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DEPARTMENT ENVIRONMENTAL SCIENCE

**KNOWLEDGE ATTITUDE PRACTICES (KAP) ON ENVIRONMENTAL SOCIAL
GOVERNANCE (ESG) IN MINING INDUSTRY, A CASE STUDY OF FREDA
REBECCA GOLD MINE ZIMBABWE.**



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**A Dissertation Submitted in Partial fulfilment of the Requirements of the Bachelor of
Science Honours in Safety Health and Environmental Management Degree.**

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Declaration

I **SANDE FRANCIS (B220369B)**, do hereby declare that this dissertation titled, “Knowledge Attitude Practices (KAP) on Environmental Social Governance (ESG) in mining industry, A case study of Freda Rebecca Gold mine Zimbabwe,” is my original work and all sources cited are listed in a comprehensive list of references. This dissertation has not been submitted to any other university or used to obtain any other qualification.

Signature of student

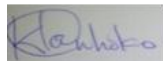


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This dissertation is suitable for submission to the faculty and has been checked for conformity with faculty guidelines.

Signature of supervisor



Date : 11/09/2025

Signature of faculty chairperson



Date...../...../



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Dedication

This research project is dedicated to my late parents, Mrs Elizabeth Kwiramombe Sande and Mr Israel Sande, my butterfly Rumbidzai Mutuma Sande and the Sande family. To my colleagues at Freda Rebecca Gold Mine, thank you for the support you gave me during the course of my research project.

Abstract

The mining sector is a cornerstone of Zimbabwe's economy, contributing significantly to national GDP and exports. However, mining operations are associated with considerable environmental, governance and social challenges, including habitat destruction, pollution, and community displacement. In response, Environmental, Social, and Governance (ESG) principles have gained prominence, emphasizing the need for sustainable and ethical mining practices. Understanding the knowledge, attitudes, and practices (KAP) of mining stakeholders regarding ESG is critical for effective implementation and compliance. This study aimed to assess the level of knowledge, attitudes, and practices of ESG among employees at Freda Rebecca Gold Mine in Zimbabwe. The level of knowledge was generally high with an average score of 4.5 with the knowledge skewed towards environmental and social aspect with limited knowledge of governance. Job role influenced knowledge of ESG principles with managerial and technical staff demonstrating higher ESG familiarity and more positive attitudes toward sustainability initiatives compared to operational workers. Educational level had an influence on ESG knowledge and attitudes with higher educated workers showing higher levels of knowledge and more positive. Key barriers included insufficient training, limited resources, and inadequate integration of ESG into daily operations.

Keywords: *Environmental Social Governance (ESG), Knowledge Attitude Practices (KAP), Mining Industry, Sustainability.*

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List of acronyms

ESG – Environmental Social Governance

KAP – Knowledge Attitudes Practices

CHAPTER 1: INTRODUCTION

1.1 Background of the study

Mining industry is one of the most economically significant industry in the world which drive the world economies, energy and technologies. Mining sector is a large industry that contribute almost 10 % of the world's Gross Domestic Product (GDP) with the most important mineral being the platinum group minerals (Abel et al., 2021). Mineral products are important in the various industries including construction, energy, renewable energy, agriculture, trade and military industries (Campbell, 2006, 2009). Zimbabwe's mining sector is highly diversified, with close to 40 different minerals. The predominant minerals include platinum group metals (PGM), chrome, gold, coal, lithium, and diamonds (Abel et al., 2021). The country boasts the second-largest platinum deposit and high-grade chromium ores in the world, with approximately 2.8 billion tons of PGM and 10 billion tons of chromium ore (Mabika, 2018). The sector accounts for about 12 percent of the country's gross domestic product (GDP) and 80 percent of national exports (Chamber of Mines of Zimbabwe, 2022). The Minister of Mines had claimed the sector had the potential to generate \$12 billion annually by 2023 if the government addressed challenges such as persistent power shortages, foreign currency shortages, and policy uncertainties (Chamber of Mines of Zimbabwe, 2022). The Chamber of Mines (2022) reported the mining industry generated \$5.6 billion in 2022 compared to \$5.1 billion in 2021, and it projected 10.4 percent sector growth in 2023.

Mining operations result in significant negative effects on the environment and society including dangers to worker health and safety, biodiversity loss, and water contamination (Mabika, 2018; Singo et al., 2022). Nowadays, significant mining corporations provide yearly reports detailing their governance frameworks, labour policies, environmental performance, and community connections (Mabika, 2018; Singo et al., 2022). Environmental, Social, and Governance (ESG) considerations have become increasingly important in the mining sector, as stakeholders, such as investors, regulators, and the public, expect companies to demonstrate their commitment to sustainable and ethical operations (Campbell, 2006; Duho, 2023). Understanding the knowledge, attitudes, and practices (KAP) of mining companies and their stakeholders towards ESG is crucial for effective implementation and compliance (Duho, 2023; Mariri & Chipunza, 2011; Shilongo, 2023). This includes awareness of ESG principles and

guidelines, understanding of the potential environmental and social impacts of mining activities, and knowledge of local and international regulations and reporting requirements related to ESG.

The mining industry plays a critical role in the global economy, providing essential raw materials, but its environmental impact is a significant concern that requires careful consideration (Lim et al., 2022). Mining activities often result in the destruction of habitats and ecosystems, leading to the decline or even extinction of sensitive or endangered species, as well as soil erosion and land degradation that can negatively impact local agriculture and sustainability (Gukurume & Tombindo, 2023; Tanda & Genc, 2024). Mining activities in the country have led to the destruction of over 20,000 ha of wildlife habitat, resulting in the displacement or decline of several endangered species (Burkepile et al., 2013). Additionally, the generation of large amounts of waste, estimated 25 million tonnes of waste annually, including toxic and hazardous materials contaminate nearby water sources, soil, and air, with serious consequences for the health and well-being of local communities and the surrounding ecosystems (Barbier et al., 2017). This has had a direct impact on the livelihoods of local communities, with a reported 10% decrease in agricultural productivity in areas affected by mining-related pollution (Moss, 2008). Furthermore, the mining industry is a significant contributor to air pollution through the use of heavy machinery and transportation vehicles, which degrade air quality and contribute to regional and global air pollution (Brown et al., 2012). While the industry has taken some steps to address these environmental concerns and adopt more sustainable practices, the environmental impact of mining remains a significant challenge that requires continued attention and investment to ensure the long-term sustainability of the industry and the protection of the natural environment.

Sustainability has become a critical focus for the mining industry, as the sector grapples with the significant environmental and social impacts of its operations. The importance of sustainability in mining cannot be overstated, as it not only addresses the pressing environmental concerns, such as habitat destruction, water and air pollution, and waste generation, but also plays a crucial role in the long-term viability and social acceptance of the industry (Hamann et al., 2011; Mariri & Chipunza, 2011; Muqayi & Chimwara, 2019). Sustainable mining practices aim to minimize these negative impacts through innovative technologies, rigorous environmental management systems, and the restoration of mined lands, while also prioritizing the well-being of local communities, ensuring equitable benefits and

addressing adverse impacts (Mariri & Chipunza, 2011). From an economic perspective, sustainability in mining serves to ensure the industry's long-term financial stability and competitiveness by reducing operational costs and capitalizing on the growing global demand for sustainable and ethically-sourced raw materials (Mariri & Chipunza, 2011). As the demand for sustainable practices continues to grow, the mining industry must embrace a comprehensive and integrated approach to sustainability to secure its place as a responsible and essential contributor to the global economy.

The social dynamics within the mining industry are complex and multifaceted, with a range of stakeholders, including workers, local communities, indigenous populations, and government authorities, all of whom have a vested interest in the sector's operations and impacts (Hamann et al., 2011). At the heart of these social dynamics are the relationships between the industry and the local communities in which it operates, as mining activities often take place in remote or rural areas, where the industry's presence can have a significant impact on the lives and livelihoods of the surrounding population (Gambara, 2007; Gukurume & Tombindo, 2023). This lead to tensions and conflicts, particularly around the issue of land rights and resource ownership, as many mining projects are located on land that is traditionally owned or used by indigenous or local populations, leading to disputes over the legitimacy of mining concessions and the fair distribution of the benefits derived from the industry's activities (Gukurume & Tombindo, 2023). Another significant aspect of the social dynamics in mining is the industry's labour practices and the treatment of its workforce, as mining is often a dangerous and physically demanding occupation, with workers facing a range of health and safety risks, and the industry has faced criticism over the use of substandard working conditions, the exploitation of migrant or informal workers, and the lack of adequate social benefits and protections for its employees (Mabika, 2018). The role of government and regulatory authorities is also a critical factor in shaping the social dynamics of the mining industry, as governments are responsible for issuing mining concessions, enforcing environmental and labour regulations, and ensuring that the industry's activities align with broader social and economic development goals (Chamber of Mines of Zimbabwe, 2022). In recent years, there has been a growing emphasis on the importance of corporate social responsibility (CSR) within the mining industry, as mining companies are increasingly recognizing the need to engage with local communities, support social and economic development initiatives, and minimize the negative impacts of their operations, although the implementation of CSR programs has been uneven across the industry (Hamann et al., 2011).

Governance in the mining industry is critical to the long-term sustainability and responsible development of the sector, spanning challenges in corporate governance, such as ensuring robust and transparent structures, environmental governance, which requires comprehensive management systems and compliance with strict regulations (Lim et al., 2022). The industry's significant environmental footprint, social governance focused on managing relationships with local stakeholders, ensures fair employment practices, protecting worker health and safety, respecting indigenous rights, and supporting community development, as well as political and regulatory governance (Hamann et al., 2011; Tanda & Genc, 2024). The overarching challenge in mining governance is the need to balance the industry's economic objectives with its environmental and social responsibilities (Shilongo, 2023). This often results in difficult trade-offs and the need for careful prioritization and coordination among various stakeholders, including companies, governments, communities, and civil society organizations (Barko et al., 2022). Emergence of voluntary initiatives and frameworks aimed at promoting more transparent and accountable governance, though their effectiveness has been growing exponentially, leading to a growing call for more robust and enforceable regulatory frameworks to ensure the mining industry operates in an environmentally, socially, and economically responsible manner.

Several ESG frameworks have been developed to aid the mining industry in addressing its sustainability and responsibility challenges, including the Towards Sustainable Mining (TSM) Framework developed by the Mining Association of Canada (Maybee et al., 2023; Quayson et al., 2023). The framework focuses on improving the industry's environmental and social performance through the implementation of management protocols and performance indicators across areas like tailings management, biodiversity conservation, and community engagement (Maybee et al., 2023; Quayson et al., 2023). The Extractive Industries Transparency Initiative (EITI) framework is also a global standard for the good governance of oil, gas, and mineral resources that promotes transparency in payments made by extractive companies to governments as well as disclosure of revenues received by governments (Karen, 2023). The International Council on Mining and Metals (ICMM) Principles framework also has set of 10 principles and supporting position statements developed by the ICMM, a global industry association, that cover areas such as ethical business practices, environmental performance, community engagement, and the rights of indigenous peoples (Karen, 2023). The Global Reporting Initiative (GRI) Standards, a comprehensive sustainability reporting framework that

provides guidelines for organizations, including mining companies, to report on their environmental, social, and governance impacts (Karen, 2023). The Responsible Mining Index (RMI) is also an independent assessment framework that evaluates the policies and practices of mining companies across various ESG criteria and aims to encourage continuous improvement and transparency in the mining industry's sustainability performance (Nehring & Knights, 2024). These frameworks provide mining companies with guidance, standards, and performance indicators to help them integrate ESG considerations into their decision-making and operations. While the uptake and implementation of these ESG frameworks vary across the mining industry, and their effectiveness in driving meaningful change continues to be a subject of discussion and evaluation, they represent important tools and initiatives aimed at addressing the complex governance challenges faced by the mining sector.

The mining industry in Africa faces several cross-cutting ESG challenges. Climate change impacts, such as water scarcity, extreme weather events, and rising temperatures, pose significant risks to mining operations and surrounding communities (Gukurume & Tombindo, 2023). Gender inequality and discrimination within the mining sector remain prevalent, with women often facing barriers to employment, career advancement, and equal opportunities (Hirons, 2020). Artisanal and small-scale mining (ASM) operations, while providing livelihoods for many, are often informal and unregulated, leading to environmental degradation, health and safety risks, and conflicts with large-scale mining operations (Singo et al., 2022). Rehabilitation and mine closure challenges, including inadequate financial provisions and insufficient environmental remediation, have left many abandoned mines as environmental and public health hazards (Singo et al., 2022). Addressing these cross-cutting issues requires a holistic and inclusive approach that considers the interconnected nature of ESG challenges in the mining sector.

The attitudes of mining companies and their leadership, such as their commitment to sustainability and the perceived importance of ESG considerations in decision-making, also play a vital role in the Environmental Social Governance (Mariri & Chipunza, 2011; Shilongo, 2023). Additionally, the actual practices implemented by mining companies, including environmental impact assessments, community engagement programs, and transparent reporting, are essential for demonstrating their commitment to responsible and sustainable operation (Barko et al., 2022). However, there is still work to be done in terms of actually putting ESG concepts into practice, particularly in the context of poor nations (Mariri &

Chipunza, 2011; Shilongo, 2023). Recognizing gaps and areas for improvement requires an understanding of miners' KAP.

Assessing the KAP of mining companies and their stakeholders can provide valuable insights for improving ESG compliance and performance, strengthening stakeholder engagement and trust, and informing policy and regulatory development (Widyawati, 2021). By identifying knowledge gaps, addressing attitudinal barriers, and enhancing ESG-related practices, mining companies can develop more effective strategies to address environmental and social impacts (Singo et al., 2022). Furthermore, understanding the concerns and expectations of local communities can help improve communication and collaboration, demonstrating a genuine commitment to sustainable and ethical practices (Widyawati, 2021). This information can also provide evidence-based inputs for policymakers and regulators, aligning industry practices with evolving ESG standards and best practices, for example, land degradation and air and water pollution from mining operations are a few of the major environmental problems (W. M. Lim et al., 2022; Ur Rehman et al., 2016). Ecological harm has been caused in sensitive locations by improper waste disposal practices, such as the use of inefficient tailings storage facilities (A. Garcia & Orsato, 2020; W. Lim et al., 2022). By damaging wildlife habitats, mining exploration and extraction can potentially pose a threat to biodiversity (W. M. Lim et al., 2022). On the social front, disputes in numerous projects have resulted from the economic uprooting of local communities, the loss of customary means of subsistence like artisanal mining, or the disturbance of hallowed cultural locations.

The Freda Rebecca Gold Mine, a subsidiary of Kuvimba Mining House, is one of the largest gold mines in Zimbabwe, located in Bindura, Mashonaland Central province (Dube & Chiluba, 2021). Known for its significant gold production, exceeding 300 kilograms per month, the mine has demonstrated a commitment to corporate social responsibility alongside its profit-making goals (Dube & Chiluba, 2021). This commitment is evident in their efforts to engage with the community, empowering them through education, healthcare, and support for small and medium enterprises (Dube & Chiluba, 2021). The mine's social responsibility initiatives include partnering with Bindura Municipality to address waste management challenges by donating litter bins (Dube & Chiluba, 2021). They also support local businesses by awarding work contracts. In education, Freda Rebecca gold mine (FRGM) provides educational sponsorships, skills training, and contributes to the construction of schools (Chamber of Mines of Zimbabwe, 2022).

1.2 Study aim

The study aims to assess the knowledge, attitudes, and practices on Environmental, Social and Governance principles among mining workers at Freda Rebecca Gold mine.

1.3 Problem Statement

The mining industry faces increasing scrutiny for its environmental and social impacts, highlighting the urgent need for responsible and sustainable practices. While the adoption of Environmental, Social, and Governance (ESG) principles is gaining traction, a gap exists in understanding the knowledge, attitudes, and practices (KAP) of stakeholders involved in mining operations. This study focuses on the Freda Rebecca Gold Mine in Zimbabwe, where a lack of comprehensive data on stakeholder perspectives regarding ESG presents a challenge. The problem statement lies in the need to assess the current level of ESG awareness, identify knowledge gaps, and evaluate the effectiveness of existing ESG initiatives within the mine. This assessment is crucial to identify key drivers and barriers to ESG adoption, ultimately informing the development of strategies to enhance ESG practices and promote a more sustainable mining industry in Zimbabwe.

1.4 Research objectives

Main Objective

To determine the Knowledge Attitude Practices (KAP) on Environmental Social Governance (ESG) among mine workers at Freda Rebecca gold mine.

Specific objectives

1. To assess the level of knowledge, attitudes, and practices (KAP) regarding ESG principles among mine workers at the Freda Rebecca Gold Mine.
2. To determine the influence of socio- demographic factors on Knowledge Attitudes, and practices on ESG principles among mine workers at Freda Rebecca Gold mine.

1.5 Research Hypotheses

1. H₀; There are no Environmental Social Governance principles applied at Freda Rebecca Gold
2. H₀; There is no relationship between socio demographic factors and Knowledge Attitudes, and practices on ESG principles Freda Rebecca Gold mine.

1.6 Justification of the Study

The mining industry faces growing pressure to demonstrate its commitment to sustainable practices, and this study will provide valuable insights into the current state of ESG awareness and implementation at the Freda Rebecca Gold Mine in Zimbabwe. By assessing the knowledge, attitudes, and practices (KAP) of stakeholders regarding ESG principles, the study will identify knowledge gaps and areas for improvement, ultimately contributing to the development of more effective strategies for promoting sustainable mining practices. Understanding the attitudes and practices of stakeholders is crucial for developing effective strategies to promote ESG principles. By identifying key drivers and barriers to ESG adoption, the study will inform the development of targeted interventions to enhance the mine's sustainability performance. These interventions could include training programs, communication strategies, and operational improvements, all aimed at fostering a culture of sustainability within the mine. Furthermore, this research will contribute to the broader goal of promoting responsible and sustainable mining practices in Zimbabwe, ultimately benefiting both the mining industry and the local communities. By addressing the concerns of stakeholders and fostering a more collaborative approach to mining, the study can help to build trust and support for the mining industry, leading to more sustainable and equitable outcomes for all involved.

CHAPTER 2: LITERATURE REVIEW

2.1 ORIGINS OF ENVIRONMENTAL, SOCIAL AND GOVERNANCE PRINCIPLES IN MINING

The mining industry has a significant impact on the environment, local communities, and broader societal issues. In recent years, there has been a growing focus on the Environmental, Social, and Governance (ESG) performance of mining companies as stakeholders, including investors, regulators, and the public, demand greater accountability and sustainable practices (Widyawati, 2021). The Knowledge, Attitude, and Practices (KAP) of mining industry stakeholders towards ESG is an important area of study, as it can provide insights into the current state of ESG integration and help identify areas for improvement (Barko et al., 2022; Widyawati, 2021). However there is a varied level of knowledge about ESG among different stakeholder groups in the mining industry. Several studies have found that mining company executives generally have a good understanding of ESG concepts and the importance of addressing ESG risks and opportunities (Barko et al., 2022; W. Lim et al., 2022; Mitchell, 2014; Widyawati, 2021). For example, a survey of mining executives found that 92% believe ESG factors are important considerations in their business strategy (Ernst & Young, 2020). However, there are also indications that the depth of knowledge and the ability to effectively integrate ESG into decision-making processes may be limited in some organizations (Gunningham, 2019).

In contrast, the level of ESG knowledge among general workers in mining operations appears to be more varied. Some studies have found that mine workers and other stake holders such as local communities have a limited understanding of ESG issues and the potential impacts of mining activities (Kemp & Owen, 2013). This can hinder their ability to engage effectively with mining companies and advocate for their interests. Investor knowledge of ESG in mining also appears to be evolving. While there is growing awareness of the materiality of ESG factors, especially among institutional investors, the depth of understanding and the ability to effectively integrate ESG into investment decisions varies (PRI, 2020). There are also indications that retail investors may have less knowledge of ESG considerations in the mining sector (Braam & Peeters, 2018).

Mining companies have made progress in implementing various ESG practices, the depth and effectiveness of these efforts can vary significantly across the industry (A. S. Garcia & Orsato, 2020). Some companies have been more proactive and innovative in addressing ESG issues, while others have been slower to adopt and integrate ESG considerations into their core business practices (Whitelock, 2019). One area where some mining companies have made strides is in developing robust environmental management systems. This includes implementing measures to monitor and mitigate environmental impacts, such as water management, waste disposal, and emissions control (Widyawati, 2021). Leading companies have also invested in technologies and processes to improve energy efficiency and shift towards renewable energy sources (W. M. Lim et al., 2022). However, the level of investment and the rigor of these environmental management systems can differ considerably between mining firms.

Engagement with local communities affected by mining operations is another area where some companies have made progress, but with varying degrees of effectiveness. Proactive mining firms have sought to build trust and collaborate with community stakeholders, through initiatives such as community development programs, local employment opportunities, and transparent communication (Gukurume & Tombindo, 2023). However, in some cases, there are still tensions and distrust between mining companies and local communities, stemming from a perception that the companies are prioritizing profits over environmental and social concerns (Lèbre et al., 2020). Improvements in corporate governance structures are also evident in parts of the mining industry. Some companies have enhanced board-level oversight of ESG issues, developed comprehensive ESG policies and management systems, and tied executive compensation to ESG performance metrics (Gukurume & Tombindo, 2023; Lèbre et al., 2020). These governance enhancements can help to integrate ESG considerations into strategic decision-making. Nevertheless, the quality and comprehensiveness of these governance practices vary, and some mining firms may still fall short in terms of transparency, accountability, and the empowerment of stakeholders (Gukurume & Tombindo, 2023; Lèbre et al., 2020).

2.2 Environmental Social Governance Theoretical Framework

Environmental Social Governance (ESG) is a comprehensive framework that integrates environmental stewardship, social responsibility, and sound governance practices into business operations and decision-making (Madzoke et al., 2024; Nehring & Knights, 2024). In the context of Zimbabwe's mining industry, ESG is both a strategic imperative and a regulatory necessity, driven by the country's rich mineral wealth, socio-economic challenges, and environmental vulnerabilities (ZELA, 2023a). The ESG theoretical framework draws on multidisciplinary theories and concepts to explain how ESG can be effectively embedded within Zimbabwe's mining sector to promote sustainable development, improve stakeholder relations, and mitigate risks.

At the core of the ESG framework is the Sustainable Development Theory, which emphasizes the need to balance economic growth with environmental protection and social equity (ZELA, 2022c). Zimbabwe's mining industry, historically a major contributor to the national economy, faces the challenge of exploiting mineral resources without causing long-term harm to ecosystems or local communities (ZELA, 2023b). The sustainable development paradigm demands that mining operations adopt practices that conserve biodiversity, reduce pollution, and rehabilitate mining sites and calls for a holistic consideration of the long-term impacts of extraction activities (ZELA, 2023b). It recognizes that the pursuit of mineral wealth cannot be decoupled from the stewardship of natural resources and the well-being of affected communities. Sustainable cities and communities, is the global Sustainable Development Goal (SDG) number 11, hence community involvement in mining companies ESG programmes is central (UN, 2017). This theoretical lens encourages mining companies to embrace a more responsible and inclusive model of development. This approach aligns with Zimbabwe's national policies and international commitments to environmental sustainability, such as the Paris Agreement and the African Mining Vision, which call for responsible resource management (IPCC, 2024).

From a social perspective, Stakeholder Theory provides a critical lens through which ESG initiatives in mining can be understood. This theory posits that companies must consider the interests and rights of all stakeholders ranging from local communities and employees to government agencies and investors rather than focusing solely on shareholders (Mugarisanwa, 2022; ZELA, 2022b). In Zimbabwe, mining companies operate in diverse social contexts, often

affecting indigenous populations, rural communities, and labour forces (ZELA, 2022c). Effective ESG implementation requires meaningful stakeholder engagement, transparent communication, and equitable benefit-sharing mechanisms to address social grievances, reduce conflicts, and enhance community well-being (Karen, 2023; Madzoke et al., 2024). This is particularly important given Zimbabwe's history of social tensions linked to land use (Basure et al., 2019), labour rights (Mabika, 2018), and resource distribution (Chiweshe & Mutondoro, 2017).

Governance, the third pillar of ESG, is informed by Institutional Theory and Corporate Governance Theory, which highlight the role of formal structures, rules, corporate social responsibility and ethical leadership in shaping organizational behaviour (Mariri & Chipunza, 2011; Nehring & Knights, 2024). In Zimbabwe's mining sector, governance challenges such as corruption, regulatory enforcement gaps, and weak institutional capacity can undermine ESG goals (ZELA, 2023b). The theory also suggests that robust governance mechanisms comprising compliance with national laws, adherence to international standards, and implementation of internal controls are essential to ensure accountability and transparency (JSC, 2018; ZELA, 2023b). Good governance practices foster investor confidence, improve operational efficiency, and enable companies to manage environmental and social risks proactively (Mugarisanwa, 2022).

The Risk Management Theory also complements this framework by emphasizing the identification, assessment, and mitigation of ESG-related risks inherent in mining activities (ZELA, 2022c). Mining is a high risk high return business where companies face multiple risks including financial risk, environmental degradation, health hazards, social unrest, and reputational damage (ZELA, 2022b, 2022a, 2023a). Integrating ESG into risk management processes allows for early detection of potential issues and the development of strategic responses that minimize adverse impacts (ZELA, 2022b, 2022a, 2023a). This proactive stance supports long-term business resilience and aligns with global trends where investors increasingly prioritize ESG performance as part of financial due diligence (ZELA, 2022b, 2022a, 2023a).

The framework incorporates elements of Corporate Social Responsibility (CSR) Theory, which underscores voluntary corporate initiatives aimed at contributing to societal goals beyond regulatory requirements (Frederiksen, 2019; Mariri & Chipunza, 2011). While CSR in Zimbabwe's mining industry has traditionally focused on philanthropy and community development projects, the ESG framework calls for a more systematic and integrated approach that aligns CSR efforts with core business strategies and measurable outcomes (ZELA, 2022a).

This transformational shift is critical for mining companies to move from reactive social interventions to proactive sustainability leadership. The theoretical framework for Environmental Social Governance in Zimbabwe's mining industry is grounded in the interplay of sustainable development, stakeholder engagement, institutional governance, risk management, and corporate social responsibility theories (ZELA, 2023b). Together, these perspectives provide a holistic understanding of how mining companies can align their operations with environmental sustainability, social equity, and ethical governance.

2.3 ESG Principles Progress and Challenges

The mining industry has shown some progress in implementing various ESG practices, but the depth and effectiveness of these efforts remain uneven. The most proactive and innovative mining companies have been able to embed ESG considerations more deeply into their operations and decision-making processes, while others continue to struggle with the challenge of balancing short-term financial priorities with long-term sustainability goals (Duho, 2023; Shilongo, 2023). Addressing these disparities and driving more consistent and impactful ESG practices across the industry will be crucial for the mining sector to enhance its social license to operate and meet the evolving expectations of its stakeholders (Duho, 2023; Shilongo, 2023).

The mining industry in Africa has a significant impact on the environment, leading to various ecological challenges. Land degradation and deforestation are common consequences of mining activities, as large areas are cleared for mining operations, infrastructure development, and waste disposal (Frederiksen, 2019; Shilongo, 2023). Water pollution is a pressing concern, with mining activities contaminating surface and groundwater resources through the discharge of toxic substances, acid mine drainage, and inadequate waste management practices (Singo et al., 2022). Air pollution and greenhouse gas emissions from mining operations, transportation, and processing contribute to climate change and local air quality issues (Singo et al., 2022). Biodiversity loss and habitat destruction are also prevalent, as mining activities disrupt and fragment ecosystems, endangering various plant and animal species. Inadequate waste management and disposal practices, including tailings dam failures, pose severe environmental risks (Singo et al., 2022). Furthermore, ineffective environmental impact assessments and

monitoring systems often fail to identify and mitigate potential environmental consequences (Jomboro, 2018; Singo et al., 2022).

Numerous social issues have also marred the mining industry in Africa, including human rights violations (Chitimira & Mokone, 2017). Child labour and forced labour practices, although prohibited, continue to persist in some mining operations, particularly in artisanal and small-scale mining sectors (Nyandoro & Hatti, 2018b). The displacement of local communities due to mining activities is a common occurrence, often leading to loss of livelihoods, cultural disruption, and conflicts over land rights (Gukurume & Tombindo, 2023). Indigenous communities face particular challenges, as mining activities can threaten their traditional lands, cultural heritage, and way of life (Gukurume & Tombindo, 2023). Health and safety concerns are also prevalent, with mining operations exposing workers and local communities to occupational hazards, such as accidents and environmental health risks from air and water pollution (Corvino et al., 2020; Gukurume & Tombindo, 2023). Inadequate community engagement and consultation processes have led to a lack of meaningful participation and benefit-sharing for affected communities. The unequal distribution of benefits and resource wealth has fuelled social tensions and conflicts, as local communities often fail to reap the economic rewards of mining operations in their regions (Corvino et al., 2020; Gukurume & Tombindo, 2023).

Governance challenges in the mining sector in Africa are multifaceted. Corruption and lack of transparency plague the industry, with issues such as bribery, embezzlement, and opaque licensing and contracting processes (Phiri et al., 2020). Weak regulatory frameworks and inadequate enforcement of existing laws and regulations have allowed mining companies to operate with limited oversight and accountability (Barko et al., 2022; Nyandoro & Hatti, 2018a). Insufficient environmental and social impact assessments, or their inadequate implementation, have led to the underestimation and mismanagement of mining-related risks and impacts (Barko et al., 2022). Lack of accountability and effective grievance mechanisms have hindered affected communities from seeking redress for violations and damages caused by mining operations (Barko et al., 2022). Limited access to information and public participation in decision-making processes have undermined the rights of stakeholders and impeded transparency (Barko et al., 2022). Inadequate revenue management and inefficient distribution of resource wealth have deprived host communities and countries of the potential economic benefits of mining activities (Singo et al., 2022). Conflict and insecurity in mining

regions, often fuelled by disputes over resource control and governance issues, have posed significant challenges to responsible mining practices.

The mining industry in Zimbabwe faces significant Environmental, Social, and Governance (ESG) challenges that threaten the sustainability and responsible management of the sector. Environmentally, issues such as water pollution, land degradation, air pollution, and inadequate waste management practices have caused severe damage to the country's natural resources and ecosystems (Corvino et al., 2020; A. Garcia & Orsato, 2020). Socially, concerns revolve around human rights violations, including the displacement of local communities, violation of indigenous rights, and inadequate compensation (Corvino et al., 2020; A. Garcia & Orsato, 2020). Health and safety hazards, community conflicts over resource access, and gender inequality further exacerbate the social challenges (Jowitt et al., 2020). On the governance front, Zimbabwe grapples with weak regulatory frameworks, lack of enforcement, corruption, and limited stakeholder engagement (Frederiksen, 2019). Opaque licensing processes, mismanagement of mining revenues, and restricted public participation undermine transparency and accountability (Frederiksen, 2019). The informal and unregulated nature of artisanal and small-scale mining operations poses additional challenges (Gukurume & Tombindo, 2023). Cross-cutting issues such as climate change impacts, rehabilitation and mine closure concerns, and conflict and insecurity in mining regions further compound the ESG challenges (Frederiksen, 2019). Addressing these multifaceted issues requires a comprehensive and collaborative approach involving the government, mining companies, civil society, and local communities to ensure responsible and sustainable mining practices in Zimbabwe.

2.4 Zimbabwe Legal Framework on Environmental Social Governance

Mining is a business which changes the landscape of the environment due to its extractive nature. Open cast (surface), shaft (underground), quarrying and other forms of mining bring forth land degradation, pollution of atmosphere and water sources (Campbell, 2009; Duho, 2023). Section 73 of Zimbabwe's Constitution gives the State the mandate to take reasonable steps to protect the environment for the benefit of present and future generations (Mugarisanwa, 2022). The constitution also accords every citizen a right to a healthy environment (Mugarisanwa, 2022). Mining companies should subscribe to environmental protection provisions of the Mines and Minerals Act (*Chapter 21:05*), Water Act (*Chapter*

20:24), Environment Management Act (*Chapter 20:27*), Explosives Act (*Chapter 10:08*); Forestry Act (*Chapter 19:05*), Hazardous Substances and Articles Act (*Chapter 20:03*); Atmospheric Pollution Prevention Act (*Chapter 20:03*) and Parks and Wildlife Act (*Chapter 20:14*) (ZELA, 2022a). The given Acts inform the environment, social and governance (ESG) framework for mining companies in Zimbabwe through the protection of people, animals and the environment from destruction and hazardous waste.

It is against this background that mining companies ESG legal framework focus on mitigating effects of their operations. Mining companies are obliged to work with communities through traditional leaders, Environmental Management Agency (EMA), Ministry of Mines and Mining Development (MMMD), Forestry Commission, Zimbabwe National Water Authority (ZINWA), Zimbabwe Parks and Wildlife Management Authority (ZIMPARKS), local authorities and the Ministry of Local Government, Public Works and National Housing which has the mandate to administer the Communal Lands Act (*Chapter 20:04*) to address the legal concerns in mining in terms of environmental and social governance (Mugarisanwa, 2022; ZELA, 2022b).

In January 2024, ESG standards became legally required for companies listed on the Zimbabwe Stock Exchange (ZSE) and Victoria Falls Stock Exchange (VFEX) to report on sustainability matters (Madzoke et al., 2024). This shift mandates public disclosure of information related to environmental, social, and governance (ESG) practices, which was previously not commonly available. The Zimbabwe Development and Investment Agency (ZIDA) Act also requires ZIDA-approved investors to operate responsibly and protect the environment, according to ZELA, (2022a). Commendably the Zimbabwe Development and Investment Agency (ZIDA) Act requires investors that pass-through ZIDA to protect the environment and operate responsibly (ZELA, 2022b). However, the lack of regulations on responsible investment at ZIDA is crippling efforts to hold the investors to account (ZELA, 2022b). Whilst the ESG reports that are produced by mining companies are informative in terms of disclosing what the companies are doing to address the social, environmental, and economic related concerns of communities where mining is taking place, monitoring of ESG by communities is very low (ZELA, 2023a).

The International Financial Reporting Standard (IFRS) S1 (general requirements for disclosure of sustainability-related financial information) and S2 (climate-related disclosures) issued by the International Sustainability Standards Board (ISSB) and adopted by the Public Accountants

and Auditors (PAAB) of Zimbabwe effective January 2024 also has a huge bearing on mining companies ESG framework given need to consider sustainability and climate opportunities and risks such as water conflicts (ZELA, 2022c, 2023a).

2.5 Attitudes towards ESG in Mining

Mining companies generally recognize the importance of ESG and have made efforts to improve their ESG performance. Many have integrated ESG considerations into their strategic planning and decision-making processes (PwC, 2020). However, there can still be tensions between short-term financial priorities and long-term sustainability goals, which can affect the prioritization of ESG issues (Gunningham, 2019). Local communities affected by mining operations often have a deep-rooted scepticism or even an adversarial attitude towards mining companies' Environmental, Social, and Governance (ESG) efforts (Gunningham, 2019). This scepticism stems from historical experiences and a perception that mining companies prioritize profits over environmental and social concerns. Many community members have witnessed first-hand the negative impacts of mining activities, such as environmental degradation, displacement, and exploitation of local resources with little tangible benefit for their communities (Hirons, 2020). Several studies, including the one conducted by Kemp and Owen (2013), have found that community members perceive mining companies as primarily driven by financial motives, with ESG considerations being secondary or merely a means to secure a social license to operate (Hirons, 2020). This perception is reinforced when communities observe a disconnect between mining companies' claims of addressing ESG issues and the reality on the ground (Frederiksen, 2019). For instance, despite companies' promises of sustainable practices, communities may continue to experience water contamination, air pollution, or the destruction of their traditional lands. Such experiences breed mistrust and resistance towards mining projects, even when companies claim to be committed to ESG principles. Overcoming this scepticism requires genuine and sustained efforts by mining companies to prioritize environmental and social concerns, engage transparently with local communities, and demonstrate tangible benefits that improve the lives of affected populations (Frederiksen, 2019).

Investor attitudes towards ESG in mining are generally positive, with a growing recognition of the materiality of ESG factors. However, there are still concerns about green washing and a

lack of consistent and comparable ESG data, which can hinder the effective integration of ESG into investment decision-making (PRI, 2020). Freda Rebecca's operational strategies reveal a strong understanding of ESG frameworks. The mine adheres to environmental standards by investing in renewable energy, such as a planned 6 MW solar plant to reduce reliance on non-renewable power source (Moyo, 2024). This aligns with global mining industry priorities to lower carbon emissions, as emphasized by the ESG Mining Company Index, which benchmarks environmental performance metrics like energy efficiency (ESG Network Zimbabwe, 2022; Moyo, 2024). Socially, the mine demonstrates awareness of stakeholder engagement through educational sponsorships, healthcare support, and infrastructure development in Mashonaland Central (ESG Network Zimbabwe, 2022). Governance knowledge is evident in transparent partnerships with local contractors and compliance with Zimbabwe's mining regulations, such as contributing to the national target of 100 tonnes of annual gold production (Moyo, 2024).

Attitudes at Freda Rebecca reflect a shift from ESG as a compliance requirement to a value-creation strategy. Management prioritizes community welfare, viewing Corporate Social Responsibility (CSR) as integral to long-term business success (ESG Network Zimbabwe, 2022). For instance, the mine's collaboration with Bindura Municipality to address waste management and water shortages underscores a proactive stance on social and environmental issues (ESG Network Zimbabwe, 2022). This aligns with broader industry trends where governance mechanisms like stakeholder engagement and transparency are linked to improved sustainability outcomes (ESG Network Zimbabwe, 2022). However, economic pressures persist, as seen in the mine's focus on expanding milling capacity to meet production targets while maintaining ESG commitments.

Mining companies have made progress in implementing ESG practices, such as developing environmental management systems, engaging with local communities, and improving governance structures (PwC, 2020). However, the depth and effectiveness of these practices can vary widely across the industry. Some companies have been more proactive in addressing ESG issues, while others have been slower to adopt ESG practices (Gunningham, 2019). At the same time, local communities affected by mining operations have also been actively engaged in advocating for improved ESG practices, through tactics such as protests, legal challenges, and collaborative partnerships with mining companies (Kemp & Owen, 2013). The effectiveness of these efforts can depend on the specific context and the power dynamics

between communities and mining companies. Investors are increasingly incorporating ESG considerations into their investment practices, such as engaging with mining companies, developing ESG-focused investment products, and advocating for improved ESG disclosure (PRI, 2020). However, the extent to which these practices are adopted and the level of influence they have on mining companies' behaviour can vary.

2.6 Challenges in implementing ESG principles in Zimbabwe

The implementation of robust environmental, social, and governance (ESG) practices in Zimbabwe's mining sector faces significant hurdles due to the weak legislative framework and inadequate enforcement mechanism. The country's mining laws and regulations often lack the comprehensive provisions necessary to effectively address the multifaceted impacts of mining operations on the environment, local communities, and broader stakeholders (Tanda & Genc, 2024). Additionally, even when appropriate regulations exist, their enforcement is frequently hampered by limited resources, insufficient monitoring capabilities, and a lack of political will (Chiweshe & Mutondoro, 2017; Maunganidze, 2016). Compounding these challenges is the pervasive issue of corruption within various levels of government and regulatory bodies. Bribery, nepotism, and the misuse of public funds undermine the integrity of the mining sector's governance structures (Chiweshe & Mutondoro, 2017; Maunganidze, 2016). Mining companies with strong political connections and influential backers may exploit these corrupt practices to circumvent regulations, evade environmental compliance, and prioritize short-term profits over sustainable practices (Maunganidze, 2016). This not only jeopardizes the well-being of local communities and the environment but also erodes public trust in the industry and its ability to operate responsibly. Furthermore, the cozy relationships between mining corporations and political elites lead to regulatory capture, where the interests of the industry take precedence over the broader public good (Muqayi & Chimwara, 2019; Murombo, 2013). This dynamic can result in lax enforcement of existing laws, preferential treatment for well-connected companies, and a general lack of accountability (Murombo, 2013). Consequently, the implementation of ESG principles, which often require a long-term commitment and substantial investment, becomes an afterthought rather than a priority.

The influence of Chinese companies and investments in Zimbabwe's mining sector has posed significant challenges to the implementation of robust environmental, social, and governance

(ESG) standards (Chipfakacha, 2024; Mapaire, 2014; Marumahoko et al., 2023). This issue extends beyond Zimbabwe's borders and is a concern across various African nations where Chinese mining operations have a substantial presence (Marumahoko et al., 2023). In recent decades, Chinese state-owned enterprises and private companies have aggressively pursued mining interests across Africa, driven by the continent's vast mineral resources and China's insatiable demand for raw materials to fuel its economic growth (Mapaire, 2014; Marumahoko et al., 2023). While this influx of investment has provided much-needed capital and economic opportunities, it has also raised concerns about the environmental and social impacts of Chinese mining operations, as well as their adherence to good governance practices (Mapaire, 2014).

One of the primary challenges lies in the differing regulatory environments and ESG standards between China and many African nations. Chinese companies often operate under lax environmental and labor regulations in their home country, and this mindset can carry over to their operations abroad (Boness, 2019; Chipaike & Bischoff, 2019). There have been numerous instances of Chinese mining companies in Africa being accused of flouting environmental protection laws, disregarding worker safety and rights, and engaging in unsustainable mining practices that prioritize short-term gains over long-term sustainability (Boness, 2019; Chipaike & Bischoff, 2019). Furthermore, the opaque nature of some Chinese investments and the lack of transparency in their dealings with host governments have raised concerns about corruption and undue influence (Chipaike & Bischoff, 2019).

Chinese companies have been known to leverage their economic clout and strategic partnerships with African leaders to secure favorable mining concessions and circumvent regulations (Krawczyk, 2019; Maunganidze, 2016; Ojakorotu & Kamidza, 2018; Saunders, 2008; Tanda & Genc, 2024). This power dynamic can undermine efforts to enforce ESG standards and hold mining companies accountable for their actions. Additionally, the influx of Chinese capital and the perceived economic benefits associated with Chinese mining investments can sometimes lead African governments to turn a blind eye to environmental and social transgressions (Krawczyk, 2019). The allure of job creation and economic development can overshadow the importance of upholding ESG principles, particularly in resource-rich but economically disadvantaged regions (Maunganidze, 2016).

CHAPTER 3: MATERIALS AND METHODS

3.1 STUDY AREA

The study was conducted at Freda Rebecca Gold in Bindura Town in Bindura District in Zimbabwe's Mashonaland Central province at the mine premises radius of the mine's operations at longitude 31.31027 and latitude -17.301. The soil in the Bindura area is predominantly sandy loam, with varying degrees of fertility depending on the specific location and agricultural practices employed and also rich in minerals including Gold, Nickel and Platinum (Musemwa & Musara, 2020). Notably, the town is situated within the Mazowe River basin, which forms part of the larger Zambezi River catchment area. The Mazowe River and its tributaries, such as the Musengezi River, play a vital role in sustaining agriculture, mining activities, and the local ecosystem, while also serving as a source of water for domestic and (FAO, 2021) industrial purposes in the area (FAO, 2021).

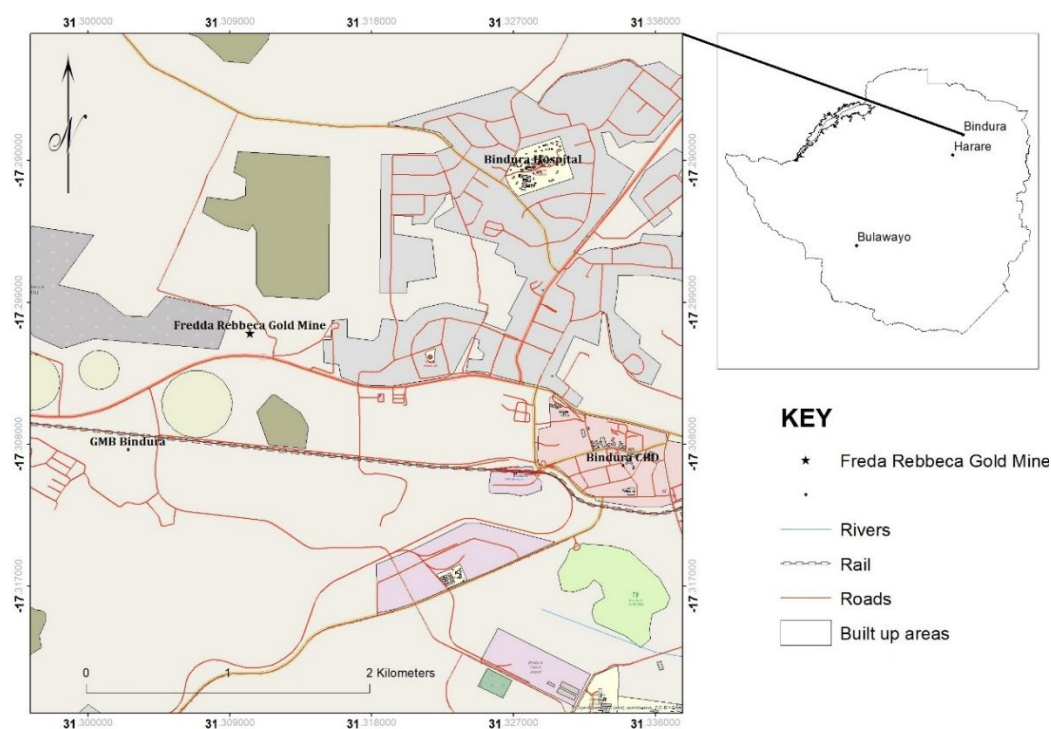


Figure 3.1; Freda Rebecca Gold Mine Location

3.2 STUDY DESIGN

This study employed a cross-sectional design to assess the Knowledge, Attitudes, and Practices (KAP) related to Environmental, Social, and Governance (ESG) standards among mine workers associated with the Freda Rebecca Gold Mine in Zimbabwe. The study population consisted of four distinct groups: underground mine employees, managerial and office employees, and employees from contracted companies. A multi-stage sampling approach was employed to select participants from each group where a stratified random sampling technique was used to select participants from different departments and job levels within the mine's workforce.

3.3 SAMPLING AND SELECTION OF RESPONDENTS

This study utilized a stratified random sampling method to select respondents among mining workers. First workers were placed into 3 strata, production staff strata, management staff strata and contractor staff strata. In those strata respondents were randomly selected for questionnaires administration. Twenty-two production staff, five management staff and three contract workers were selected.

3.4 DATA COLLECTION AND ANALYSIS

A Questionnaire survey was employed where semi-structured questions and open ended were developed, addressing aspects of ESG knowledge, attitudes, and practices relevant to their roles and perspectives. The questionnaires were pre-tested and validated before data collection and then administered physically.

All collected data were securely stored and managed using Microsoft Excel. Data were analysed using descriptive and inferential statistics, including frequency distributions, and appropriate statistical non-parametric tests including chi-squared tests, ANOVA Kruskal Wallis 'H' test, and Joncheere Teperstra tests to assess associations and differences between groups in Statistical Package for Social Sciences (IBM SPSS version 23). Triangulation of quantitative and qualitative data was be employed to enhance the validity and comprehensiveness of the findings.

3.4 ETHICAL CONSIDERATIONS

The study was approved by the Department of Safety Health and Environmental Management, Bindura University of Science Education and the Safety Health Department at Freda Rebecca Gold mine (Appendix B). Data security and confidentiality were guaranteed, with special attention paid to safeguarding participants who share their experiences with ESG principles and sensitive company operations data. Informed consent were obtained from all participants, and community engagement will be given priority to ensure culturally sensitive implementation.

CHAPTER 4 RESULTS

4.1 Mine workers demographics

A total of 30 mine workers were administered with questionnaires, the majority of them (76.7%, $n = 23$) were males and 23.3% ($n = 7$) were females. Sixty percent of the respondents were aged between 31 – 45 years ($n = 18$), 30% between 18 and 30 years ($n = 9$), while 6.7% ($n = 2$) and 3.3% ($n = 1$) were between 46 – 60 years and over 60 years respectively. 73.3% were miners or mine production staff ($n = 22$) which included electricians, miners, general hands, cooks, welders, drivers, heavy machinery operators, plant fitters laboratory technicians, safety healthy officers and quality control officers, whereas 16.7% were management staff ($n = 5$) including fore-mans, human resources managers and heads of departments, and 10% were contractors or suppliers ($n = 3$).

In terms of education, all respondents had some form of formal education with 40% of the respondents being holders of a diploma ($n = 12$), 30% had Bachelor's degrees ($n = 9$), 23.3% had a National Certificate ($n = 7$) while 6.7% had high school education ($n=2$).

23.3% of the respondents were single ($n = 7$), 76.7 % ($n = 23$) of the respondents were married while none of the respondents were divorced or widowed. None of the respondents had less than one year of experience at the mine, while 40 % of the respondents had between 5-10 years of experience and 60% of the respondents had more than 10 year of experience at the company.

Table 4.1. Mine workers demographics summary

Category		Percentage
Gender	Male	76.7
	Female	23.3
Age	18-30 Years	30
	31-45 Years	60
	46-60 Years	3.3
	Over 60	3.3

Experience at the mine in years	Less than a year	0
	1-5 Years	40
	6-10 Years	0
	Over 10 Years	60
Department	Mining production staff	73.3
	Management staff	16.7
	Contractors staff	10%
Education	Diploma	40%
	Bachelor's degree	30%
	National certificate	23.3%
	High School Education	6.7%
Marital status	Single	23.3%
	Married	76.7%
	Widowed	0%
	Divorced	0%

4.2 ESG Knowledge

Seventy percent of the respondents admitted they have heard of Environmental Social Governance (ESG) Principles but were not knowledgeable (n = 21) while 20% were partially familiar (n = 6) and 10% were very familiar of ESG principles (n =3). There was mixed awareness levels in terms of different ESG principles among respondents with mean scores of 0.93 on water conservation, 0.87 on waste management, 0.89 on environmental restoration efforts, 0.99 on Employee occupational safety and health, 0.78 on gender equality, and 0.88 on reducing environmental impacts showing a higher environmental principles awareness. Low mean tallies of 0.23 on ESG principles familiarity, 0.37 on laws regulations and policies, 0.12 on anti-corruption, 0.21 on corporate social responsibility, 0.05 on fair and equitable access to

natural resources, 0.37 on employee welfare programs, and 0.36 on environmental management plans indicate low knowledge social and governance principles. While the awareness of such principles is low, the study also find out that most respondents are aware of principles without knowing they are ESG principle but as mine policies.

Table 4.2 ESG Knowledge variables

Variable	Mean $\pm$ sd	Std Error
Are you familiar with ESG principles?	0.23 $\pm$ 0.28	0.002
Are you familiar with these ESG principle in the mining industry		
Water conservation	0.93 $\pm$ 0.02	0.05
Waste management	0.87 $\pm$ 0.33	0.023
Carbon emission reduction	0.32 $\pm$ 0.57	0.015
Anti-corruption	0.12 $\pm$ 0.003	0.082
Environmental Restoration efforts	0.89 $\pm$ 0.34	0.15
Employee safety and health	0.99 $\pm$ 0.45	0.23
Corporate Social responsibility	0.21 $\pm$ 0.07	0.14
Gender equality	0.78 $\pm$ 0.95	0.03
Fair and equitable access to natural resources	0.05 $\pm$ 0.12	0.012
Are you familiar with any laws, regulations and policies that regulate the ESG in the mining sector (Environmental Management Act, EMA compliance policies, Water act, Harzadous Control Act, Mines and Minerals Act, Occupational Health and Safety Regulations)	0.37 $\pm$ 0.07	0.002
Are you aware of any Freda Rebecca programs or initiatives aimed at reducing its environmental impact?	0.88 $\pm$ 0.39	0.113
Are you aware of any Freda programs or plans that focus on employee, former employee, employee dependants' welfare and development?	0.37 $\pm$ 0.46	0.005
Do Freda Rebecca have a Environmental Management Plan you are aware of	0.36 $\pm$ 0.57	0.09

4.3 ESG Practices

Respondents participated in various ESG related activities both unaware and aware of their status in Environmental Social Governance. All of the respondents were involved in water conservation, 90% of the respondents in waste management, 70% in carbon emissions reduction, 90% in employee safety and health, 80% in community health programs, 90% in

environmental restoration efforts while half of the respondents were involved in anti-corruption training (Table 4.3)

Table 4.3 Respondents involvement in ESG Aspects

ESG Aspect	Respondents Association		% Involvement
	Involved	Not Involved	
Water Conservation	30	0	100%
Waste Management	27	3	90%
Carbon Emissions Reduction	21	9	70%
Employee Safety and Health	27	3	90%
Community Health Programs	24	6	80%
Anti-Corruption Training	15	15	50%
Reforestation Efforts	27	3	90%

In terms of ESG practises, they are excessively integrated into mining operations in critical areas that are controlled by regulatory or compliance requirements. Environmental practices are the most highly rated with higher mean scores of 4.83 on water pollution prevention, 4.59 on biodiversity preservation, 4.66 on control of dust and noise pollution, and 4.97 on hazardous waste management, showing the company's commitment on environmental conservation and protection. High mean scores on gender equality in leadership (4.65), and prevention of child labour and ethical practises (4.96) indicating a commitment in gender equality and ethical labour practices which coincidentally are the regulated both nationally and internationally. Moderate mean scores on community engagement and grievances management (2.96), balance of profit and sustainability (3.04), Whistle blower protection (3.1), staff engagement and in planning and monitoring (2.89), and transparent reporting and communication (2.84), indicate a more reserved approach in addressing these issues.

Table 4.4 ESG Practices variables

Variable	Mean $\pm$ sd	Std Error
How effective is the mine culture in identifying and reporting safety concerns or other grievances within the company	4.37 $\pm$ 0.34	0.45
How effective does the mine address these environmental challenges		
Water pollution prevention	4.83 $\pm$ 0.02	1.55
Biodiversity preservation near mining sites	4.59 $\pm$ 2.33	0.23
Land rehabilitation post mining	3.62 $\pm$ 1.60	0.54
Hazardous waste management	4.97 $\pm$ 0.23	2.34

Environmental Restoration efforts	3.43 ± 4.86	1.16
Employee safety and health	4.93 ± 2.45	2.32
Fair and equitable access to natural resources	2.01 ± 3.65	1.14
Control of dust and noise pollution	4.66 ± 1.25	1.06
How effective are the company policies in addressing;		
Gender equality in leadership roles	4.65 ± 1.34	3.04
Prevention of child labour and ethical labour practices	4.96 ± 0.03	0.05
Cultural heritage protection	2.13 ± 3.54	0.27
Community engagement and grievances	2.96 ± 1.35	1.75
Improving community livelihoods	3.69 ± 2.34	0.073
Do your company prioritise balancing profit sustainability in mining operations?	3.04 ± 2.39	1.13
How do your company address the following principles;		
Whistle blower policies on reporting transgression	3.10 ± 3.08	0.11
Staff engagement in planning and monitoring	2.89 ± 4.34	0.02
Transparent reporting and communication	2.84 ± 2.05	0.62
Should the mine link ESG performance to shareholder dividends	4.36 ± 0.57	0.19

4.4 ESG Attitudes

Attitudes towards ESG principles were generally positive with mean scores of 4.04 on ESG importance in the mining industry long term success, 4.73 on importance of community engagements, 4.37 on importance of environmental safety, 4.04 on balancing profit and sustainability, 4.36 on the essential of good governance, 4.56 on the contribution of every staff, and 4.23 on workers being trained on ESG principles. However, majority of respondents felt the government should not be responsible for enforcing ESG mining industry compliance suggesting that the compliance should be mine based.

Table 4.5 ESG Attitudes variables

Variable	Mean ± sd	Std Error
How important are ESG principles to the mine's long term success	4.04 ± 2.03	0.34
How important are community engagements in mining operations, conflicts mitigation and sustainability	4.73 ± 0.06	1.06

How important is environmental safety in the long term mining sustainability	4.37 ± 0.17	1.87
Should mining companies prioritise profit and sustainability balance	4.04 ± 2.39	1.03
Do ESG compliance and adoption affect operational cost	2.09 ± 3.96	0.08
Good governance is essential for management and growth of the mining industry	4.36 ± 2.33	0.11
Should corporate social responsibility made mandatory for mining companies	3.04 ± 0.07	1.03
All staff play a role in ESG performance at the mine	4.56 ± 3.06	1.89
The government should be responsible for enforcing the mining industry compliance in ESG mandates.	2.43 ± 2.03	0.002
Should all workers be trained and contribute to ESG actions for all mining companies	4.23 ± 0.03	0.34

4.5 Demographic influence on Knowledge Attitude and Practices on ESG principles.

There was a statistically significant difference on ESG knowledge between job roles and familiarity with ESG principles (p value = 0.004 Anova Kruskal Wallis test), with employees in the management showing more knowledge and awareness of ESG principles and practises as compared to both production and contract employees.

Most respondents showed familiarity with environmental principles of ESG including waste water management, Hazardous waste disposal, reforestation and reduction in carbon emissions. A few were familiar with cooperate social responsibility principle, other than that, respondents were not aware the social and governance principles of ESG.

Job role showed a significant difference in influencing ESG knowledge and attitudes on livelihoods improvements (p = 0.008 Anova Kruskal Wallis), biodiversity conservation (p = 0.026 Kruskal Wallis), cultural heritage protection (p = 0.038 Anova Kruskal Wallis) and adequacy of ESG training (p = 0.019 Anova Kruskal Wallis) (Table 4.2). There was no significant difference on job role's influence on ESG knowledge and attitudes on addressing community grievances, water pollution prevention, noise pollution control, land rehabilitation, air pollution, gender equality, child labour, mental health, staff engagement, ESG compliance on operational costs, community trust, and workplace sustainability culture (Table 4.2). Educational level had a significant difference in influencing ESG knowledge and attitudes on

livelihood improvements (p = 0.038 Kruskal Wallis), addressing community grievances (p = 0.003 Kruskal Wallis), water pollution prevention (p = 0.000 Kruskal Wallis), biodiversity conservation (p = 0.027 Kruskal Wallis), noise pollution control (p = 0.004 Kruskal Wallis), gender equality (p = 0.000 Kruskal Wallis), mental health (p = 0.000 Kruskal Wallis), cultural heritage (p = 0.002 Kruskal Wallis), and workplace sustainability culture (p = 0.001 Kruskal Wallis).

Table 4.6 Anova test results on the influence of Job role and Education level on Respondents' Knowledge Attitudes and practices.

ESG KAP Factor	Job Role (P value)	Educational level (P value)
Livelihoods improvements	0.008*	0.038*
Addressing community grievances	0.333	0.003*
Water pollution	0.433	0.000*
Biodiversity Conservation	0.026*	0.027*
Noise Pollution	0.145	0.027*
Land rehabilitation	0.884	0.927
Air Pollution	0.098	0.116
Gender Equality	0.064	0.000*
Child Labour	0.011	0.505
Mental Health	0.223	0.000*
Cultural Heritage	0.038*	0.002*
Staff Engagement	0.011	0.420
ESG compliance on operational costs	0.104	0.539
Community trust	0.268	0.61
Adequacy on ESG training	0.019*	0.115
Workplace sustainability Culture	0.104	0.001*

Production and contractor/supplier employees felt ESGs have moderately improved livelihoods. While management employees responded with the improvement in livelihoods through ESGs being influences significantly. Production and management employees rated the mine's effectiveness in conserving biodiversity as effective while contractors rated the effectiveness as extremely effective (mode = 5).

Management and contractor employees believed the mine address cultural heritage protection issues extremely efficient (mode = 5) while production staff believed the mine addresses cultural heritage efficiently (mode =4). Production and contractor employees believe the ESG training for their respective roles is basic but sufficient (mode =3) while employees in management feel that the ESG training is comprehensive and regular (mode = 4) for their role.

CHAPTER 5 DISCUSSION

5.1 ESG Knowledge, Attitudes and Practices

The results from this study reveal important insights into the intersection of demographic characteristics, education, job roles, and Environmental, Social, and Governance (ESG) awareness and practices among mine workers in Zimbabwe. A significant majority of respondents were male and within the productive age group of 31–45 years, reflecting the broader gender and age dynamics commonly observed in the mining sector both regionally and globally¹. This demographic structure mirrors patterns observed in mining sectors across sub-Saharan Africa, where mining remains a male-dominated industry due to both cultural norms and the physically demanding nature of the work (Lahiri-Dutt, 2012). The predominance of younger and middle-aged adults is consistent with findings from other studies in resource-rich economies, where mining offers employment opportunities to those in their most productive years (Corvino et al., 2020; Mariri & Chipunza, 2011). In Zimbabwe, this demographic reality has implications for policy and intervention design, particularly around health, safety, and gender inclusion in the sector.

Education levels among respondents were relatively high, with all participants having some formal education and 70% holding either a diploma or a bachelor's degree (Al-Mansoori & Hamdan, 2023). This is notable given that, in many African mining communities, lower levels of educational attainment often limit workers' ability to engage with complex regulatory and sustainability frameworks (Al-Mansoori & Hamdan, 2023). The study found that educational attainment was significantly associated with knowledge and attitudes towards Environmental, Social, and Governance (ESG) principles, particularly in areas such as livelihood improvements, biodiversity conservation, and cultural heritage protection. This is consistent with international literature, which highlights education as a key enabler of sustainable mining practices and effective community engagement (Corvino et al., 2020; Mariri & Chipunza, 2011). In Zimbabwe, where disparities in educational access persist, these findings underscore the need for targeted ESG training and capacity-building, especially for production and contractor staff who may not have had the same exposure to ESG concepts as management.

Familiarity with ESG principles was generally low, with 70% of respondents reporting that they had heard of ESG but were not knowledgeable, 20% being somewhat familiar, and only 10% being very familiar. Management staff exhibited greater awareness and understanding of

ESG compared to production and contractor employees a finding that aligns with studies from other mining contexts, where management typically receives more comprehensive ESG training and is more involved in policy development and implementation (Franks et al., 2014). This knowledge gap is significant, as effective ESG integration requires buy-in and understanding at all organizational levels. In Zimbabwe, where artisanal and small-scale mining is prevalent, the lack of ESG awareness among non-management staff could hinder the sector's ability to meet both local and international sustainability standards (Murombo, 2013).

Despite limited familiarity with the broader ESG framework, most respondents actively participated in environmental activities such as water conservation (100%), waste management (90%), carbon emissions reduction (70%), and reforestation (90%). However, there was less engagement with social and governance aspects, such as anti-corruption training (50%) and corporate social responsibility initiatives. This trend is not unique to Zimbabwe; globally, mining companies have often prioritized environmental compliance, sometimes at the expense of social and governance dimensions (Franks et al., 2014). Yet, as stakeholder expectations evolve, there is growing recognition that social license to operate and long-term sustainability depend equally on robust governance and meaningful community engagement (Franks et al., 2014).

5.2 Relationship between Socio Demographics and Knowledge Attitudes & Practices of ESG

Job roles also influenced ESG familiarity and participation. Management staff demonstrated higher awareness and engagement with ESG principles compared to production workers and contractors¹. This distinction is mirrored in global mining literature, where management typically receives more comprehensive ESG training and is more involved in policy-making, while operational staff may have limited exposure to such frameworks (Corvino et al., 2020; Mariri & Chipunza, 2011). The Zimbabwean context, characterized by a mix of large-scale and artisanal mining operations, presents unique challenges. Artisanal miners, for instance, often lack formal ESG training and are less integrated into corporate sustainability programs, which can hinder sector-wide progress toward ESG goals (Murombo, 2013).

The influence of ESG training was evident, with management perceiving their training as more comprehensive and regular, while production and contractor staff viewed theirs as basic but sufficient¹. This highlights the importance of standardized, context-specific ESG training

across all job roles, as recommended by the Responsible Mining Academy and other global initiatives (ESG Network Zimbabwe, 2022; ZELA, 2023b). Such training should address mining-specific scenarios, including community resettlement, water management in arid regions, and negotiations with local stakeholders—issues highly relevant to Zimbabwe’s mining landscape, where operations often intersect with rural communities and sensitive ecosystems (ESG Network Zimbabwe, 2022).

Relating these findings to the Zimbabwean scenario, it is clear that while progress has been made in integrating ESG principles into mining operations, significant gaps remain. The sector’s future competitiveness and social acceptance will depend on its ability to broaden ESG training, foster greater inclusion of women and younger workers, and strengthen engagement with local communities (Lahiri-Dutt, 2012; Lim et al., 2022). As international standards and investor expectations continue to rise, Zimbabwean mining companies must demonstrate transparency, accountability, and a genuine commitment to sustainable development, not only to attract investment but also to secure the trust of the communities in which they operate (Garcia-Zavala et al., 2023). Digital transformation and the adoption of new technologies can further enhance ESG performance, enabling better data collection, reporting, and stakeholder communication key factors for success in an increasingly regulated and scrutinized global mining industry.

CHAPTER 6 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

- ESG (Environmental, Social, and Governance) awareness was generally low while Management staff showed significantly higher ESG knowledge and awareness compared to production and contractor employees. Knowledge was skewed towards the environmental and social aspects of ESG.
- Respondents were most familiar and actively involved with the environmental aspects of ESG (such as water conservation, waste management, and reforestation), while knowledge and involvement in social and governance aspects were limited.
- Job role significantly influenced ESG attitudes regarding livelihoods, biodiversity conservation, cultural heritage, and adequacy of ESG training, but not on other ESG factors like community trust or workplace sustainability culture.
- Educational level significantly influenced ESG knowledge and governance toward several factors, including livelihoods, community grievances, water and noise pollution, biodiversity, gender equality, mental health, cultural heritage, and workplace sustainability.

6.2 Recommendations

- Increase targeted ESG training for production and contractor staff to bridge the knowledge gap with management and improve familiarity with all ESG pillars, especially social and governance aspects.
- Develop and implement comprehensive ESG awareness programs tailored to all job roles, ensuring that training is regular and addresses both theoretical and practical aspects of ESG.
- Enhance participation in social and governance initiatives (such as anti-corruption training and corporate social responsibility) to balance the current focus on environmental activities¹.
- Foster a workplace culture that values and integrates ESG principles at all organizational levels, leveraging the relatively high educational attainment among workers¹.
- Collaborate with external stakeholders, including local communities and regulatory bodies, to strengthen ESG compliance and build community trust.

References

- Abel, S., Mukarati, J., Mutohori, C., & le Roux, P. (2021). Determinants of foreign direct investment in the Zimbabwean Mining Sector. *Journal of Economic and Financial Sciences*, 14(1), 7.
- Al-Mansoori, F., & Hamdan, A. (2023). Integrating indigenous knowledge systems into environmental education for biodiversity conservation: A study of sociocultural perspectives and ecological outcomes. *AI, IoT and the Fourth Industrial Revolution Review*, 13(7), 61–74.
- Barbier, E. B., Czajkowski, M., & Hanley, · Nick. (2017). Is the Income Elasticity of the Willingness to Pay for Pollution Control Constant? *Environmental and Resource Economics*, 68, 663–682. <https://doi.org/10.1007/s10640-016-0040-4>
- Barko, T., Cremers, M., & Renneboog, L. (2022). Shareholder Engagement on Environmental, Social, and Governance Performance. *Journal of Business Ethics*, 180(2), 777–812. <https://doi.org/10.1007/S10551-021-04850-Z>
- Basure, H. S., Taru, J., & Mutangi, G. T. (2019). Livelihoods fragility and land tenure in the post-fast track land reform era in Upper Guruve, Zimbabwe. *Anthropology Southern Africa*, 42(3), 259–270. <https://doi.org/10.1080/23323256.2019.1639524>
- Boness, C. M. (2019). Case 14: Hiring and Firing in the Chinese-Zimbabwean Mining Industry. In C.-H. Mayer, L. Louw, & C. M. Boness (Eds.), *Managing Chinese-African Business Interactions* (pp. 215–223). Springer International Publishing. https://doi.org/10.1007/978-3-030-25185-7_17
- Brown, D., Chanakira, R. R., Chatiza, K., Dhliwayo, M., Dodman, D., Masiwa, M., Muchadenyika, D., Mugabe, P., & Zvigadza, S. (2012). Climate change impacts, vulnerability and adaptation in Zimbabwe. *IIED Climate Change Working Paper*, 3. www.iied.orgClimateChange
- Burkepile, D. E., Burns, C. E., Tambling, C. J., Amendola, E., Buis, G. M., Govender, N., Nelson, V., Thompson, D. I., Zinn, A. D., & Smith, M. D. (2013). Habitat selection by large herbivores in a southern African savanna: The relative roles of bottom-up and top-down forces. *Ecosphere*, 4(11), art139. <https://doi.org/10.1890/ES13-00078.1>
- Campbell, B. (2006). Good governance, security and mining in Africa. *Minerals and Energy - Raw Materials Report*, 21(1), 31–44.
- Campbell, B. (2009). Mining in Africa: Regulation and development. In IRDC. IRDC. https://books.google.com/books?hl=en&lr=&id=8tIVkxqB00C&oi=fnd&pg=PR5&dq=environmental+social+governance+in+mining+in+Africa&ots=mLlhxOv171&sig=YyRZrSv8OLRX_rAXjyMrQ6ItFS4
- Chamber of Mines of Zimbabwe. (2022). Annual report. In *The Chamber of Mines of Zimbabwe Annual report 2022* (Issue 1, p. 133). The Chamber of Mines of Zimbabwe. <https://doi.org/10.1080/00050326.1934.10436379>
- Chenje, M., Sola, L., & Paleczny, D. (1998). *The state of Zimbabwe's environment 1998*. <http://agris.fao.org/agris-search/search.do?recordID=XF2015020262>

- Chipaike, R., & Bischoff, P. H. (2019). Chinese Engagement of Zimbabwe and the Limits of Elite Agency. *Journal of Asian and African Studies*, 54(7), 947–964. <https://doi.org/10.1177/0021909619848783>
- Chipfakacha, C. T. (2024). Chinese Funding: A Curse to Africa: A Case of Shurugwi Zimbabwe. *African Journal of Political Science*, 12(1), 31–36.
- Chitimira, H., & Mokone, P. (2017). A general legislative analysis of "torture" as a human rights violation in Zimbabwe. *PER / PELJ*, 20. <https://doi.org/10.17159/1727>
- Chiweshe, M. K., & Mutondoro, F. S. (2017). Political corruption and the post 2018 agenda in Zimbabwe. *Journal of Public Administration and Development Alternatives (JPADA)*, 2(2), 34–46.
- Corvino, A., Doni, F., & Bianchi Martini, S. (2020). Corporate governance, integrated reporting and environmental disclosure: Evidence from the South African context. *Sustainability*, 12(12), 4820.
- Dube, G., & Chiluba, B. (2021). Ergonomic Factors Associated with Lower Back Pain Amongst Load-Haul-Dump Truck Operators at Freda Rebecca Gold Mine, Bindura, Zimbabwe. *Journal of Preventive and Rehabilitative Medicine*, 3(1), 50–59.
- Duho, K. (2023). Environmental Reporting, Corporate Governance, and Sustainable Development in Africa's Mining Sector. In *SGDs in Africa and the Middle East Region* (pp. 1–30). Springer International Publishing. https://doi.org/10.1007/978-3-030-91260-4_21-1
- ESG Network Zimbabwe. (2022, June 23). *Freda Rebecca Gold mine transforming lives in Mash Central – ESG Network Zimbabwe*. <https://esgnetworkzimbabwe.co.zw/freda-rebecca-gold-mine-transforming-lives-in-mash-central/>
- FAO. (2021). *SOCIO-ECONOMIC IMPACT OF SMALLHOLDER IRRIGATION DEVELOPMENT IN ZIMBABWE*. Food Agriculture Organisation. <https://www.fao.org/3/x5594e/X5594e14.htm>
- Franks, D. M., Davis, R., Bebbington, A. J., Ali, S. H., Kemp, D., & Scurrah, M. (2014). Conflict translates environmental and social risk into business costs. *Proceedings of the National Academy of Sciences*, 111(21), 7576–7581. <https://doi.org/10.1073/pnas.1405135111>
- Frederiksen, T. (2019). Political settlements, the mining industry and corporate social responsibility in developing countries. *The Extractive Industries and Society*, 6(1), 162–170.
- Gambara, Cuthbert. Z. (2007). Environmental Impact Assessment Report for the Marange Chiadzwa Diamond Project Proponent: Zimbabwe Minins Development Corporation By. *Institute of Mining Research*, 3(July), 332–345.
- Garcia, A., & Orsato, R. (2020). Testing the institutional difference hypothesis: A study about environmental, social, governance, and financial performance. *Business Strategy and the Environment*, 28(8), 3261–3272.
- Garcia, A. S., & Orsato, R. J. (2020). Testing the institutional difference hypothesis: A study about environmental, social, governance, and financial performance. *Business Strategy and the Environment*, 29(8), 3261–3272. <https://doi.org/10.1002/BSE.2570>
- Garcia-Zavala, C., Ordens, C. M., Pagliero, L., Lèbre, É., Aitken, D., & Stringer, M. (2023). An approach for prioritising environmental, social and governance (ESG) water-related

- risks for the mining industry: The case of Chile. *The Extractive Industries and Society*, 14, 101259.
- Gukurume, S., & Tombindo, F. (2023). Mining-induced displacement and livelihood resilience: The case of Marange, Zimbabwe. *The Extractive Industries and Society*, 13, 101210. <https://doi.org/10.1016/J.EXIS.2023.101210>
- Hamann, R., Kapelus, P., & O’Keefe, E. (2011). Corporate social responsibility and its implications for governance: The case of mining in South Africa. *Governance Ecosystems: CSR in the Latin American Mining Sector*, 260–276.
- Hirons, M. (2020). How the Sustainable Development Goals risk undermining efforts to address environmental and social issues in the small-scale mining sector. *Environmental Science and Policy*, 114, 321–328.
- In The High Court Of Zimbabwe Bere & Makonese Jj Bulawayo 29 January & 1 February 2018: Hearing before the High Court of Zimbabwe*, Judicial Service Commission (2018).
- IPCC. (2024). *Special Report on Climate Change and Land: Indigenous Knowledge and Resilience*. Intergovernmental Panel on Climate Change. <https://www.ipcc.ch>
- Jomboro, B. (2018). *Environmental Process in Impact Assessment (Eia) Sector: Awareness , Perceptions and Environmental Management Strategies in Mudzi District* (Issue November 2018). Univesity of Zimbabwe.
- Jowitt, S., Mudd, G., & Thompson, J. (2020). Future availability of non-renewable metal resources and the influence of environmental, social, and governance conflicts on metal production. *Communication Earth & Environment*, 1(1), 13.
- Karen, A. (2023). Compliance with Environmental, Social, and Governance Requirement in the Mining Industry. *Multidisciplinary Journal of Science and Technology*, 3(1), 93–100.
- Krawczyk, W. J. (2019). Aid, Governance and Public Finance Fraud: Evidence from Zimbabwe. *Gospodarka Narodowa. The Polish Journal of Economics*, 299(3), 119–144.
- Lahiri-Dutt, K. (2012). Digging women: Towards a new agenda for feminist critiques of mining. *Gender, Place & Culture*, 19(2), 193–212. <https://doi.org/10.1080/0966369X.2011.572433>
- Lèbre, É., Stringer, M., Svobodova, K., Owen, J., Kemp, D., Cote, C., Arratia-Solar, A., & Valenta, R. (2020). The social and environmental complexities of extracting energy transition metals. *Nature Communications*, 11(1), 1–8.
- Lim, W., Ciasullo, M., Douglas, A., & Kumar, S. (2022). Environmental social governance (ESG) and total quality management (TQM): A multi-study meta-systematic review. *Total Quality Management and Business Excellence*, Mar(9), 1–23.
- Lim, W. M., Ciasullo, M. V., Douglas, A., & Kumar, S. (2022). Environmental social governance (ESG) and total quality management (TQM): A multi-study meta-systematic review. *Total Quality Management and Business Excellence*. <https://doi.org/10.1080/14783363.2022.2048952>
- Mabika, B. (2018). Improving Workers’ Safety and Health in the Zimbabwean Mining and Quarrying Industry. In *Walden University*.

- Madzoke, I. T., Nyambe, H. K., Malala, N., & Wu, J. (2024). Investigating the Relationship between ESG Performance and Financial Performance: Evidence from Listed Mining Companies in Zimbabwe. *OALib*, 11(05), 1–23. <https://doi.org/10.4236/oalib.1111542>
- Mapaure, C. (2014). Chinese Investments in Zimbabwe and Namibia. *A Comparative Legal Analysis*. Centre for Chinese Studies, University of Stellenbosch. https://www.researchgate.net/profile/Clever-Mapaure/publication/311875115_Chinese_Investments_in_Zimbabwe_and_Namibia_A_Comparative_Legal_Analysis/links/5b2799b5aca2723fbee7dbb/Chinese-Investments-in-Zimbabwe-and-Namibia-A-Comparative-Legal-Analysis.pdf
- Mariri, T., & Chipunza, C. (2011). Corporate governance, corporate social responsibility and sustainability: Comparing corporate priorities within the South African mining industry. *Journal of Human Ecology*, 35(2), 95–111.
- Marumahoko, S., Shayawabaya, T., Ngorima, O., & Nhede, N. T. (2023). Community Acceptance of Chinese Mining Investment in Rural Zimbabwe: The Situation of Hwange District. *The Strategic Review for Southern Africa*, 45(2). https://www.upjournals.up.ac.za/index.php/strategic_review/article/view/4793
- Maunganidze, L. (2016). Zimbabwe: Institutionalized Corruption and State Fragility. In D. Olowu & P. Chanie (Eds.), *State Fragility and State Building in Africa* (Vol. 10, pp. 39–60). Springer International Publishing. https://doi.org/10.1007/978-3-319-20642-4_3
- Maybee, B., Lilford, E., & Hitch, M. (2023). Environmental, Social and Governance (ESG) risk, uncertainty, and the mining life cycle. *The Extractive Industries and Society*, 14, 101244.
- Mitchell, S. (2014). Environmental, social and corporate governance reporting: Perspectives from the Johannesburg Stock Exchange and an international metals and mining sample [Stellenbosch University]. In *Doctoral Dissertation Stellenbosch*. <https://scholar.sun.ac.za/handle/10019.1/95862>
- Moss, B. (2008). Water pollution by agriculture. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 363(1491), 659–666. <https://doi.org/10.1098/RSTB.2007.2176>
- Moyo, B., J.P. (2024, July 22). Freda Rebecca Gold Mine plans to develop a solar plant with an average of 6 MW. *The Environment*. <https://www.theenvironment.co.zw/2024/07/22/freda-rebecca-gold-mine-plans-to-develop-a-solar-plant-with-an-average-of-6-mw/>
- Mugarisanwa, Y. (2022). Legal Evidence based advocacy guide on good environmental governance: Constitutional provisions on environmental rights and management of natural resources in Zimbabwe. *PWYP Socio-Political and Economic Context of Natural Resource Governance and Management in Zimbabwe Report*, 1, 1–4.
- Muqayi, S., & Chimwara, O. (2019). The Sustainability of diamond mining in Zimbabwe. *The Sustainability Ethic in the Management of the Physical, Infrastructural and Natural Resources of Zimbabwe*, 423.
- Murombo, T. (2013). Regulating mining in South Africa and Zimbabwe: Communities, the environment and perpetual exploitation. *Law Env't & Dev. J.*, 9, 31.

- Musemwa, L., & Musara, J. (2020). Impacts of improved sorghum varieties intensification on household welfare in the mid-Zambezi Valley of Zimbabwe. *Agrekon*, 59(2), 254–267.
- Nehring, M., & Knights, P. (2024). A Systems Engineering Approach to Incorporate ESG Risks and Opportunities in Early-Stage Mine Design and Planning. *Mining*, 4(3), 546–566.
- Nyandoro, M., & Hatti, N. (2018a). Economic determinants of poverty in Zimbabwe. *Social Science Spectrum*, 4(2), 56–74.
- Nyandoro, M., & Hatti, N. (2018b). Poverty and the politics of poverty in independent Zimbabwe, 1980-2017. *Social Science Spectrum*, 4(2), 56–74.
- Ojakorotu, V., & Kamidza, R. (2018). Look East Policy: The Case of Zimbabwe–China Political and Economic Relations Since 2000. *India Quarterly: A Journal of International Affairs*, 74(1), 17–41. <https://doi.org/10.1177/0974928417749642>
- Phiri, M., Maruta, E. P., & Chazireni, E. (2020). Poverty in Zimbabwe: A Critical Review. *European Journal of Social Sciences Studies*, 5(5), 37–44. <https://doi.org/10.46827/ejsss.v5i5.901>
- Quayson, M., Bai, C., Mahmoudi, A., Hu, W., Chen, W., & Omoruyi, O. (2023). Designing a decision support tool for integrating ESG into the natural resource extraction industry for sustainable development using the ordinal priority approach. *Resources Policy*, 85, 103988.
- Saunders, R. (2008). Crisis, capital, compromise: Mining and empowerment in Zimbabwe. *African Sociological Review/Revue Africaine de Sociologie*, 12(1). <https://www.ajol.info/index.php/asr/article/view/43530/27054>
- Shilongo, G. M. (2023). Evaluating the implementation of environmental, social and governance factors in the mining sector: A case study of Namibia [Stellenbosch University]. In *Doctoral Dissertation Stellenbosch*. <https://scholar.sun.ac.za/handle/10019.1/127154>
- Singo, J., Isunju, J. B., Moyo, D., Steckling-Muschack, N., Bose-O'reilly, S., & Mamuse, A. (2022). Hazards and Control Measures among Artisanal and Small-Scale Gold Miners in Zimbabwe. *Annals of Global Health*, 88(1). <https://doi.org/10.5334/aogh.3621>
- Tanda, P. A., & Genc, B. (2024). Zimbabwe's mining policy impact on revenue leakages. *Resources Policy*, 91, 104884.
- UN. (2017). *THE 17 GOALS | Sustainable Development*. United Nations Department of Economic and Social Affairs. <https://sdgs.un.org/goals>
- Ur Rehman, R., Zhang, J., Uppal, J., Cullinan, C., & Akram Naseem, M. (2016). Are environmental social governance equity indices a better choice for investors? An Asian perspective. *Business Ethics*, 25(4), 440–459. <https://doi.org/10.1111/BEER.12127>
- Whitelock, V. G. (2019). Multidimensional environmental social governance sustainability framework: Integration, using a purchasing, operations, and supply chain management context. *Sustainable Development*, 27(5), 923–931. <https://doi.org/10.1002/SD.1951>
- Widyawati, L. (2021). Measurement concerns and agreement of environmental social governance ratings. *Accounting and Finance*, 61(S1), 1589–1623. <https://doi.org/10.1111/ACFI.12638>
- ZELA. (2022a). *Law & Policy – Zimbabwe Environmental Law Association*. <https://zela.org/publications/law-policy/>

- ZELA. (2022b). Local Content Policies and Guidelines in the Mining Sector in Zimbabwe. *Zimbabwe Environmental Law Association*, 1–2.
- ZELA. (2022c, September). *The role of Environmental, Social and Governance (ESG) Reporting in promoting responsible sourcing and investment in the extractive sector.* – *Zimbabwe Environmental Law Association*. Zimbabwe Environmental Law Association. <https://zela.org/the-role-of-environmental-social-and-governance-esg-reporting-in-promoting-responsible-sourcing-and-investment-in-the-extractive-sector/>
- ZELA. (2023a). *MINING PROJECT PERFORMANCE REPORT Case of Sabi Star Lithium Project by Max Minds Investments in Buhera* (Law Compliance No. 1). Zimbabwe Environmental Law Association.
- ZELA. (2023b). *Responsible Mining audits and Environmental Social Governance (ESG) in Zimbabwe; Current Practises Challenges and Recommendations.* (No. 1). Zimbabwe Environmental Law Association.

Appendix A Data Collection Questionnaire



Sande
Questionnaire.docx

Appendix B Approval Letter

BINDURA UNIVERSITY OF SCIENCE EDUCATION



DEPARTMENT OF ENVIRONMENTAL SCIENCE
Bag 1020, BINDURA, Zimbabwe

Tel : 263 - 71 - 6505
Cell : 0778371588
Email : tmugure@buse.ac.zw

Dear Sir/Madam

REQUEST FOR PERMISSION TO COLLECT DATA FOR ACADEMIC RESEARCH PROJECT

PROJECT TITLE: Knowledge Attitude Practices (KPA) on Environmental Social Governance in mining industry, A case study of Freda Rebecca Gold Mine Zimbabwe

ACADEMIC SUPERVISORS: Mr Nhokovedzo

This letter serves to inform you that **Sande Francis, Registration Number (B220369B)** is a fourth-year student at Bindura University of Science Education, in the Department of Environmental Science. During his fourth year of study, he is supposed to do a research project in his area of specialisation.

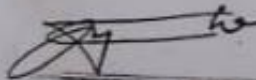
Please assist in any possible way. Data collected will be used for academic purposes only and will not be published without your prior consent.

Thank you for your assistance.

Yours faithfully,

Mr T. Nyamugure
DEPARTMENT OF ENVIRONMENTAL SCIENCE

Approval subject to SMC confirmation
Okwisa 29/4/25







Appendix C Data analysis Output



Spss Analysis
Output.docx