

Title:

Creating safer working environments through the application of SARF in ISO31000:2018 strategies in the Artisanal and Small - Scale Mining sector.

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Abstract

Introduction: The Artisanal and Small-Scale Mining (ASM) sector is a vital component of economic development in various global sectors. Despite its prominent role, the sector faces a myriad of safety, ethical, and community issues. Introducing the Social Amplification Risk Framework (SARF) into ISO31000:2018 strategies presents a novel solution to improving the ASM sectors' working conditions.

Objective: This study explores the integration of SARF into ISO31000:2018 to enhance safety in the ASM sector. The solution is explored through the lens of security professionals and the ethical dilemmas they face when entering the sector.

Design: Surveys were conducted among seven participants from the security community to ascertain their working conditions, challenges, and risk management solutions. The qualitative analysis was conducted to determine the gaps that could be filled by SARF.

Results: The remote and underdeveloped location of ASM sites leads to logistical challenges and safety risks. The main hazards are physical danger, community hostility and retaliation, legality issues, and impacts on health. Participants recognize the need for cultural sensitivity, community outreach, ethical considerations, and risk assessment.

Conclusions: This study suggests that ASM development enjoys complex and twofold dimensions of both promises and threats. Evidently, ethical and safety-sensitive approaches are required to address these challenges. By integrating SARF into ISO31000:2018 approaches, all these dimensions can be addressed through a structured and systematic methodology.

Recommendations: Future research should also analyse the socio-economic effect on communities, the outcome of ethical frameworks, and the way security professionals enforce ethical practices. Practical measures, such as cultural sensitivity campaigns, security protocols, and measures, are fully recommended in this sector.

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Chapter 1 : Introduction

The ASM sector incorporates diverse risks and challenges which may pose health risks to employees. These risks are exacerbated in the informal sector where there are poor policies and regulatory frameworks (Hirons, 2020). Therefore, creating a safe environment is warranted to cushion the workers from adverse health outcomes and enhance their understanding of risk. In this perspective, it is crucial to understand and appreciate the need for duty of care and the stakeholder's role in mitigating adverse health outcomes. Enhancing safety, thus becomes crucial to guarantee stakeholders of duty of care (Eniowo, Kilambo & Meyer, 2020). Besides, it is critical to understand the perception of safety in the workplace, particularly within the context of the ASM sector to improve the societal outlook considering that this sector has been faced with critical safety challenges (Bester, 2022).

This study aims to assess how SARF can be incorporated within ISO31000:2018 to create a safer working environment for the ASM sector. While there are provisions mandating employers to offer a safe working environment, implementing and regulating these laws is always slow and weak in the informal mining sector. This creates a situation whereby the ASM sector workers are continually exposed to high risks in the event of an accident. Also, there is an apparent gap in the sense of duty of care to be understood by all stakeholders in the ASM sector.

1.1 Aims

This study aims to evaluate how the SARF can be incorporated within ISO31000:2018 strategies to create a safe working environment for the ASM sector from the perspectives of outsiders entering the industry and security teams engaged in this process.

1.2 Objectives

- 1 To evaluate the current risk management strategies used within the ASM sector to determine areas for improvement.
- 2 To explore how SARF can be incorporated within ISO31000:2018 to address these gaps and ensure safe operations.
- 3 To evaluate the ethical dilemma faced by security personnel when working in the ASM sector, especially concerning risk management, and ensuring workers' welfare.

1.3 Research Question

This study will adopt the following research questions:

- a) What are the views of stakeholders concerning safety in the ASM sector?
- b) How can the SARF framework be implemented effectively in ISO31000:2018 to mitigate ethical challenges and ensure workplace safety?

This study is organised into six main sections, starting with an introduction that lays the groundwork by discussing the duty of care and the importance of risk management frameworks, specifically highlighting the role of ISO31000:2018 and SARF's relevance in ASM. It proceeds with a detailed literature review, examining the interplay between risk cognition, organised crime, Risk Homeostasis Theory, security standards, corporate social responsibility (CSR), and the influence of cultural theories on risk perception within the ASM communities. The research methodology section explains the approach to participant engagement, sampling, interviews, data collection, and ethical considerations. This is followed by a research analysis part, which focuses on the communication gaps, evaluates current due diligence frameworks, and assesses the community's understanding of risk, proposing the integration of SARF into CSR initiatives. The

conclusion summarises the findings, discusses the implications for safer workplace creation, and recommends directions for future research and interventions. The dissertation is supported by appendices providing essential research documents and adheres to the Harvard referencing style.

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Chapter 2 Literature Review

2.1 Introduction

The ASM sector literature has focused broadly on the current operating standards and protocols deployed in operational dynamics. This literature has broadly covered the industry's inherent risks amidst escalating pressure from stakeholders to adopt strict regulations. When evaluating the current literature on this topic, it is vital to critically examine the link between risk, organised crime and applicable theoretical frameworks, current security standards, the role of corporate social responsibility, and the application of SARF in guiding standards application. This literature critically analyses these metrics systematically in the following sections.

2.2 Duty of Care and Risk Understanding in the Workplace

Salas-Urviola, Calsina-Paricahua and Vilca-Salas (2021) define duty of care as the legal and moral obligation of stakeholders, employers, and key actors to ensure the safety, health, and welfare of those under their care. Duty of care is more significant in the ASM sector where employees often operate in hazardous conditions with limited safety resources and infrastructure. This aspect implies that the employers and stakeholders must strive to establish robust safety measures, and training programs, and comply with jurisdiction regulations to avert the inherent risks of ASM sector activities collapse (Moyo et al., 2022). Neglecting such a duty threatens the physical safety of workers and undermines their basic rights and dignity.

Different authors have highlighted the need to consider the duty of care in the ASM sector. For instance, Aizawa (2016) explains how governments, mining entities, and localised society can work together to ensure duty of care standards to protect ASM workers from hazards that can compromise health and safety. Also, De Haan, Dales and McQuilken (2020) maintain that the

concept of duty of care applies in the identification of sustainable mining practices and social responsibility initiatives that can make a general difference in the well-being of communities concerned with ASM sector activities.

Recognising and fulfilling the duty of care towards the workers and with a deep understanding of the inherent risks is one of the vital features that enhances safer working environments for ASM sector workers. Opakas (2023) notes that the recognition of the duty of care as a moral and legal obligation of employers towards their employees should involve proactive measures to reduce risks and ensure workplace safety. For example, Ofori et al. (2020) explain that the duty of care must be understood not only as an important legal and moral obligation for employers but also as an intervention to safeguard the subordinates under their care. This process ensures that proactive measures are incepted by employers to protect the employees from adverse events. Zvarivadza (2018) argues that a comprehensive approach must be undertaken amongst different stakeholders involved in ASM sector activities, such as miners, regulators, and community members to effectively handle the complex problems inherent in this sector.

ASM sector activities introduce diverse hazards including physical risks such as mine collapses, equipment-related accidents, and environmental risks such as land degradation and pollution (Bester, 2022). The mandate for occupational health and safety is thus an understanding of such risks other than just technical proficiency. Besides, this role demands a holistic approach that integrates technical knowledge with the community's socio-cultural insights and broader community engagement.

It is however vital to understand that the duty of care extends beyond just complying with regulations to demonstrating commitment in anticipating and preventing adverse outcomes that

may be encountered by employees in the course of their duties. In this regard, a broader understanding of the risks is invaluable for developing tailored interventions to offer workers adequate safety and protection (Rwiza et al., 2023). Having such an understanding demands a holistic approach that blends technical capabilities with the socio-cultural expertise of community involvement. Wu et al. (2021) note that the duty of care extends beyond legal and regulatory mandates. This proactive stance is fundamentally critical in the ASM sector which is often characterised by weak regulatory oversight leading to informal mining practices. In this respect, stakeholders must go beyond basic legal obligations and seek to improve occupational health and safety standards levels.

Risk complexity in the ASM sector is further compounded by socio-economic factors including poverty, lack of alternative livelihoods, and low access to basic needs such as health and education (Banda, 2023). These factors increase the vulnerability of miners and also influence how they perceive and make decisions concerning risk. This implies that addressing risks in this sector demands a holistic focus by acknowledging the intersection between occupational risks and socio-economic dynamics. Cano and Kunz (2022) argue that care responsibilities in the ASM sector are often faced with legal and ethical constraints. Various stakeholders such as mining companies, government agencies and communities all have a responsibility to ensure that the health and safety of miners is free from any health risks. However, this obligation is almost always marked by very clear and frequent limitations, such as insufficient resources, weak socioeconomic approach, weak frameworks and governing incompetencies (Sojková, 2022). One criticism of the current evidence of the effect of duty of care in the ASM sector at present is uniformity in implementation and compliance mechanisms.

While the duty of care upheld by employers can represent a legal responsibility to avoid legal implications, the moral perspective that emphasises the intrinsic value of human life and well-being is often overlooked (De Haan, Dales & McQuilken, 2020). When this perspective is focused on as the sole precept for safety management, it's apparent that a compliance-driven approach to safety can be achieved. Therefore, there is a need for minimum compliance while eliminating causes and accident prevention.

2.3 Understanding Risk Perception and Interpretation in the ASM Sector

Risk perception refers to how individuals perceive and evaluate the potential and severity of hazards in their environment (Lydia, Godwin & Isaac, 2022). Understanding the concept of risk is essential to implement effective safety measures in the ASM sector where workers are exposed to many hazards such as cave-ins, toxic exposure, and accidents involving heavy machinery among others. However, risk attitudes in the ASM sector are often influenced by various factors, including culture, beliefs, socioeconomic circumstances, and historical experiences. Recent studies have examined the complexity of risk perception in the ASM sector. For example, Eniowo, Kilambo and Meyer (2022) evaluated how cultural norms and social dynamics shape risk attitudes among ASM sector professionals in different geographies. Their research suggests that traditional mining groups may have specific risk perceptions that differ from external stakeholders, requiring customised risk management. Additionally, Baffour-Kyei et al. (2021) highlight the role of informal social networks and community cohesion playing a role in influencing risk interpretation and response strategies with ASM workers. These insights highlight the importance of developing a broader understanding of risk perceptions to effectively address security concerns in the ASM area of operations.

2.4 Overview of Risk Management in the ASM Sector

The ASM sector is known for its informal nature, lack of regulatory oversight, and often remote or inaccessible operating environments. These characteristics lead to a variety of challenges and dangers faced by ASM sector workers (Ndlazi, 2020). Common risks include accidents with heavy machinery, exposure to harmful chemicals, tunnel collapses, and disputes over resource access. Furthermore, ASM activities can cause environmental harm such as deforestation, soil erosion, and water contamination, which further increase risks to both human health and ecosystems. Recent literature stresses the complex nature of risks in the ASM sector. For example, Hirons (2020) outlines various health and safety hazards encountered by ASM sector workers, such as exposure to mercury and other toxic substances used in mineral processing. Additionally, Logrosa (2018) explores the social and environmental impacts of ASM sector operations on local communities and ecosystems, stressing the importance of sustainable and responsible mining practices.

Despite the risks inherent in ASM operations, sector-specific risk management practices are often inadequate or poorly implemented. ASM operators, lacking formal training and resources, may prioritise productivity over safety, fostering a culture of risk acceptance or ignorance. Moreover, regulatory frameworks governing ASM sector activities may be weak or inadequately enforced, exacerbating safety and environmental issues. Recent research underscores the necessity for enhanced risk management strategies in the ASM sector. Moyo et al. (2022) advocate for the adoption of participatory risk assessment methods that involve ASM communities in identifying and addressing hazards. Similarly, Cabezas (2020) stresses the importance of integrating indigenous knowledge systems and traditional risk-coping mechanisms

into formal risk management frameworks to improve resilience and sustainability in ASM sector operations.

In spite of the obstacles faced, there exist opportunities to enhance risk management within the ASM sector. The integration of technological advancements, such as remote sensing, GIS mapping, and sensor-based monitoring systems, can greatly improve the identification of hazards and the implementation of early warning mechanisms. Moreover, capacity-building initiatives, including training programs and platforms for knowledge-sharing, can empower both ASM sector workers and stakeholders to adopt safer practices and adhere to regulatory requirements.

Recent scholarly works highlight the significance of partnerships and collaboration in advancing risk management endeavours within the ASM sector. For instance, Conteh and Maconachie (2021) advocate for the involvement of multiple stakeholders, including governments, mining companies, civil society organisations, and local communities, in the development and implementation of effective risk management strategies.

2.5 Significance of ISO31000:2018 Strategies

In light of the diverse and evolving risks present in the ASM sector, the implementation of robust risk management frameworks is crucial. The International Organisation for Standardisation (ISO) has developed a range of standards to assist organisations in effectively managing risks (Hamir & Sum, 2021). One such standard is ISO 31000:2018, which offers principles, frameworks, and processes for risk management that apply to organisations of varying sizes and industries, including ASM sector operations.

ISO 31000:2018 underscores a proactive and systematic approach to risk management, with a focus on the identification, assessment, treatment, and monitoring of risks across the organisation

(Soutzis, 2020). By embracing the strategies outlined in ISO 31000:2018, ASM stakeholders can strengthen their ability to anticipate, mitigate, and respond to risks effectively, thereby safeguarding the well-being of workers, communities, and the environment. Various stakeholders have emphasised the significance and relevance of ISO 31000:2018 in the ASM sector. For instance, Hinton et al. (2020) have illustrated how ASM sector organisations in Ghana have leveraged the principles of ISO 31000:2018 to enhance their risk management practices and bolster operational resilience. Similarly, Lassalle et al. (2021) discuss the incorporation of ISO 31000:2018 into ASM governance frameworks, highlighting its potential to foster transparency, accountability, and sustainability.

Furthermore, the strategies outlined in ISO 31000:2018 are in line with the growing emphasis on responsible sourcing and sustainable mining practices. Different stakeholders, including governments, mining entities, investors and civil organisations are increasingly acknowledging the importance of integrating risk management into ASM governance frameworks to address social, environmental, and ethical issues. Through the adoption of ISO 31000:2018 strategies, ASM sector stakeholders can demonstrate their dedication to responsible business practices, mitigate reputational risks, and enhance stakeholder confidence and trust.

2.6 Relevance of SARF in the ASM Sector

The SARF (SARF) is a theoretical model that offers a comprehensive perspective for analysing and addressing risk perception, communication, and management (Moyo et al., 2022). In the context of the ASM sector, SARF is particularly relevant to understanding the intricate interplay between social, psychological, and institutional factors in shaping the amplification or attenuation risk process. Recently, the ASM sector has gained significant attention due to its

inherent risks to human health, safety, and the environment, as well as its socio-economic importance in many developing regions (Hilson et al., 2017). Despite efforts to enhance safety standards and practices, the ASM sector remains one of the most perilous occupations worldwide.

The application of SARF within the ASM sector holds great potential for improving risk management strategies and ultimately creating safer working environments for all stakeholders. The idea behind SARF is that risk perceptions are not solely determined by the objective characteristics of hazards but are shaped by different cultural, social, and cognitive factors. Understanding the mechanisms through which risks are perceived, interpreted, and communicated in the ASM sector is paramount as miners often face multiple and interconnected risks ranging from physical dangers to socioeconomic vulnerabilities (Vasquez, 2021). For instance, Adrany, Stringer and Altink (2023) highlight how the amplification of risk perceptions among ASM communities can stem from various sources, including media portrayal, community norms, and individual experiences. By embracing SARF, stakeholders in the ASM sector can gain insights into these complex risk dynamics and tailor interventions accordingly.

Recent literature has highlighted the applicability of SARF in various contexts, including environmental hazards, public health crises, and technological disasters. For instance, Slovic et al. (2016) applied SARF to analyse public perceptions of climate change risks, demonstrating how media coverage and social discourse can amplify or attenuate risk perceptions. Similarly, Leach and Fairhead (2017) utilised SARF to examine community responses to the Ebola outbreaks in West Africa, revealing how cultural beliefs and social networks influence risk communication and behaviour.

2.7 Application of SARF in ASM for Creating Safer Environments

SARF offers valuable insights into risk communication, stakeholder engagement, and the development of interventions to create safer working environments in the ASM sector. Miners often face interconnected and multiple risks from physical injuries to socio-economic vulnerabilities (Mabe et al., 2023). By understanding the social dynamics and communication channels in ASM communities, stakeholders can effectively identify, assess, and mitigate risks, thereby enhancing safety and well-being.

Identifying and mitigating risk amplification pathways can contribute to the creation of safer working environments. One vital aspect is recognising and appreciating the role played by social networks and information flows in shaping risk perceptions and behaviours amongst ASM sector stakeholders. Lahiri-Dutt (2018) underscores how informal communication channels within ASM communities can magnify risk perceptions, leading to practices that prioritise short-term gains over long-term safety considerations. By integrating SARF into risk management strategies, such as those outlined in ISO 31000:2018, stakeholders can devise targeted communication campaigns and capacity-building initiatives aimed at correcting misinformation and promoting safer practices.

Besides, SARF emphasises the importance of trust, credibility, and stakeholder engagement in risk communication processes (Ayambire et al., 2024). In the ASM sector, where trust between miners, government agencies, and other actors may be fragile due to historical grievances and power imbalances, fostering meaningful dialogue is essential. Adranyi, Stringer and Altink (2023) argue that SARF provides a framework for participatory risk assessment and decision-making. In this process, the voices and perspectives of ASM stakeholders are valued and

integrated into risk management policies and practices. By building trust and collaboration, SARF-based approaches can enhance the effectiveness and sustainability of interventions aimed at improving safety outcomes in the ASM sector.

However, this undertaking incorporates various challenges and risks. Armah et al. (2016) examined the social amplification of mercury-related risks in ASM communities, highlighting the role of social networks, cultural beliefs, and information dissemination in shaping risk perceptions. The study underscored the importance of community engagement and participatory approaches in addressing mercury pollution and promoting safer mining practices.

Furthermore, SARF can inform the design and implementation of risk communication strategies tailored to the specific needs and preferences of ASM sector stakeholders. For example, Moretti and Garrett (2018) adopted SARF principles to develop a community-based risk communication program in Tanzanian ASM communities. The program aimed to improve miners' understanding of occupational hazards, promote preventive behaviours, and facilitate access to support services.

Moreover, SARF can guide the integration of risk communication and management into broader development initiatives in the ASM sector. By engaging with local communities, governments, and industry stakeholders, SARF-based approaches can enhance collaborative decision-making, and risk governance, and promote sustainable development outcomes. For instance, Lahiri-Dutt (2018) advocated for SARF-informed strategies to address the socio-environmental impacts of ASM sector activities, emphasising the need for inclusive, context-specific interventions that prioritise community well-being. By applying these principles, stakeholders can enhance risk communication, build trust, and empower communities to participate in decision-making processes. SARF increases the duty of care to the stakeholders and enhances risk management

strategies that would facilitate overall work safety. The following chapter focuses on the literature review where previous studies on this topic will be critically analysed

2.8 Relationship: risk cognition, Organised Crime, and Risk Homeostasis Theory

An understanding of risk awareness is essential for security professionals to ensure that outsiders entering an ASM environment are fully aware of the ASM sector. These security professionals often work in areas where there are risks and threats, equating to danger, danger determined by their daily experience. Wagner and Hunter (2020) argue that ASM communities uniquely understand risk, shaped by their socioeconomic environment and cultural beliefs. These communities often perceive risks differently from mainstream society, with factors such as poverty, lack of access to education, and limited job opportunities influencing their risk perceptions. For example, ASM sector workers may view risks such as exposure to toxic chemicals or collapsing mines as justifiable trade-offs for the potential economic benefits of their work. This aspect implies that interventions aimed at improving safety in the ASM sector must consider the specific risk perceptions of these communities to be effective. Aizawa (2016) indicates that ASM sector workers may exhibit higher risk tolerance due to financial frustration, limited alternative lifestyles, and lack of safety regulation. This higher risk may be reflected in short-term actions. Profit takes precedence over long-term security.

The connection between risk perception and ASM communities is intricate. Ajith, Ghosh, and Jansz (2020) show that ASM sector workers often have a high tolerance for risk due to the dangerous nature of their work and limited alternatives. This increased risk tolerance can impact decision-making and result in behaviours prioritising immediate benefits over long-term safety

concerns. Additionally, cultural elements and socioeconomic pressures also influence risk perceptions among ASM communities, creating a complex risk environment.

Aizawa (2016) and Ajith, Ghosh, and Jansz (2020) provide fundamental insights into the motivations and risk perceptions of ASM sector workers. Aizawa's research in Tanzania outlines how the ASM sector serves as an economic activity and a social safety net, indicating that risk awareness among ASM sector workers is not solely based on economic reasoning but is also strongly linked to social advantages and community relationships. This perspective challenges conventional risk assessment models that may disregard the social aspects of risk perception in ASM sector communities. However, Aizawa's analysis needs to thoroughly examine how these social advantages might impact workers' tolerance towards risk, particularly in the presence of physical and legal hazards. This gap highlights the need for a more detailed understanding of risk awareness that considers the economic and social factors driving ASM sector activities.

Alternatively, Ajith et al. (2020) concentrate on the measurable risk factors leading to injuries in ASM sector operations, comprehensively evaluating the physical hazards involved. Although their findings offer valuable information on the types of risks and their frequency, they still need to completely integrate the psychological or cognitive aspects of risk perception among ASM sector workers. Assuming that risk factors are universally perceived or that workers consistently evaluate their consequences, overlooks the cultural and individual diversities in risk awareness. This oversight highlights a critical gap in the literature, where the subjective nature of risk perception in diverse ASM sector communities is not adequately explored. While Smith et al. (2016) acknowledge the broader health and safety concerns in the ASM sector, including the impact of illegal mining activities, they evaluate the specific effects of organised crime on how the community perceives and manages risks.

Organised crime significantly influences risk perceptions and behaviours in the ASM sector. Studies by Rosales (2019) and Moyo et al. (2022) demonstrate how criminal networks exploit the weaknesses of ASM sector operations through extortion, theft, and illegal taxes. These activities not only endanger the safety of ASM sector workers but also cultivate an atmosphere of fear and distrust. Consequently, ASM workers may resort to informal protection networks or compliance with criminals to manage perceived risks and protect their livelihoods.

Landrigan et al. (2022), on the other hand, note that ASM sector operations are subject to a variety of potential risks as they are often conducted in remote and economically disadvantaged areas, including those associated with organised crime such as forced labour, human trafficking, migrant smuggling and money laundering, including abuse. The authors highlight the complex relationship between ASM sector activity and organised crime, arguing that the vulnerability of ASM activity makes it attractive to criminal groups seeking to exploit resources and individuals. To pursue opportunities and income generation, ASM industry players engage in exploitative labour practices or facilitate illegal trading arrangements for mining goods. Therefore, the ASM sector stakeholders are fully cognisant of the risks inherent in these activities but often struggle to balance economic pursuit and health.

Besides, the impact of organised crime on risk perceptions in ASM communities must be balanced. Aizawa (2016) argues that the availability of criminal resources may contribute to normalising risk among ASM sector workers. Financial needs and limited social alternatives lead individuals to accept risk-rich activities, mining is carried out despite the associated risk. The literature also highlights the role of socioeconomic factors in shaping risk perceptions in the ASM community. Landrigan et al. (2022) highlight the health and environmental risks associated

with ASM activities, further exacerbating the existing social and economic challenges ASM sector communities face.

Furthermore, the presence of organised crime further complicates the ongoing risk in ASM sector communities. Zvarivadza (2018) notes that criminal groups can influence mining operations, impose rules and regulations, and use sector workers to raise funds. This creates an environment in which risk perception is distorted, where individuals weigh the risks of opposing criminal organisations against the potential rewards of compliance. Consequently, this attribute is critical in evaluating how organised crime affects community risk perceptions.

The informal ASM sector is known for its various risks to individuals, including physical dangers, legal and financial risks, and the vulnerability of its workers (Aizawa, 2016; Ajith & Jansz, 2020). Aizawa (2016) suggests that apart from economic benefits, the sector also provides social benefits that encourage continued participation, highlighting the importance of considering this aspect when analysing the risk perception of ASM sector workers. The presence of organised crime in ASM sector communities complicates the situation further by increasing risks such as violence, exploitation, and legal issues, affecting the perception of risk among all parties involved (Landrigan et al., 2022). The involvement of criminal elements can lead to a heightened sense of risk among external buyers and their security teams, who must take extra precautions to ensure safe transactions.

2.9 Risk Homeostasis Theory

The theory of Risk Homeostasis, which asserts that individuals adjust their behaviour in response to perceived levels of risk to maintain a constant level of risk, is crucial when considering the ASM sector (Kearney & Kruger, 2016). This concept suggests that the

introduction of security teams or external buyers might only reduce their exposure to risks if they integrate into the social and economic structures of local ASM communities (Kiryu, 2020). Otherwise, their presence might paradoxically lead to behaviours that maintain or even increase overall risk levels. As safety measures are implemented, individuals might engage in riskier behaviours to counterbalance the perceived increase in safety, a phenomenon known as risk compensation. Scholz (2017) points out that security personnel in the ASM sector could inadvertently trigger risk compensation among workers and criminal groups, suggesting that efforts to enhance safety through increased security measures, such as introducing firearms or enforcing strict regulations, might lead to behavioural adjustments that negate the intended safety benefits. Therefore, the research aims to address this dilemma by proposing solutions to improve workplace safety within the ASM sector effectively.

2.10 Security standards and recognised frameworks

The findings from the articles in the literature yield different opinions concerning the security standards and frameworks present in this sector. According to Logrosa (2018), the ISO 31000:2018 Risk Management Guidelines can be applicable in the ASM sector. This is an established principles-based policy that provides a mechanism for the management of risks that can be applicable to the industries. Părăian et al. (2018) further argue that ISO 3100:2018 is among the principal security standards currently in use in the extractive industry in the form of principles and guidelines on the management of risk. The ISO 31000 comprises a standard security framework applicable to several sectors, although its application to ASM operations directly faces numerous challenges. For instance, Mutemeri et al. (2016) outline that the current security frameworks fail to encompass the diverse dynamics of the ASM systems, which are significantly different from massive mining operations. Such loopholes create inadequate

methods of managing risks that may fail in the reduction of the actual threats facing the miners, investors, and personnel seeking security from the sector. Moreover, their lack of ASM-specific standards and guidelines limits the possible use of the available frameworks to suit the demands of the ASM sector. Unlike other firmly established industries that operate based on agreed parameters, the ASM works under easily controlled and non-regulated environments, implementing standardized measures quite impossible (Sojková, 2022).

Oliveira, Tereso, and Santos (2019) claim that although the principles of ISO 31000 cannot be changed, the context of the risk in the ASM communities is not specifically described in the document and should be applied by the individual users. Thus, it is empowered to define the type of risk evaluation of the interaction with stakeholders and is allowed to follow by the indicating and monitoring of the principles. Logrosa (2018) argues that with regard to external access to the ASM sector communities, security experts may use ISO 31000 as the guidelines for risk evaluation and control. Sojkova (2022) analysed the framing of the artisanal mining that was focused on the extractive industry in Ghana, and related to the following policymaking context of this environment. According to the research, the related documentation on the EOS used in the extractives exploration sector chose not the angle needed for the ASM but was more focused on LSM and the need for technology use and compliance. Therefore, it could be a dedicated policy design for the ASM sector projects. However, because of the problematic perspective, there is an evolving understanding of the need to adapt current frameworks.

By considering risk communication, cultural sensitivity, and stakeholder engagement, security teams may create plans that emphasize the protection and well-being of both externals and ASM sector employees. In addition, they may utilize the principles laid out in ISO 31000 to handle ethical challenges surrounding the interaction between externals and the ASM industry, ensuring

that there is responsible discretion in such matters. Wilson et al. (2015) and Sokjova (2022) also noted the ASM sector as a whole is typified by a myriad of challenges, including informality, remote locations, and often unpredictable sociopolitical situations. This necessitates both greater consideration of the application of traditional security provisions designed around a more formal context and a re-thinking of such provisions. Moreover, due to the sector's complexity, the mere application of ISO 31000:2018 is insufficient since it would require a broad re-adjustment to comply with the requirements of the ASM sector. Moyo et al.(2022) further expose the inadequacy of generic security standards by noting the differing and unique attributes in each sector. They also lament the inability of traditional risk assessment models to understand the ASM operational complexities which are physical, socio-economic, and human rights-orientated. Therefore, the application of ISO 31001 principles is inadequate in the ASM-environmental dialogue as it is unlikely to cover all necessary areas, a factor which can worsen rather than mitigate the risks. Ndlazi (2020) furthers the need to incorporate community points of view into risk frameworks in the ASM sector. The view seeks a much-needed bottom-up approach that respects and acknowledges the local cultures, governing systems, and livelihoods present. This approach is necessary since it fails to implement security measures such as ISR systematically resulting in the normalization of inequalities and conflicts within ASM communities.

In this regard, the SARF appears to be a suitable framework for explaining and mitigating security-related problems in the ASM setting (Kasperson et al., 2022). Although initially applied to explaining social dynamics affecting perceptions of risk of technological hazards, the understanding of SARF extends to determining how risks are enhanced or mitigated across complex socio-technical systems. By incorporating the principles of SARF into the strategies of ISO 31000, security experts can become more prepared to determine interconnected risks within

the ASM context, thereby developing more contextually relevant and ethically sustainable methods to mitigate these risks (Czanner & Czanner, 2023). Thus, innovation is presented in incorporating the SARF framework in combination with ISO31000:2018 strategies into the field of ASM, particularly from the viewpoint of security consultants and groups. However, although a review of existing literature demonstrates the necessity for more specific focus studies or frameworks in this domain integrating the SARF and ISO31000:2018, particularly in the related context of the ASM, prior studies on SARF and ISO31000:2018 mainly focus on a corporate/industrial context, and researchers may change the exclusive character to satisfy the requirements of the decentralized/informal setting like the ASM.

Based on an extensive literature review, appropriate responses to safety and security concerns within the ASM context will require levels of risk perception, the complexities of organized crime, and restrictions of current intervention mechanisms (Oliveira et al., 2019). While technological or regulatory intervention is necessary to boost safety, the underlying socioeconomic determinants encouraging risky behaviour and the capacity of organized crime to influence events also need to be addressed.

Furthermore, the involvement of security teams and consultants in this environment creates moral issues about their potential effect on ASM communities and the possible reinforcement of exploitative systems. Security teams have to negotiate complex power dynamics as outsiders participating in ASM communities to avoid inadvertently causing harm, in the long run, counterproductive (Mulaba-Bafubiandi et al., 2023). As a result, the appropriate stance to take is to adopt a holistic approach that considers the physical safety of buyers or investors and the wider implications of their presence and activities in ASM settings. Eniowo, Kilambo, and Meyer (2022) emphasise how deep-rooted risk perception is, the obscured influence of organized

crimes on these perceptions, and the unexplored potential of RHT in the ASM sector. They also expose evidence gaps in the existing literature. Given the relevance of examining the underlying economic, social, and cultural factors shaping risk perception and safety behaviour among ASM stakeholders, devoting more attention to these domains while specifically studying SARF and ISO31000:2018 practices within the ASM sector would yield significant benefits.

First, Hilson et al. (2017) outline the need for developing security frameworks that will be appropriate given the highly informal nature of ASM activities and the inherent socio-economic dynamics of these communities. In the absence of tailored adaptations to existing practices, security professionals may face insurmountable difficulties in mitigating the risks that are specific to the ASM environment, thus making those people highly vulnerable with regard to being further exploited and increasing all associated ethical issues. Simultaneously, different parties have made their attempts to create such frameworks assumable, and Moretti and Garrett (2018) mention the International Council on Mining and Metals (ICMM) proposition to develop such a set of guidelines for responsible mining practices that would be built around sustainable development while minimizing the negative impact on the communities. However, some criticise these efforts as being biased in favour of major mining enterprises and dismissive of ASM operators' unique needs and characteristics. This critique only enforces the need to involve all the stakeholders in the process of creating such security frameworks for the ASM sector.

When discussing how security frameworks adapt to these changes in the ASM sector, McQuilken and Hilson (2016) have explained that the immediate-intervention nature of government's efforts to curtail carbon emissions, primarily driven by the increasing fear of the effects of climate on governments' activities. Recently, governments have issued new legislation and regulatory tools reflecting a move toward the use of clean energy as well as encouraging

companies to adopt appropriate business practices to ensure minimalized carbon emissions. As part of the security provider's ethics, however, the focus on renewable sources rather than fossil fuel, which powers ASM and other activities in the sector, is one of the structural adjustments deemed necessary for a cleaner future.

According to Campbell (2020), the integration of the public in the creation of awareness is instrumental in ensuring that the sustainable demands of every population are reflected. The government's measures regarding incentives for clean energy and innovation also affect the inclusion of sustainable practices among the stakeholders in the sector. The shift to a sustainable economy is nonetheless an indication that the new normal also has to focus on certain activity rearrangement. Campbell (2020) emphasises that all stakeholders will have to work together to solve these environmental issues. In this, however, the ethical dimension of the security framework in this sector cannot be ignored. There is evidence that the citizen safety support term for investors and buyers entering ASM communities is unethical. Ofosu and Sarpong (2022) reveal some of the ethical implications of energy provisions in the sector.

Adding to the complexity of security management, the risk homeostasis theory poses security professionals an additional challenge. Particularly, considering that in the ASM sector, many people's livelihoods are at stake due to high-risk mining practices, better security measures might create adverse incentives for even riskier behaviour or lead to the maintenance of certain vulnerabilities (Conteh & Maconachie, 2021). Therefore, optimal security measures imply the ability to distinguish between the socioeconomic factors influencing certain ASM practices and targeting underlying issues but introducing arbitrary security measures. The application of SARF to the ASM sector is limited. While pursuing risk communication and perception, Moyo et al. (2022) state that the underlying structural factors may remain unchanged. These factors include

labour abuses or the loss of the natural environment, limiting SARF as a standalone framework. While it may help understand risk factors in the ASM context, risk management should only be a part of a broader vision targeting the sector's structural weaknesses. Therefore, the introduction of internationally recognized frameworks such as ISO 31000 to the ASM sector would necessitate a revision of the context-based security standards and the introduction of new approaches to the subject based on the sector's unique vulnerabilities. By incorporating the SSRF principles and closely working with essential actors, security professionals might find it possible to navigate the principles of ethical ASM without compromising standards but working on personas' safety in the sector. However, the latter would require comprehensive structural reforms to tackle the sector's primary issues.

2.11 Corporate social responsibility and ethical impact

Several aspects are essential during the appraisal of Corporate Social Responsibility initiatives in ASM operations. Helping ASM workers fulfil better socio-economic standings, especially as many of them tend to occupy precarious and marginalized conditions, is a fundamental obligation. As such, the role of CSR is crucial in helping demonstrate these responsibilities (Kasperson et al., 2022). For instance, Bester and Groenewald (2021) argue that the potential of CSR can be examined to determine the working conditions of ASM workers in the South African mining industry. Notably, the success of such an initiative lies solely in regard to how responsible a company can get in reducing the root causes of vulnerability and inequality among ASM communities. For example, training programs might only be more inclined towards providing small-scope improvements like safety equipment and, therefore, remain superficial and avoid major issues around poverty, lack of education, or a poor economy.

Although CSR can help reduce some risks or improve certain working conditions, it is only effective when stakeholders input their efforts and tailor the initiatives to meet local needs and priorities. According to Bester (2022), the only possible way to make CSR effectual was by incorporating the participation of ASM workers in such activities, as they were often ostracised and labelled illegal. However, because this process runs informally while lacking sufficient regulations, incorporating CSR could be an inappropriate approach to make it more efficient.

That creates one of the leading ethical dilemmas because accepting and enabling artisanal mining through CSR initiatives increases the risk of exposing these workers to exploitative forms of work, hence normalizing modern-day slavery. According to Bester and Groenewald (2021), because ASM workers are the poorest and operate in remote and resource-rich areas, they are at higher risk of being exploited by middlemen or criminal elements who may seek to exploit them for other forms of profit. Additionally, the need to invest in ASM activities, including buying and investing in security consultants, legitimates systems of exploitative and human rights abuses, hence increasing socio-economic inequalities while intensifying the suffering of poor communities.

ASM activities' environmental impact, on the other hand, throws an ethnological obscurity on sustainability and resource utilization. Mining corporations are not always subject to appropriate regulatory or ecological oversight or licenses because of the unceremonious nature of this organization. Although their corporate values focus on responsible mining and ecological conservation, Wu et al. (2021) explain that it is inconceivable to verify the degree of compliance. In situations where the enforcement of due diligence procedures and the safeguarding of implementation criteria for environmental protocols are more arduous due to their informality, the ASM undertakings will always be associated with logging, water pollution, eradicating innate

hedges, hence organismic contamination, and short-term economic sustainability goals. Ethically facilitating ASM undoubtedly portrays this and added differences.

According to Nemergut et al. (2013), not only does this benefit the artisans, but it also impacts the stakeholders responsible for purchasing, investing, or engaging in business or consultants, known as the supply chain. Each group of stakeholders involved in this organization also has its unique set of ethical values. Importers and investors unfamiliar with how ASM operate may inadvertently acquire tenets through an exploitative system. Herein, the tenets align with the set ethical standards for sourcing, selling, and investing in mineral and mineral products from an enterprise that practices child slavery or environmental degradation (McWhorter, 2017). This also affects security consultants in the community, a third-party entity from this context. It is possible to facilitate harassment and foster an unsafe atmosphere in the community while illegal misdealing is prevalent. This raises an issue of abdicating the responsibility for services in the locale devolves to issues of the clandestine as a statement of slavery, environmental misconduct, and experiences discrimination due to the lack of social security for the workers and the community.

2.12 SARF and Cultural Theory in the ASM Sector

The study of ASM-related efforts to enhance workplace safety is pivotal to the application of SARF and cultural theory, which are essential for shedding light on risk communication dynamics and perceptions of risk within ASM communities. SARF offers a theoretical perspective through which risks can be either magnified or minimized, whereas cultural theory emphasises the role of cultural beliefs and values in shaping individuals' perceptions of risk and their behaviour (De Haan, Dales & McQuilken, 2020). SARF contends

that the social and cultural contexts in which risk communication occurs simultaneously influence the public's perception of risk (Keane et al., 2023). The framework identifies various channels, including media, social networks, institutional responses, and individual cognition, through which risk information is filtered, interpreted, and disseminated. Consequently, it underlines the importance of addressing not just the technical facets of risk but also the social dynamics involved.

SARF has been utilized within the ASM sector to examine how risk information is communicated and perceived among mining communities. A study by Kumah, Hilson, and Quaiocoe (2020) on ASM communities revealed that risk perceptions were influenced by social factors as much as if not more than, technical aspects such as mining hazards. These factors include the level of trust in local authorities and perceptions regarding the fairness of resource distribution, suggesting that SARF advocates for the inclusion of diverse stakeholders in decision-making processes and promotes pluralism and tolerance of different cultures and lifestyles in the realm of risk communication.

However, one limitation of SARF as a framework for risk communication may be its inadequacy in addressing language barriers, low literacy levels, and power imbalances within community organizations. Although SARF tends to emphasise the amplification of risk perceptions, it may neglect factors that contribute to the attenuation of risk perceptions or facilitate risk reduction practices.

2.13 Cultural Influences on Risk Perception in ASM Communities

The roles of cultural theory in understanding risk perceptions are highlighted by its emphasis on how individuals' cultural worldviews shape their interpretations and reactions to

uncertain and complex situations. Storey (2021) identifies four cultural biases-hierarchies, individualist, egalitarian, and fatalist. These represent diverse worldviews influencing orientations towards risk and social order. Specifically, within ASM communities, the focus is on how miners and stakeholders perceive and manage risks and uncertainties associated with mining activities. Doyle's (2023) findings suggest miners believe accidents and injuries are inevitable, leading them to embrace more risks and show reluctance towards investing in safety measures. Such hierarchical social structures significantly impact risk perceptions and decision-making processes in ASM communities, where power dynamics can undermine effective risk management. Thus, it's crucial to recognize how cultural influences shape risk perceptions, enabling the implementation of targeted interventions that address underlying beliefs and values associated with risky behaviours in ASM communities. These interventions, by acknowledging the importance of collectivism and community support, can effectively promote behaviour change. Engaging local leaders and traditional governance in risk communication can serve as a cultural bridge, fostering a conducive working environment.

2.14 Summary

The analysis of the literature provides a critical need to balance between the pursuit of economic gains and the need to consider a safe mining environment. From an outsider's viewpoint, the balancing of the two metrics is fundamental to meeting the bigger socio-cultural obligation. The literature reviews, for example, address the ethical dilemma of security professionals pursuing economic and social gains in ASM sector activation for practices that may improve modern-day slavery. While mining is independent of processes used by miners, it

is also critical to assert social-economic reasoning on the broader ways and means, including the risks involved and their mitigation.

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Chapter 3 : Research Methodology

This study adopted a qualitative research methodology to obtain data concerning the study topic. Qualitative methods are appropriate for a study demanding obtaining data in a short time frame. Besides, this method is appropriate for this study considering the need to obtain broader perspectives from the participants concerning the study metrics. In this aspect, semi-structured interviews were adopted to obtain perspectives from the participants in the ASM sector concerning the study metrics.

3.1 Permission and Access to Participants

The data collection process involved obtaining the participants' consent and accessing the people within the ASM sector followed a systematic process geared towards ensuring strict adherence to research protocols and guidelines (Bos, 2020). Permission to access and engage participants was crucial, particularly given that it involved human subjects, requiring confidentiality and privacy to be secured against any ethical issues that could compromise research quality (Ros, 2019). Prior to the study's commencement, permissions were obtained from relevant authorities, including local governments, community leaders, and associations within the ASM sites. Consent is a pivotal step in ethical research, serving to guarantee ethical standards while respecting participants' rights, as outlined by Ross (2019). Transparency and communication, emphasised by Dawson et al. (2019) were vital in the consent process to safeguard participants' rights and freedoms, particularly given the sensitivity of accessing participants in local ASM contexts. Following participants' approval, extensive consultations were held with stakeholders such as ASM workers, community leaders, and mining company representatives. This process facilitated participatory inquiry, trust-building, and clear communication of the research intentions and methodology. Participants were provided with

detailed information about the study, ensuring they understood its objectives and potential impacts (Stewart, 2023). Formal invitations to participate were extended post-consultation, with assurances of anonymity and confidentiality. Consent forms, tailored to local languages and cultural contexts, were designed to prevent misunderstandings, ensuring informed, voluntary participation. Access to ASM sites was achieved through collaborations with local organizations, NGOs, and community-based groups, providing insights into socio-cultural aspects and power structures within communities, thus broadening the research context (Gearon & Parsons, 2019). The emphasis on reciprocity and trust, especially in studies involving contentious resources like the ASM sector, highlights the complexity and importance of gaining access to meaningful research (Gefenas et al., 2022).

3.2 Sampling method

The study used purposive sampling to collect data from the study participants. Purposive sampling was selected for several reasons. The heterogeneous nature of the ASM sector is well-documented in the variety of stakeholders and circumstances of operation (Campbell et al., 2020). This makes it feasible to use purposive sampling to choose players who have had great experience and proximity to the ASM, ensuring relevance and data quality. In addition to that, the targeted sampling strategy ensured that the researcher concentrated on particular individuals who would impart relevant information on risk management frameworks of the ASM sector. Given the few studies on the same topic, it was particularly important to select survey responders and interviewees who are knowledgeable in the ASM activities. Moreover, the purposive sampling enabled in the selection of key knowledgeable partners who would provide extensive views of how two RM frameworks (ISO 31000:2018 and the SARFs) had been applied within the ASM sector (Ames, Glenton & Lewin, 2019). This study targeted ASM actors. Their

participation helped describe the pragmatic obstacles and potential creative concepts to increase safety and sustainability within ASMs. Using this sampling method, a total of 7 participants were sampled. This sample was made up only of participants from the security community as the interest of this study was to obtain participant's views regarding security aspects.

3.3 Justification for using purposive sampling

The rationale for choosing purposive sampling rather than any other method was the ability to learn more about a broader sample size. Even though, as noted by Denieffe (2020), the most straightforward definition of the ASM is that it is heterogeneous; the component is intertwined in multiple operation areas with various participants. In this case, purposive sampling was chosen to select people who were more familiar with the operations of the ASM, hence they provided more elaborate and descriptive answers to each question, making it more valuable for the study. The sample was prepared meticulously due to their efficiency in risk management. This method ensured that the study gave useful insight into the best way to approach risk management in the ASM sector. Already, the selected sample was sorted by their operations and their knowledge. The responses provided by these subjects offered critical information about the current knowledge of the risk management strategies of the ASM (Sibona, Walczak & White Baker, 2020). Similarly to the knowledge, research is also limited, hence the need for respondents who could be able to provide their views on this topic.

3.4 Data collection process

The procedures for conducting interviews were outlined through active listening and probing skills. As a result, the questions were expanded or clarified to retrieve new information,

as pointed out by Bhatt (2019). Probing questions were directed to seek opinions concerning specific themes ranging from risk management practices, challenges faced during ASM operations, and the potential application of SARF ISO31000. The collection procedure also included recording participants' contributions while at the same time noting down short notes. In this way, participants' responses and conversations developed in their own words were captured and preserved. That way, primary data was accessed without mixing any information but providing room for necessary interpretation (Jones, 2021). The note-taking procedure was directed to complement the audio recording to give ideas that were perhaps missing or understated in the interviews at hand, especially on vital points or occurrences. The situation was intended to increase data scope for analysis, without which deficiencies in the outcome were to be realized. Since audio recording proved to be the main resource for data retrieval, it provided room for transcription done at a later stage to get the level of analysis captured in the responses from participants. The researcher attempted to analyse more participant's feedback by assessing non-verbal cues and the researcher made observations, which were to be captured finally. Cox et al. (2023) outlined the importance of data recording in qualitative research to ensure the information given is analysed clearly and exhaustively. At this stage, the researcher can legitimize the outcome by giving a meaningful analysis suitable for comparison and critical appraisal.

3.5 Research ethics

Throughout the data acquisition and management, the study was guided by ethical standards, without which the final outcomes could have been discredited and lacked the integrity of a sound study. Additionally, the overall process was straightforward where the researcher was a proponent of violating any of the provided ethical conducts during the handling of the

components of respect, beneficence and justice in relation to their role of ensuring the safety, as well as the rights of the participants (Gearon & Parsons, 2019; Wigneron et al., 2021). The undertaking was guided by the requirement of treating all stakeholders with the tenets of futility in proper regard through averting unethical behaviour. The participants in the interview were informed accordingly so they could give their consent based on sound comprehension and appraisal of the risks and benefits they would stand to benefit. They were given the opportunity to agree to the interview at any time before the full commencement of the interviewing session without threat or force necessary.

Data confidentiality and privacy aspects were not exceptional in aspects of the institution of the study. In such direction, complete pseudonymization of the participants' information details took place where all the identifiers that could be used to locate, track or link the participants to the collected outcomes were eliminated (Hoft, 2021). The data was fully kept where only the research team which carried out the study was mandated with the role of accessing the data. The participants acknowledged that the data would not be available to third parties without their consent and unless where necessary for the improvement of their sector.

Considering the facet of cultural sensitivity and awareness was critical at the time of the interaction with participants. In the process, the aspect of respecting cultural values, traditions, and norms. Specifically, the cultural and social principles as critical features of the meeting organization's strategy were recommended to establish a welcoming atmosphere supported by trust and understanding (Lippe, Johnson, & Carter, 2019). In the meantime, deliberate efforts were instituted to address various risks and harm to participants that could be presented through the research findings. That aspect involved investigating, developing, and exploiting ASM activities, which are often presented as a heavy responsibility and low protection to its workers.

Focus was made when some signs of discomfort or emotional disturbance were observed throughout the research. The researcher was prepared to respond to any support action or referral when the research participants needed it.

Consequently, the study was subject to an external and independent ethical review committee and board. This external review ensured that the study was designed appropriate learning from the current standards and principles. These efforts have demonstrated a high level of trustworthiness and ethical standards of the study (Bos, 2020). Since the aspect of transparency was understood, the team ensured a robust communication channel with its participants. The participants were informed of the study's progress and findings. The study's participants were given the opportunity and right to review and comment on the research's pieces, thereby ensuring a foothold to understand the research issues. The participants demonstrated learning with a high level of ethical considerations by maintaining high standards of dignity, autonomy, and well-being of the participant (Dawson et al., 2019). Apparently, the responsibility in this manner was promoted in the ASM sector. These efforts not only contributed to the high ethical standards but also supported the validity of the study's findings.

3.6 Information risks and privacy considerations

The potential information risks and concerns for privacy were some of the most critical ethical issues addressed in this study. Due to the need to maintain the privacy and confidentiality of the participants and the vast number of textual data typical of this study, it was ensured through several appropriate measures. As noted by Clark-Gordon et al. (2019), privacy is one of the most important issues in ensuring ethical compliance, and it was rightly protected to ensure proper consideration. Before starting the data collection, the participants were provided with detailed information about the research, objectives, procedures, and the potential risks and

benefits of participation in a thorough informed consent process. The participants were assured that their participation was voluntary and that they could quit at any point without consequences. During the data collection and analysis, the researcher made sure that no specific identifying and contextual information that could compromise the anonymity of the participants was included in the research outputs or publication. Data collection methods were purposefully designed to minimize the risk of unauthorized access or disclosure; interviews were done in private contexts where the participants were free from interruptions or external eavesdropping. The digital recordings and transcripts were stored in password-protected devices that only the authorized researchers had access to, and all identifying information such as names, locations, and other specific details that could identify the participants were deleted or anonymized from the dataset. Additionally, the researcher was aware of the potential risks and vulnerabilities associated with the ASM sector, including the hazardous working conditions, socioeconomic challenges, and power imbalances that influence participation in the sector (Yun, Lee & Kim, 2019). Special consideration ensured that the interviews and interactions with the participants were done in a safe and comfortable environment, free from coercion or undue influences. This helped to ensure that the protection of the autonomy, confidentiality, and privacy of the participants was assured as a respect for their rights and necessary trust-building condition to obtain valuable data (Wu, Vitak & Zimmer, 2020).

Chapter 4 : Results

4.1 Introduction

This chapter outlines the key findings, that the researcher gathered from the seven participants of the security community. The section provides the gathered consolidated results from the question concerning the response. The study acquired incites regarding the fundamental aspects of environments, characteristics of risks focus, response to ensure safety, ethical issues, the most impact on communities, and recommendations for better interaction in the ASM sector.

4.2 Typical Environments and Challenges

All interview respondents consistently referred to ASM sites as remote, isolated, and devoid of basic infrastructure, which would be a substantial point of concern for any project. In terms of the communities, enforcement efforts used the descriptions of them being close-knit and highly suspicious of not only the authorities but also newcomers, coupled with harsh conditions and desperate working practices in the absence of a sustainable alternative. As Participant 1 noted: *“Mostly, the areas I have encountered are remote and underdeveloped, with limited access to basic amenities”*.

The idea was similarly expressed by Participant 4, stating that "working conditions are difficult, with limited access to modern tools or safety equipment". As a final consideration, Participant 1 provided the following details:

“Mostly, the areas I have encountered are remote and underdeveloped, with limited access to basic amenities. The working conditions are harsh and the majority of people working here seem desperate”.

This point of view would reinforce the necessity for better safety and risk management in these environments.

4.3 Risks and Safety Concerns

One of the associated themes that arose across all responses was the wide range of risks inherent in the ASM sector. Those included insufficient safety measures that could lead to physical harm, locals turning hostile, legal issues, as well as health dangers such as poor work conditions or environmental threats. Participant 2 expressed concern about "miscommunication or cultural misunderstandings leading to conflict," while Participant 6 warned about "accidents due to unsafe working conditions, and potential for environmental damage". The necessity of risk assessment, involving local authorities, and the availability of personal protection equipment were reiterated by multiple respondents as essential for the protection. Participant 3 stressed the importance of "leveraging local knowledge" by "working closely with community liaisons and investing in robust safety gear and training". Not only does this ensure reduced risks, but it also promotes community participation and responsibility for safety.

4.4 Strategies for Safety and Community Engagement

Given the responses, it is apparent that the sampled respondents recognize the critical role played by safety and community stakeholder engagement strategies in the ASM subsector. Indeed, their respective contributions emphasise the role of a safety measure that takes into account other relevant factors such as thorough risk assessment, community management, and ethical investment plans. For instance, the current participant, Participant 1, states that they normally conduct,

“thorough risk assessments before any visit, establishing communication with local leaders, and ensuring we have an exit plan”.

It would then follow that the other actors in the considered subsector would adopt the use of these strategies to respond to stakeholder concerns. The additional response highlights the participants' understanding of the need to maintain ethical and safety protocols. For example, Participant 4 indicates that he does not "work with clients who do not commit to ethical practices." It goes without saying that the measure directly addresses the relevant safety and externalities related to ASM activities. Participant 1 calls for "greater inclusiveness, such as the inclusion of local community members in the decision-making process," suggesting that taking a collaborative approach may make mining a safer and more ethical industry. Participant 3 stresses the importance of involving "those with local experience, such as community liaisons," which not only considerably facilitates the implementation of safety measures but also guarantees that operations do not exacerbate existing issues.

4.5 Ethical Considerations and Impact

One of the most pressing concerns was addressing ethical dilemmas, which included, among others, contributions to modern-day slavery or exploitation. All participants recommend educating clients on ethical implications and rewarding contributions to community development. While forming strategies for action in the sector, Participant 1 described a need to find “a balance,” and Participant 4 assured they “do not work with clients who do not commit to ethical values”. More specifically, the impact on local ASM workers and their communities was found to be a pressing concern. Both disruption and local initiatives that improve living and working conditions were avoided. Community engagement strategies proved vital for safety and ethical operations in the ASM sector. Participant 5 focused on “building trust with community,

employing local guides and ensuring our activities do not disrupt local livelihoods”. The rest of the contacts, including Participant 6 who was responsible for “collaborating with local leaders and communities to ensure workplace safety”, also noted the importance of integrating the community's knowledge and preferences.

4.6 Proposed Improvements for Ethical and Safe Interactions

The response indicates other potential approaches to fostering safer and more ethically considerate interactions. These include the need for less exclusive practices such as working with ASM organizations, making information about ASM's realities more accessible, and endorsing more responsible investments. For instance, Participant 5 mentions the need for "encouraging more responsible and ethical buying among investors," while Participant 7 focuses on greater awareness and education among all stakeholders on the realities of ASM.

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"We try to encourage more responsible and ethical buying practices among investors. I think that this could greatly improve the situation for ASM workers."

"There's a need for greater awareness and education among all stakeholders about the realities of ASM and the importance of ethical engagement."

Another common factor is the significance of education. For example, Participant 2 mentions the need for,

"improved education for all parties on the realities of ASM and the necessity for ethical procedures,"

Indicating that awareness can close the gap that presently exists between security, investors, and the local community. Similarly, participant 6 suggests that ;

“Improving education and health facilities in those communities may be crucial to mitigating the dangers linked to their activities,”

This implies that education and health are also vital in raising the sector’s safety standards. In addition, it is necessary to adapt safety measures to the unique circumstances of the ASM sector.

Participant 4’s proposal involves “a blend of technology, information from the area, and international guidelines to mitigate threats while maintaining productivity,” highlighting the necessity of innovative and context-specific measures. Participant 7 mentions that,

"It's also essential to recognize the need for constant monitoring of developments to guarantee that no threat is overlooked, as well as a readiness to react as conditions change,"

This response highlights the dynamic nature of safety management within the ASM sector.

4.7 Conclusion

The participant's responses illustrate the complexity of operations within the ASM sector and emphasise the need to obtain a balance between safety, respect for local traditions and local communities, and the central tenets of ethical operations. However, the insights offered by the security professionals point to a way forward that involves more consultative and educated practices, regular risk analysis, and an ideal of positive contributions to the local communities involved in ASM. These methods will allow the sector to take the first steps toward not only operating safely but sustainably and ethically.

Chapter 5 Discussion

Respondents' feedback highlights the ethical risks in the ASM sector, particularly relating to potential contributions to modern-day slavery and the exploitation of vulnerable groups, including children. These concerns align with findings by Hilson, Hilson & McQuilken (2016) who note that the sector is fraught with ethical risks due to its informal and largely unregulated nature. This ethical dilemma faced by security teams and investors, balancing profit with ethical considerations, reflects broader industry challenges in ensuring responsible sourcing and investment. Furthermore, the results indicate environmental and health risks associated with ASM, with participants expressing concerns over unsafe working conditions and environmental degradation. These risks underscore the need for enhanced environmental protection and occupational health standards in the sector. The emphasis on inclusive practices and community involvement in decision-making processes suggests a move towards more sustainable and ethical mining practices (Ribeiro-Duthie et al., 2017). This aspect emphasises the integration of environmental sustainability and health considerations into ASM operations (Ofosu et al., 2020). This approach could mitigate risks and contribute to the long-term viability of mining communities. The participants' emphasis on respectful engagement with local communities and minimizing negative impacts aligns with the discourse on sustainable and ethical mining (Kinyondo & Huggins, 2021). However, a gap remains between ideal practices and reality, highlighting the ongoing need for tangible improvements in environmental protection and community engagement within the ASM sector.

5.1 Safety and Risk Management

The discussion around strategies for managing risks and ensuring safety in ASM operations points towards a reliance on established risk assessment models, including thorough

preparation, community involvement, and health and safety training (HSTs). While these methods are undoubtedly important, they are limited in innovatively addressing the unique challenges of the ASM subsector, such as operating in remote areas with poor infrastructure and the often informal nature of these activities (Hirons, 2020). Moreover, the notion of risk homeostasis, which, though not directly mentioned by participants, is pertinent to this conversation. It suggests that individuals may alter their safety behaviours based on their perceived safety, potentially negating the effectiveness of certain precautions (Deberdt & Le Billon, 2023). This theory posits that a heightened focus on surveillance and planning by security professionals may unintentionally foster a sense of increased safety among other stakeholders, leading them to engage in riskier behaviours. Consequently, the successful implementation of ISO31000:2018 standards in the ASM context requires a broader understanding of human behaviour and risk perception.

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5.2 Towards Ethically Considerate and Safer ASM

One of the key findings across the responses is an explicit focus on the extent of ethical risks involved, including the potential contribution to the continuation of modern slavery. This is consistent with the statement by Doyle (2023) who identified ethical risks as a major concern for the ASM sector. The authors noted that its informal and relatively less-controlled environment provides fertile ground for exploitation and human rights violations. The results highlight a profound struggle for almost all security professional to keep their clients safe from harm without contributing to these ethical dilemmas. Therefore, the focus on proper education and conduct, as indicated by Jones (2023), appears to be a promising first step.

Nevertheless, the real problem lies in translating this understanding of the problematic pattern into a broad, unified commitment to risk-perception practices. This raises questions about

the applicability of existing regulations and the necessity of stronger global implementations and local compliance enforcement to ensure human rights sustainability within the sector. The implicit range of consensus across the responses indicated the need for the ASM sector to operate more responsibly and ethically in terms of safety, health, and broader social and environmental concerns. This view is consistent with suggestions offered in the literature (McQuilken & Hilson, 2016). However, the potential effectiveness of these approaches is anchored on addressing a range of serious challenges, from the informal structure of most ASM operations and their locations to the difficulty of aligning the interests of multiple stakeholders to shared priorities (Mutemeri et al., 2016). The conversation points to the usefulness of the SARF in ISO31000:2018 as a potential contributing factor in the development of a more inclusive risk communication and management approach, acknowledging the socio-economic realities of those living in the ASM communities and the intricate risk matrix they navigate.

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The importance of community engagement and social responsibility is evident across the responses. Most participants underlined the importance of respectful interaction and local development initiatives. This closely relates to the concept of social obligations, which has become a critical determinant of mining operations' long-term viability (Latapí Agudelo, Jóhannsdóttir & Davídsdóttir, 2019). The conversation about trust-building, learning community customs, and contributing to local projects, as evidenced by Participants 2 and 6, points to the growing recognition of the importance of moving beyond mere legal compliance to developing genuine collaboration frameworks with local communities. These aspects not only address social and economic risks but contribute to the sustainable growth and empowerment of demographics usually pushed to the peripheries of the global economy (Sojková, 2022).

5.3 The Role of Security Professionals

The respondents also indicate the broader context of transitioning security professionals in the ASM sector – from risk managers to ethical guardians. As a result, the existing evidence indicates the increasing complexity of security work in which various dimensions of ethics, society, and environment converge (Smith et al., 2016). The fact of continuous risk assessment and adaptability stressed by Participant 3 and Participant 7 suggests that security professionals should not only be prepared to navigate the complex system of ASM professionally but also serve as proponents of the ethical and sustainable orientation.

Therefore, the insights advanced by participants reflect a sector that finds itself at the crossroads of time and fundamental changes. Insightfully, the analysed responses call for a more integrated understanding of risk and risk management that incorporates ethics and community, and environment sustainability into the "heart" of mining through the supply chain. This calls for more responsible, sustainable, and ethical mining with ratified frameworks, developed with global partnerships, and embraced genuinely by the people.

5.4 Analysis of Miscommunication in the ASM Sector

The ASM sector often poses a unique challenge of communication. This challenge seems to be rooted not in practical but in cultural and social aspects of interactions between the ASM communities and various stakeholders (Scholz, 2017). The feedback from security professionals demonstrates numerous areas where communication challenges exist. At their core, the lack of proper understanding and alignment regarding the realities of the ASM communities and tasks among the local workers, external investors, buyers and security teams unveil the crucial communication gap. These misunderstandings are fuelled by different objectives, backgrounds and lack of visions and standards. One of the first challenges entails cultural misunderstandings

and misinterpretations between external parties and local ASM communities. Such miscommunications can lead to tension and conflict, preventing proper collaboration and ethical and safe operation (Ajith, Ghosh & Jansz, 2021). Hence, the need for cultural awareness training, as highlighted by several participants, is indicative of the fact that external parties frequently lack realistic expectations and cultural competence when engaging with these communities.

Risks are unnecessarily exacerbated due to miscommunication, and synergy is potentially diminished due to such cultural inefficiencies (Tobalagba & Vijayarasa, 2020). Another notable mismatch is revealed by the participant's responses, which surround the perceptions of risks and security measures between local and external personnel. While security prioritises physical safety and technological hazard prevention, the abused staff workers may intentionally collude to provide financial miscommunication. While this gap can be attributed in part to the existence of both personal and procedural measures by foreign consulting companies as stated by Participants 1, 3, and 7, local ASM workers prioritize risk differently. This is due to competing needs based on the informal study of socioeconomic conditions and their realities (Arthur-Holmes et al., 2023). The lack of common views on risk leads to a communication gap, as the measures implemented may not address the concerns of local people at all.

Moreover, due to the high level of importance of ethics, as the mining industry is known for various ethical problems, stakeholders must uphold ethical operations. As noted by Participant 4, the refusal to cooperate with stakeholders who are not interested in ethical ASM activities due to some ethical risks is the only way to fill this gap. However, Smith et al. (2016) explain that ethical risks are not entirely ethical for all stakeholders. Due to the presence of numerous ethical problems in the industry, it is sometimes challenging to define what ethical measures must be adopted (Hilson et al., 2017). While some stakeholders have already

committed to aligning business processes with ethical standards, many other stakeholders are unaware of these regulations. Hence, cooperation opportunities and measures may vary depending on the understanding of ethical risks. Thus, as Participant 5 states, it is better to establish trust with the community through measures that people can accept and understand. Apart from translation errors, this response also implies the necessity to adopt measures suitable for the socioeconomic conditions of the community. This should be something more than professional communication to gain people's trust and build new ways of cooperation.

5.5 Evaluation of Current Frameworks for Due Diligence in the ASM

The ASM is a critical source of livelihood for millions of people residing in far-flung and underdeveloped regions (Bhatt, 2019). The nature of the industry makes it complicated to guarantee ethical practices and safety. Its due diligence frameworks have thus played a vital role in helping oversee the sector, reducing risks to not only workers and local communities but also to outsiders such as investors and security personnel. However, the interview and insights from security professionals who operate in the sector revealed that the present due diligence practices are fundamentally flawed as outlined below.

5.5.1 Inadequate Consideration of Local Realities

Another vital gap in due diligence frameworks is evident in their generality, which does not consider the specific cultural, social, and environmental characteristics of different ASM areas. For example, most respondents noted the complexity of the working, social, and living conditions in and around ASM sites, describing the dynamics as a blend of hope and despair and contrasting it with urban or other developed areas (Cano & Kunz, 2022). Therefore, the responses suggest that due diligence must be area-specific and deeply anchored in the target context. This aspect highlights the importance of considering the diversity and specificity of

ASM and developing tailored strategies. This is also highlighted by Ajith, Ghosh and Jansz (2020) who support the contextualization of due diligence by mentioning that it may improve due diligence's efficiency and sustainability.

The second category of concern is related to more ethical dilemmas, including the involvement in modern-day slavery and the utilisation of vulnerable populations, including children. Although current policies generally touch upon these areas, the practical implication seems to be underdeveloped (Gearon & Parsons, 2019). Thus, the experiences of respondents illustrate the misalignment between the stated ethical standards of policies and the actual reality within ASM communities. Therefore, this anomaly damages the reputation of the sector as a whole while placing due diligence actors in compromised or even immoral positions (Singo et al., 2022).

5.5.2 Risk Assessment and Management

The tone of the feedback shared by the participants speaks to a need for a critical review of the current assessment and management of risks within the existing due diligence frameworks. It is noted that a risk assessment is carried out, but due to the ever-changing and mostly unpredictable nature of the ASM environment, a more flexible and adaptive approach should be used when thinking about safety and risk (Zvarivadza, 2018). The need for continuous vigilance and adaptability as introduced by the participants highlights the importance of not only thorough but also responsive due diligence practices. This view can be argued further using existing studies that call for an adaptive risk management approach based on the unpredictable and changeable nature of ASM operations (Hilson & Maconachie, 2017).

5.5.3 Community Engagement and Participation

The results also point to the need for the participatory process of the due diligence process. The current process may not currently value the importance of forming a good relationship with the

communities to help them build trust with the local leaders and operators hence making ASM more sustainable (Gefenas et al., 2022). The emphasis on engaging with local leaders, use of local guides, and involvement in community projects as mentioned by the participants show that the current due diligence process may fail to show the extent to which the community is involved, integrated, and benefits from the activities. Some studies on the due diligence process have shown that the process should be a participatory one because the more people are involved in decision-making, the more ethical and sustainable the mining companies will be (Kasperson et al., 2022).

5.5.4 Transparency and Ethical Sourcing

Finally, a noteworthy aspect to consider is the imperative to demand better transparency through due diligence frameworks and ethical sourcing practices. According to the participants, the mask of mystery shrouding the true origins of any investment and the actual impact they have on local communities is a critical disadvantage. Such a move disrupts efforts to run due diligence through the ethical supply chain, allowing the forms of exploitation and corrupt equivocation to continue unabated (O’Faircheallaigh & Corbett, 2015). Thus, “asking questions about the source” of the supply chain, as the participant noted and actively participating in the discussion on ethical sourcing and its role, is another factor that must be taken into account in the due diligence framework. Lahiri-Dutt (2018) also underlines the importance of such factors, presenting transparency through the supply chain as paramount to addressing ethical dilemmas and ensuring responsible investment in the ASM field.

5.6 Importance of ASM Communities' Understanding of Risk

The informal and often neglected nature of ASM makes it complex to solve issues such as reliable risk management and ethical concerns. It is important to consider cultural and social factors when addressing risk within ASM communities.

5.6.1 Cultural and Social Factors that Affect Risk Perceptions

Contextual attributes influence the way ASM communities look at risks and ethics (Dawson et al., 2019). The security personnel noted a big difference between ASM sites and modern urban metropolitan settings where security agents and investors came from. These differences in locality and risk perceptions are attributed to local communities' intense cohesion and closeness, social networking, and tight interconnection. For instance, violence is ethnographic to ASM sites but often has a meaning of life condition. Observations made by one of the experts reveal "Primitive conditions and people. It is primitive life...It's desperate, but the level of hope is extraordinary". This kind of resilience creates a social homeostasis as people try to balance between the need for social integrity and their own survival. Besides, the seven respondents noted the potential for misunderstandings and lack of understanding of the other culture. This issue emanates from the risk homeostasis theory, often applied in behaviour science (Clifford, 2022). The professionals often called for courtesy and understanding of ASM workers' and families' life sustainability. Cultural familiarity with the miners and the community can assist security agents in fully understanding ASM status and economically supporting the workers (Persaud et al., 2017).

5.6.2 Recommendations for Integrating SARF into CSR Initiatives for Safer Working Environments

The participants' feedback suggests the need for community engagement in mitigating risks and addressing ethical dilemmas. In a SARF-informed CSR perspective, the decision-making process about the development and implementation of a CSR approach must include ASM communities as leading decision-makers (Bester & Groenewald, 2021). The role of these communities should be that of key stakeholders, as their knowledge and experience can enhance more efficient risk management mechanisms. This perspective aligns with SARF in terms of the social processes involved in the creation of risks and consequences (Yakovleva & Vazquez-Brust, 2018).

The operations of the ASM and the ethical dimension of its activities must be transparent to build trust and goodwill with the community (Clifford, 2022). For security professionals, building the knowledge of an ethical dilemma is of critical importance for a sense of urgency and awareness in CSR actions. In a SARF context, CSR should involve transparency in projecting the risks and ethical focus and how negative influences on communities are reduced. This can also be achieved through public reporting and discussion meetings with the stakeholders (Hilson & Maconachie, 2020).

The participants presumed that education was necessary to bring the community's perception of risks closer. According to SARF, the flow of information and interpretation is a factor in the attenuation and amplification of risks involved (Sauerwein, 2023). In this regard, a SARF perspective of CSR should involve educational programs on health and safety, the role of the environment, and the rights of workers. It can empower communities for more organized risk management systems.

The participants provided inferences about the development of the community from a CSR perspective (Fritz et al., 2022). However, the responsibility of CSR operations is not only to avail immediate safety and health measures. An organizational perspective must focus on the creation of a supportive infrastructure environment for living and economic opportunities. The need strengthens the argument that a CSR perspective from a SARF approach should involve all-around measures to help vulnerable people.

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Chapter 6 Conclusion

The aim of this study was to evaluate how SARF can be implemented in ISO 31000:2018 to create a safe working environment in ASM. The study has shown that this is a promising strategy to improve safety measures and address ethical concerns in the ASM. The survey data provides oversight into the respondent group's attitudes, which, in this case, includes security personnel, and reveals a mature approach to the complex interactions and sources of risks in ASM settings. The approach described by the participants suggests that a holistic view of ensuring safety that not only focuses on protecting lives but also considers the ethical implications of operating within the ASM is critical at all levels. Therefore, this answers the research question about stakeholder sentiment regarding safety and practically applying SARF in ISR to counteract ethics-based hazards. The participants expressed their concern with multifaceted risks ranging from physical dangers to legal challenges and exploitation motivated by novel and known patterns of conduct. Such a strategy that includes thorough risk assessments, is sympathetic to local knowledge. Besides this approach must prioritise a balanced and responsible approach to ethical questions of utmost importance, and focused on community collaboration is alternative.

Furthermore, this study has demonstrated the impact of cultural sensitivity, ethical investment, and community influence on the safer mining environment. These three factors contribute significantly to the mitigation of risks associated with the antagonistic relationship between external security and the local working community. Thus, it is evident that these factors all contribute to making the ASM practice adhere to the principles of sustainability and morality. A close examination of the participants' responses shows consensus on several issues. First, the assessment of the state of the ASM in terms of extreme situations, including desperation and

hope, struggle and poor infrastructure is critical. Secondly, the security professionals consider their work to be an intermediary link between the investors and the working community. Therefore, they regard risk assessment, cultural awareness, and community engagement as the primary conditions, which ensure the given practices are safe and ethical investments in which to invest (Ofosu et al., 2020). Importantly, the plea for educational projects, healthcare provisions, and better infrastructure establishes an in-depth understanding of security activities beyond the area of risk.

Moreover, undertaking ethical dilemmas by the security personnel criticizes the knowledge of the possible active participation in the continuation of hard practices in the ASM sector (Hilson, Hilson & McQuilken, 2016). Thus, the steps taken ensure responsible investment, transparency, and ethical considerations. Nevertheless, it must be acknowledged that this process has inherent challenges as discussed previously. Therefore, the risk homeostasis theory revealed some exciting views from the participants, whose safety measures were developed in the ASM sector. According to these precepts, individuals adjust their behaviours in line with their perceived level of risk. Therefore, the learned safety measures, individual assessments, and various adjustments suggest the process dynamics of the balance between safety and productivity (Sojková, 2022).

6.1 Implications for creating a safer working environment

The implications of these findings are multi-faceted in terms of creating safer working environments in the ASM. Mainly, when conceptualized within the SARF integrated into ISO31000:2018 strategies. The shared experiences and strategies of the security professionals above point to a constellation of ethical dilemmas, risk and risk management, and ethical considerations that necessitate a multi-tiered, multi-faceted approach to safety in the ASM

context (Tobalagba & Vijayarasa, 2020). As such, the finding of the participants emphasizing due risk assessment and interaction with local leaders for their safety just before visiting an ASM site is in pursuit of ISO31000:2018's customizing the risk management process to the situation. This, thus, applies not only to risk identification and assessment but also to the amplification of good by nurturing a collaborative relationship and trust between a security team and investors and the local populations (Hilson & Maconachie, 2016).

The ethical dilemma is further highlighted by the ASM context, where there is a high likelihood that one could be funding or facilitating modern slavery and exploitation. The safety and ethical considerations and strategies demonstrated by the participants, including dispensing PPE, doing community work, and insisting on ethical sourcing from their clients, indicate a commitment to social responsibility and the well-being of the local ASM communities. These are all emphasised in the SARF, which requires sociably responsible communication and action that do not relatively amplify nor reduce the risk's perception to different stakeholders (Bansah et al., 2018). However, it is critical to note a huge gap in the applied SARF and ISO31000:2018 strategies in relation to ASM safety: the non-existence of an amorphous framework or guidelines for the consideration of ethics or interaction with communities (Ofosu et al., 2020). Therefore, there is a need for management strategies and policies that promote inclusive processes and longer planning processes with a major emphasis on sustainability in ASM communities. The process creates an event horizon that integrates the SARF within the ISO31000:2018 risk management guideline to become a sociable performance framework that reduces risks—both the real and false perception. Consequently, this positively amplifies and implements risk reduction among the stakeholders involved.

6.2 Recommendations for future research

Several thoughtful recommendations emerge from the responses gleaned from the surveys of the stakeholders in the ASM, specifically focusing on the professionals involved in security and risk management. Based on the topics and controversies they raised and their experiences and observations, it becomes clear that there are several critical areas for further research and practical actions to make the work in ASM safer. These include more supportive of ethical concerns, and more prosperous for all the communities involved such as local workers, the investors or buyers, and the security professionals who facilitate the transactions between the two sides (Suhartini & Abubakar, 2017).

Firstly, there is a strong need for research into the socio-economic impacts of ASM activities on the local communities especially from a longitudinal perspective. The issues of longer-term effects of working with foreign investors and having external security forces involved in the processes must be tackled to understand more deeply how these activities contribute to community development (Isung, 2021). It is critical to analyse the balance between the positive developments funded by the investors, such as schools, health clinics, and other community initiatives and the negative aspects of work such as the disruption of the social fabric (Haundi et al., 2021).

Secondly, the highly ethical dilemmas identified by the participants – including the threat of modern-day slavery and other forms of exploitation – demand research into the efficiency of the existing legislation and regulatory measures aimed at making the ASM a more ethically acceptable business (Ribeiro-Duthie et al., 2017). With comparative research on different state practices from different countries, it is possible to assess which competitors have been particularly successful in eliminating unethical practices in their own artisanal mining realms or

have greatly improved the standards applicable there. It is, therefore, also possible to understand what might work for a global standard. This might involve researching the activity of the security consultants in regard to their efforts to secure their client's business and sourcing ethics and assessing the balance struck between business interests and human rights (Baffour-Kyei et al., 2021).

However, scholarly research is not the only resolution to the pressing issues and immediate risks that these professionals have brought up. A practical solution, therefore, is to design and institute fully-fledged and well-rounded cultural sensitivity and conflict resolution training programs for both security teams and locally based investors (Hilson et al., 2017). The solution will equip external figures with the necessary skills to navigate the complex socio-cultural aspects of the ASM sites and communities. In return, the actors involved will have fewer places and causes of misunderstanding, promoting an atmosphere of respect (Idris-Nda & Waziri, 2018). The solution, further, should include training on ethical engagement, and promoting an atmosphere where external actors do not just mine and leave but contribute positively to the communities at all levels.

There is, however, a pressing need to enhance the safety standards in the mining sector through collaborative efforts between invested actors, local leadership, and security personnel. Such efforts might result in the formulation of safety protocols that are universally acknowledged by all involved actors (Buss et al., 2019). This solution, however, should include high-quality risk assessment tools, well-thought-out emergency plans, and regular practice runs. The result will be the assurance of safety for both hosting workers and visiting troops against physical harm and health threats. Finally, there is a pressing need for initiatives that bring transparency to the ASM supply chain. The use of advanced supply chain tracking tools such as

the blockchain can help institute a clearer, more transparent, and easily traceable supply chain (Calvao & Gronwald, 2019). The clear chain will reduce instances of exploitation, assuredly improve general welfare, and eliminate all unethical practices possible. Alternatively, closer collaboration between the invested actors and the security teams can enforce adherence to both moral and legal standards.

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Appendices

Appendix 1: Survey Questions and Participant's Responses.

1. Understanding the Environment:

Can you describe the typical situation or environment you encountered when entering ASM communities for a project?

2. Perceived Risks:

From your perspective as a security personnel, what are the main risks you or your team face or the investors you're accompanying when planning a visit to an ASM site?

3. Safety Measures:

What strategies or measures do you typically implement to ensure the safety of your team and the investors during visits to ASM sites?

4. Ethical Considerations:

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In your experience, how do you address ethical dilemmas, such as potential contributions of ASM activities to modern-day slavery or exploitation of children?

5. Impact on Local Communities:

How do you perceive the impact of your work on the local ASM workers and their communities? Are there steps you take to minimize any negative effects?

6. Improving Interactions:

Based on your experience, what improvements can you propose to foster safer and more ethically considerate interactions between security teams, investors, and ASM communities?

7. Risk Homeostasis:

How do you manage the balance between risk and safety measures?

Participant 1:

Q1: "Mostly, the areas I have encountered are remote and underdeveloped, with limited access to basic amenities. The working conditions are harsh and the majority of people working here seem desperate."

Q2: "The main risks include physical harm due to inadequate safety measures, potential hostility from local communities, and legal issues arising from unregulated mining activities."

Q3: "We conduct thorough risk assessments before any visit, establish communication with local leaders, and ensure we have an exit plan. Providing personal protective equipment (PPE) and first aid training for the team and investors is standard."

Q4: "It's about striking a balance. We educate our clients on the ethical implications of their investments and encourage them to contribute positively to the communities, such as funding schools or healthcare."

Q5: "Awareness is key. We try to minimize disruption and foster respectful interactions. It's important to understand that our presence should not exploit but ideally benefit the community."

Q6: "Promoting more inclusive practices, such as involving community members in decision-making processes, could lead to more sustainable and ethical mining operations."

Q7: "Constant vigilance and adaptability are essential. We monitor risk levels continuously and adjust our safety protocols accordingly to ensure everyone's safety without overburdening the project with excessive precautions."

Participant 2:

Q1: "Rural, isolated, often surrounded by nature, which adds to the logistical challenges. The workers are usually locals trying to make a living in tough conditions."

Q2: "Besides the obvious physical dangers, there's also the risk of miscommunication or cultural misunderstandings leading to conflict. Environmental impacts can also pose health risks."

Q3: "Emphasis on cultural sensitivity training for our team and investors, alongside standard safety measures. Building rapport with the community beforehand is crucial."

Q4: "We actively look for signs of exploitation and report them to relevant authorities. Engaging in dialogue about ethical sourcing with our clients is also a priority."

Q5: "We aim to be as non-intrusive as possible and support local initiatives that improve living and working conditions. It's about leaving a positive footprint."

Q6: "Better education for all parties about the realities of ASM and the importance of ethical practices could bridge many gaps. Also, more transparent supply chains."

Q7: "Risk assessments are tailored for each visit, balancing thorough preparation with the flexibility to adapt to unexpected situations."

Participant 3:

Q1: "Challenging, often with a stark contrast to urban settings. Basic infrastructure is lacking, and there's a sense of community but also survival."

Q2: "Health and safety are major concerns, along with potential legal implications of engaging in or supporting unregulated mining activities."

Q3: "We leverage local knowledge by working closely with community liaisons and invest in robust safety gear and training."

Q4: "Transparency with our clients about where their investments go and the impact they have is key. We advocate for responsible investment practices."

Q5: "We strive to ensure that our operations do not exacerbate local issues. Engaging in community projects and supporting local economies are steps we take seriously."

Q6: "A greater focus on sustainable development within these communities could ensure that the benefits of ASM are more widely distributed."

Q7: "It's about being proactive rather than reactive. Understanding the environment fully allows us to implement precise safety measures without hindering the operation's goals."

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Participant 4:

Q1: "Difficult working conditions, with limited access to modern tools or safety equipment. The communities are often tight-knit but wary of outsiders."

Q2: "Theft or violence is a concern, as is the risk of causing unintentional offence due to cultural differences. Health risks from exposure to hazardous materials are also significant."

Q3: "Prioritizing community engagement and ensuring that our presence is welcome and beneficial is key. We also focus heavily on health and safety training."

Q4: "We refuse to work with clients who do not commit to ethical practices, including ensuring that their investments do not contribute to human rights abuses."

Q5: "We try to ensure that our work offers some benefit to the local community, whether through direct investment, education or by improving infrastructure."

Q6: "Greater international cooperation and stricter regulations could help ensure that the benefits of ASM are realized by the communities that host them."

Q7: "Safety cannot be compromised. We use a combination of technology, local knowledge, and international best practices to mitigate risks without stifling productivity."

Participant 5:

Q1: "They are usually remote and lacking in basic infrastructure, making the logistics of any project challenging. The community dynamics are complex, with a mix of hope and despair."

Q2: "Security issues, including potential for conflict with local groups, and health risks from poor working conditions are the most pressing concerns."

Q3: "We focus on building trust with the community, employing local guides, and ensuring that our activities do not disrupt local livelihoods. Safety drills and emergency response plans are standard."

Q4: "It involves a commitment to not harm, understanding the local socio-economic landscape, and avoiding any activities that could be seen as exploitative."

Q5: "We aim for a positive impact by contributing to community projects and ensuring that our activities do not negatively affect the local way of life."

Q6: "We try to encourage more responsible and ethical buying practices among investors. I think that this could greatly improve the situation for ASM workers."

Q7: "Balancing risk and safety involves a broad approach, constantly reassessing the situation on the ground and adjusting our strategies accordingly."

Participant 6:

Q1: "The environment is often primitive with significant manual labour. Communities are generally welcoming but cautious of outsiders' intentions."

Q2: "Cultural misunderstandings can escalate quickly. There's also the risk of accidents due to unsafe working conditions, and the potential for environmental damage. These risks can build up to a crisis of not properly managed"

Q3: "We try to collaborate with local leaders and communities to ensure workplace safety. We ensure all team members are familiar with local customs and the language. Safety protocols are rigorously followed."

Q4: "We engage in constant dialogue with our clients about the importance of ethical sourcing and the real cost of neglecting these principles. We make them understand the implications of unethical operations although this has faced imminent challenges"

Q5: "Our goal is to leave the communities better than we found them, whether through education, health initiatives, or infrastructure projects. I think we have tried our best to positively impact these communities. The rest I think the local authorities can enforce."

Q6: "I don't think there is a gold standard to safety but I feel that improving access to education and healthcare in these communities can be imperative in minimising the risks associated with ASM activities."

Q7: "It's about continuous risk assessment and adapting our strategies to ensure the highest level of safety without compromising the mission's objectives."

Participant 7

Q1: "Harsh, isolated, yet there's a strong sense of community. Infrastructure is often non-existent, and working conditions are dangerous."

Q2: "The isolation of these communities means that medical help is far away in case of an emergency. There are also risks related to local conflicts and exploitation."

Q3: "Our approach includes comprehensive pre-departure briefings, medical check-ups, and establishing strong lines of communication with local authorities and communities."

Q4: "We insist on transparency and ethical conduct in all dealings. This means vetting our clients carefully and ensuring they understand the implications of their investments."

Q5: "We are acutely aware of our footprint and strive to ensure that it is as light as possible. This means engaging with communities in respectful and meaningful ways."

Q6: "There's a need for greater awareness and education among all stakeholders about the realities of ASM and the importance of ethical engagement."

Q7: "Ensuring safety is an ongoing process that requires vigilance, preparedness, and a willingness to adapt strategies as situations evolve."