Top 100 JSE-listed firms by the end of 2019, therefore mining companies outside the 100 JSE-listed companies were excluded. Qualitative research as applied in this study involved the active participation of the researcher in the process of data gathering and analysis, which provided the researcher with an opportunity to thoroughly engage with participants and the documents under study. However, this is time consuming and labor-intensive, which added to the delay in completion. Due to the inherent subjective nature of qualitative research, the credibility of the results is often questioned, including the generalisability of the results. However, to reduce any potential bias during data analysis, triangulation was applied to data derived from both annual reports and interviews to corroborate findings. The findings of the study provide a static snapshot of corporate engagement with the SDGs by the selected mining companies in 2019 and, therefore, should not be perceived as the general practice of all the JSE

listed mining companies. Finally, the research approach used in this study is more suitable for a small sample size. For a larger sample size with large documents, it is recommended that an automated software should be used for content analysis.

5.8 Recommendations for further studies

It would be valuable to conduct a follow-up study in the near future to determine whether any improvement occurred in the level of engagement with the SDGs by the selected JSE listed mining companies. This would be instructive to get a clearer picture of the extent of corporate engagement with the SDGs by JSE-listed mining companies.

Whilst the prominent dimensions of sustainable development are environment, society, and economy, it would be beneficial to conduct research on the governance aspect, which is essential in setting the tone on commitment to engage with the SDGs from top management. This could also explore changing the approach of prioritization of SDGs from mere materiality analyses to comprehensive mapping of the value chain in consultation with key internal and external stakeholders. This is because it was noted that the majority of mining companies in the study opted for only materiality analyses on the prioritization of the SDGs without mapping their value chains.

It is further recommended that an in-depth study be undertaken on the barrier/challenges associated with goal setting, and the integration of the SDGs in the private sector. Additionally, it is recommended that research be undertaken to get more information on the quality of reporting on the SDGs by looking into the qualitative and quantitative aspects of the information disclosed. Information on baseline, goals, targets, and KPIs needs to be critically assessed. Lastly, it would be important to investigate the issue of time orientation. This is important to understand progress from past performance as well as commitments (both qualitative and quantitative) for future performance.

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ANNEXURE 1: Ethical clearance certificate

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

SCHOOL OF ANIMAL, PLANT AND ENVIRONMENTAL SCIENCES ETHICS COMMITTEE
CONSTITUTED UNDER THE UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)

CLEARANCE CERTIFICATE **PROTOCOL NUMBER: HA2001**

PROJECT TITLE	Assessing the strategy and performance of selected JSE listed mining companies on their contribution to the United Nations Sustainable Development Goals
INVESTIGATOR	Mr Dumisani Gift Hlongwane
SCHOOL/DEPARTMENT OF INVESTIGATOR	Animal, Plant and Environmental Sciences
DATE CONSIDERED	13 March 2020
DECISION OF THE COMMITTEE	Approved unconditionally
RISK LEVEL	MINIMAL RISK
EXPIRY DATE	Date of submission of the project Research Report

ISSUE DATE OF CERTIFICATE 11 August 2020 **CHAIRPERSON** _____
(Dr Shalini Dukhan)

cc: Supervisor: Dr Ute Schwaibold

DECLARATION OF INVESTIGATOR

To be completed in duplicate and **ONE COPY** returned to the Chairperson of the School/Department ethics committee.

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

_____ 17 / 08 / 2020
Signature **Date**

PLEASE QUOTE THE PROTOCOL NUMBER ON ALL ENQUIRIES