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TITLE OF PROJECT

**IMPLICATIONS OF ARTISANAL MINING POLICY REFORMS ON SOCIO-
ECOLOGICAL SUSTAINABILITY IN MAZOWE DISTRICT, ZIMBABWE**

AUTHOR

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**DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR THE MASTER OF SCIENCE DEGREE IN NATURAL
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I certify that this research dissertation is original work, prepared by the author except to the extent alluded to in the acknowledgements and comments contained in the study. The material from other sources has been properly and fully acknowledged in the text. In addition, this research has not been submitted in partial or full fulfilment of any other programme at this or any other University.



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Student's signature

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Dedication

To my sons Pardon and Desmond.

Acknowledgements

I thank the Lord Almighty God for the good health and wisdom that have enabled me to complete this dissertation. I am deeply indebted to my supervisor, Dr. R B Maponga, for his patience, wise counsel, and constructive guidance that has resulted in the successful completion of this study. Special mention also goes to my classmates with whom we have shared the academic trenches. I acknowledge the brilliant contributions and support that I have received from the CEO of Mazowe Rural District Council, Ministry of Mines and Mining Development officials, traditional and local leadership in Mazowe district, academics, EMA officials, health and education practitioners, artisanal miners in Mazowe district, ZELA and other environment-related CSOs.

Abstract

Socio-ecological harm characterises the artisanal mining sector yet there exist ASM laws and regulations. The existing ASM policies need to be assessed to determine effectiveness of reforms in the sector. The study examined the implications of Artisanal Mining policy reforms on socio-ecological sustainability in Zimbabwe. It assessed the ASM policy reforms, explored their impact on socio-ecological sustainability and analysed the factors for effective implementation in Mazowe District. A qualitative research approach was adopted. Interviews, FGDs, and participatory observations were carried out to collect data. The findings were analysed in terms of content and themes. The study found out that ASM policy reforms have been effective in regulating formal or registered artisanal miners and leading to a positive impact on socio-ecological sustainability in Mazowe District. The formal ASMs did not use child labour, there were fewer cases of mining-related violence, created employment for locals, thus afforded community peace and development. Ecologically, the formal ASMs followed mining regulations, for instance, fencing claims, refilling open pits/shafts, reforestation, and proper chemical disposal. The same did not apply in the informal artisanal mining sector. Cases of child labour, school dropouts, child pregnancies, and mining-related violence have been recorded, while pits or shafts have been left unfenced and open, resulting in farmer-miner disputes among others. The study concludes that ASM policy reforms have not been effective in promoting socio-ecological sustainability in the non-formal sector. The policy reforms have been formulated and implemented as a one size fits all, assuming that all ASM are registered or formal. The policy has also not been adequately implemented due to human and resource constraints. Some miners lacked knowledge of the mining policies, others lacked green ethics or ignored proper mining practices in pursuit of profit, and some lacked the resources to comply with the ASM policy reforms. The study recommends that ASM mining reforms should be revised, paying attention to the realities of artisanal miners, especially the unregistered. There is a need for formalisation through registration, financing and capacity building for socio-ecological sustainability in the ASM sector. The ASM policies should also be adjusted to suit the economic realities characterised by a growth in the informal sector, and increasing the knowledge of artisanal miners on the best mining practices or socio-ecological sustainability in the district.

Key Words:

Artisanal Mining, socio-ecological sustainability, ASM policy

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Acronyms and abbreviations

AMV	Africa Mining Vision
ASM	Artisanal and Small-Scale Mining
AU	African Union
CID	Central Investigations Department
CIO	Central Intelligence Organisation
CSOs	Civil Society Organisations
EIA	Environmental Impact Assessment
EMA	Environmental Management Agency
EMPs	Environmental Management Plans
IAD	Institutional Analysis Development
FGDs	Focus Group Discussions
MPF	Mining Policy Framework
RBZ	Reserve Bank of Zimbabwe
RDC	Rural District Council
SADC	Southern African Development Community
SAZ	Standards Association of Zimbabwe
SDGs	Sustainable Development Goals
UN	United Nations
ZELA	Zimbabwe Environmental Law Association

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CHAPTER 1: INTRODUCTION

1.1 Background to the Study

Policy reforms are done to address a problem condition within a specific sector. In the mining context, one of the aims of artisanal policy reforms is to achieve socio-ecological sustainability by diligently regulating the conduct of artisanal small-scale miners. According to global standards and good governance frameworks, ASM reforms are aimed at formalizing the artisanal mining sector by ensuring that artisanal miners adhere to the environmental regulations, safe mining standards, engage the community in artisanal mining processes, and capacity-building programmes (Hilson 2019, Mutemeri and Schwartz 2016). In Zimbabwe, ASM reforms are found in policy frameworks that include the Environmental Management Act, Mines and Minerals Act, and the Artisanal and Small-Scale Mining Policy, among others. These policy reforms emerge against a backdrop where artisanal mining has become one of Zimbabwe's most contentious sources of livelihoods. Despite its potential for economic growth and livelihoods, the sector has been affected by its socially and environmentally destructive nature (Moyo et al, 2018).

Artisanal mining policy reforms present an opportunity for the government to regulate the sector and promote sustainable, social, and environmental practices. A widely accepted view is that a good ASM policy can maximize benefits derived from artisanal mining whilst reducing the negative impacts of the sector (Hentschel et al, 2003). In Zimbabwe, the policy approach towards artisanal mining has alternated between restrictive and supportive stances. Spiegel (2015) notes that in the 1990s, Zimbabwe was commended for its initiatives that sought to formalize and regulate the artisanal and small mining sector. In 1991, the Government promulgated the Mining (Alluvial Gold) (Public Streams) Regulations: 1991 Statutory Instrument Number 275, hereby referred to as SI 275/1991. SI 275/1991's requirements, like the backfilling of trenches and pits, promoted socio-ecological sustainability. In 1993, the government, in conjunction with the United Nations Department for Economic and Social Development, introduced the Harare Guidelines on Small-scale mining. These guidelines were internationally acclaimed and seen as a benchmark for nations seeking to enrol artisanal miners in sustainable development initiatives.

In the early 2000s, a policy shift resulted in the condemnation and criminalization of artisanal mining activities when SI 275/1991 was repealed. The central government withdrew the power

of Rural District Councils (RDCs) to license and regulate alluvial and riverbed mining (Spiegel, 2015). In addition, heavy-handed crackdowns like Operation *Chikorokoza Chapera* (loosely translated as an Operation to end illegal or informal mining) in 2006 were initiated by law enforcement against artisanal miners, leading to a loss of livelihoods during that period. The operation was conducted following the massive environmental impacts emanating from artisanal mining. Artisanal miners began to pursue night-time activities, which they undertook deep in forests to evade the authorities. These activities occurred without any environmental accountability.

In 2013, the Zimbabwean government decriminalized the activities of around 350,000 artisanal miners. The purpose of the policy shift was to boost gold deliveries to the Fidelity Printers and Refineries, the sole official gold buyer in Zimbabwe (Sibanda, 2021). This alternation in policy highlights the policy inconsistency that has affected the governance of artisanal mining in Zimbabwe. The inconsistencies also threaten sustainability, which is key to people and the environment. In terms of law, the Mines and Minerals Act is the principal legal framework that regulates the exploration and exploitation of mineral resources in Zimbabwe. The major challenge with this law is that it is outdated and fails to address the socio-ecological impacts of artisanal mining. In its current state, the Mines and Minerals Act is biased towards mineral extraction whilst foregoing tenets of sustainable mineral extraction and management. Furthermore, the Act focuses more on large scale mining and does not recognize existence of artisanal miners. Given this, the Government of Zimbabwe has embarked on a process of amending the current Mines and Minerals Act. At the time of this writing, the Mines and Minerals Amendment Bill (MMAB) is under review.

The study examined the implications of these policy developments on socio-ecological sustainability. The findings aimed at proposing measures that can be put in place to achieve socio-ecological sustainability through ASM policy reforms. The recommendations are necessary given that the MMAB has not yet been passed into law. The Mines and Mineral Act is complemented by legal instruments like the Environmental Management Act of 2002, which requires that all miners, including artisanal and small-scale miners should carry out Environmental Impact Assessment reports prior to mining. This requirement has been used to justify crackdowns like Operation Chikorokoza Chapera in the past (Mutseta, 2023). Despite the existence of various legislation that seeks to protect the environment, like the Water Act, Parks and Wildlife Act, among others, environmentalists castigate the overriding effect of the

Mines and Minerals Act over these pieces of legislation. The gaps within these frameworks, which in turn hinder the smooth practice and implementation of sustainable mining practices from an artisanal mining perspective, are one of the key aspects that this research addresses.

The draft minerals policy (Republic of Zimbabwe, 2013) contains proposals that can promote sustainability in artisanal mining. The policy emphasizes ASM extension services, financing, and marketing or quality assistance, which it regards as a golden triangle (Jourdan et al, 2012). The draft policy seeks to recognise and empower women entrepreneurs who seek to enter the artisanal mining sector by offering them a special window in the financing mechanism as well as in the customised short training courses that are offered through the Zimbabwe School of Mines. Despite the existence of the policy reforms and debates, there has been a lack of an empirical study that examines the implications of ASM policy reforms on socio-ecological sustainability, a gap that is addressed in this study.

The Reserve Bank of Zimbabwe (RBZ) has also played a part in the ASM mining sector. The Bank has often been at loggerheads with artisanal miners, encouraging them to be registered so as to qualify for financial and technical support. It has encouraged the establishment of mining associations to represent the artisanal miners. The RBZ stated plans to provide training and financial support to artisanal miners through these associations. In 2024, the Ministry of Mines and Mining Development embarked on a Small-Scale Miners Training program across the country's eight rural provinces. The exercise was to teach artisanal miners to adopt sustainable and safe mining practices (Sunday Mail, 11 February 2024).

In December 2024, the Zimbabwean government launched a USD 23.7 million project aimed at reducing mercury use in artisanal mining activities by 4.85 tonnes over five years and offering support to around 7500 artisanal miners (PlanetGold). The PlanetGold Zimbabwe project, funded through the Global Environment Facility (GEF), is being implemented in partnership with development partners like the United Nations Environment Programme and an international NGO, IMPACT International. A Preliminary literature review has shown that the Zimbabwean government has partnered with development partners in the past as it sought to encourage sustainable artisanal mining practices. Whilst some of these programmes encountered success at their inception, the inconsistency in the regulatory and policy frameworks has undermined the objectives of such programmes.

Government policy is pivotal in encouraging sustainable mining practices. The idea being that a well-thought-out policy should strike a balance where mineral development, economic growth and livelihoods can be achieved with minimal social and environmental damages (Sinding, 2025). As such mining policy occupies the heart of a sustainable mining sector. Accordingly, regional and sub-regional policy frameworks guide governments on the best practices. The Africa Mining Vision (African Union 2009) and the SADC protocol on mining (SADC 2006) provide policy recommendations to African and Southern African countries, respectively. This study will utilise the global to regional visions and protocols for aligning national policy reforms in the ASM to achieve socio-ecological sustainability.

1.2 Statement of the Problem

The contemporary artisanal mining policy reforms are aimed at formalizing the artisanal mining sector, fostering good and sustainable environmental practices, and harnessing community engagement in artisanal mining processes. In the Zimbabwean context, various measures and policies have been established to effectively regulate the ASM sector through the Environmental Management Act, and the Mines and Minerals Act, among others. Despite the existence of such policies, socio-ecological sustainability continues to be threatened in Mazowe District. This speaks to the weaknesses of the ASM policy reforms in particular areas where illegal ASM has been conducted. The problem manifested through an increase in prostitution, diseases, use of child labour, child pregnancies, violence within the mining areas, farmer miner conflicts, water pollution and mining accidents at the mining sites. Ecological harm has been witnessed through land degradation where mining pits or shafts are left unfilled, and trees cut down thus causing deforestation. Discharge of contaminated water from mining processes into rivers and water bodies has caused water pollution and destabilisation of ecosystems. The study showed that the deficiencies in the ASM policies, such as lack of good environmental practices, conditionalities attached to surveying and policy inconsistencies have worsened the problem. Factors such as political interference, lack of political will, lack of finance among others have compromised socio-ecological sustainability in Mazowe District. The bulk of conventional literature focused on the impact of ASM on the environment or economy, and less attention was placed implications of policy reform perspective. This lacuna in literature explain the continued harm of socio-ecological settings due to ASM. Thus, there is need to assess the implications of the ASM policy reforms and explore policy changes that need to be made to achieve socio-ecological sustainability in areas where ASM occur. Lack of a comprehensive and coherent artisanal mining policy has resulted in artisanal miners operating on the edges of

a formalised mining sector. Several challenges continue to exist, like illegal mining, and environmental degradation.

1.3 Aim of the Study

- To examine the implications of artisanal mining policy reforms on socio-ecological sustainability in Zimbabwe.

1.4 Research Objectives

The objectives of the study were:

- To identify the ASM policy reforms implemented in Mazowe District, Zimbabwe.
- To assess the implications of ASM policy reforms on socio-ecological sustainability in the Mazowe district, Zimbabwe.
- To determine factors that can enhance the impact of ASM policy reforms on socio ecological sustainability in the Mazowe district, Zimbabwe.

1.5 Scope of the Study

The study covered ASM activities in wards 18, 19, and 22 of Mazowe District, in Mashonaland Central province. Gold is the dominant mineral mined in these wards. Ward 18 is composed of informal and formal ASM. The informal artisanal small-scale miners are found along Mazowe river, while the formal miners have claims dotted around the Vonabo clinic, Iron Duke, to areas where A1 farmers are located, and also stretches to cover the Mazowe Citrus farms and Mondo 3 and 4 mining claims. Ward 19 covers areas near Mazowe Hotel and while ward 22 includes Jumbo mine stretching to the Magaya mining claims. Jumbo area drew the attention of the researcher because this is where the bulk of ASM is being conducted and where serious socio-ecological damage has been observed and reported. These wards became a hive of ASM activity after the closure of Jumbo Mine, which was a large scale mine. Most of the artisanal miners are former workers who are mining to earn a living disregarding set out policies and socio-ecological sustainability principles and practices.

The scope of the study covered ASM policy reforms which had an impact on socio-ecological sustainability in Mazowe District. The policies covered include the Gold Trade Act (Chapter 21:03), Mines and Minerals Act (Chapter 21:05), Environmental Management Act (Chapter 20:27). The policies read together with regional to global mining conventions and frameworks have potential implications on socio-ecological sustainability in Mazowe District. The researcher covered the period from 2013 to present. 2013 was chosen as it marked the year

when the nation adopted a new Constitution. During this time there were calls to align existing Acts and policies to the new Constitution. Emphasis is also placed on 2017 when political transition took shape with the coming in of the Second Republic. In this phase debates ensued around amending the Mines and Mineral Act and an alignment of the existing policies to Transitional Stabilisation Programme, National Development Strategies 1 and 2 together with the 2030 economic vision of the state. All these periods marked policy reforms in the mining sector that have an impact on socio-ecological sustainability in Mazowe District. However, there was lack of an empirical study that assessed the implications of the ASM reforms on socio-ecological sustainability, which has been addressed by this study.

1.6 Rationale and Significance of the Study

The researcher undertook this study with the view of assessing the impact of ASM policy reforms on socio-ecological sustainability in wards 18, 19, and 22, in Mazowe District. This was against the background of the growth of ASM in Mazowe District, Jumbo mine area, in particular. Informal artisanal miners have mined without following mining regulations and good mining practices that promote socio-ecological sustainability. The researcher noted that in the absence of context-specific ASM policies, socio-ecological sustainability in Mazowe will be missed. At the time of this writing, the researcher had witnessed social problems related to informal artisanal mining, such as the use of child labour, school dropouts, underage pregnancies, farmer-miner disputes, prostitution, accidents, injuries, and fatalities in the Mazowe District. On the ecological side, cases of water pollution, land degradation, and deforestation have been witnessed arising from informal artisanal mining in the Mazowe district. Further, the researcher noted a technical gap in the literature where scant studies have been done that focus on ASM policy reforms on socio-ecological sustainability in Mazowe District.

Accordingly, if the ASM policy reforms are not adequately reviewed, socio-ecological harm will continue unabated. Informal mining practices are not durable, and this may threaten the sector that is producing 60% of gold for the government. This will affect future revenue flows needed for the nation to realise its national development goals, Vision 2030, as well as the SDGs. Further, the socio-ecological harm will continuously affect the livelihoods of people in Mazowe District and the well-being of the environment. The study also closes a literature gap in the field of natural resources governance. If this lacuna is not addressed, scholars will remain using literature that is not context-specific in terms of ASM policy reforms and socio-ecological

sustainability. This will compromise research that is grounded in the country's socio-economic to political realities.

The findings and recommendations from this study have potential significance to the Ministry of Mines and Mining Development, which may bolster the existing ASM policies to effectively result in socio-ecological sustainability in Mazowe District. Policymakers may also use the findings to further sharpen the Mines and Minerals Amendment Bill to reflect the realities of ASM and the promotion of sustainable mining practices. This is key given that mining is one of the backbone of the national economy and any reform that is done in the spirit of sustainability is consistent with the UN Sustainable Development Goals (SDGs) in particular SDG 1 'no poverty' and 15 'life on land' which the government of Zimbabwe subscribes to.

The Environmental Management Agency (EMA) may benefit from the study by considering recommendations around ecological sustainability that are critical to the institution as they may be able to design environmental policies related to mining that suites the realities of ASM in Mazowe District. Thus they may depart from a generalised environmental management approach to a responsive and balanced approach that protects the environment and enhance community livelihoods.

The study may be of importance to ASM in Mazowe District who have been ignorant of the ASM policy reforms. They may also enhance the understanding of ASM who are knowledgeable about the reforms but were not aware of their implications on socio-ecological sustainability. These contributions may promote good and ethical mining practices that will benefit the Mazowe community and environment. The benefits may also be felt by farmers in the areas who have been affected by poor ASM activities in the District. The generality of Mazowe community may benefit from the recommendations as they have been indirect victims of pollution and in some cases contaminated water from ASM activities.

The significance of the study stretches to the academic community. The study fills in a lacuna in conventional literature through a discussion of findings that focus on ASM policy reforms and their implications on socio-ecological sustainability. Past academic studies have either focused on the impact of ASM activities on social or environmental issues without focusing on ASM mining policies, which this study has done. This study therefore highlights the often ignored impacts of policy reforms on local communities and their socio-ecological systems.

The study has potential benefits to non-governmental organisations. These include CSOs in the mining and environment cluster who can use the findings in their community engagements,

advocacy and inclusive sustainable development strategies. Global agencies such as United Nations (UN) and the donor community may be able to use the study to build the capacity of ASM in Mazowe District resulting in socio-ecological sustainability. ASM mining associations like the Zimbabwe Miners Federation and Miners for Economic Development may find the study insightful to educate their members and other relevant stakeholders.

1.7 Definition of key terms

Mining

According to Balasubramanian (2016), mining is the extraction of economically valuable minerals or other geological materials from the Earth's surface. Mining constitute players ranging from large, medium to ASM. In this study, mining involves a process of extracting gold mineral from the surface by ASM in Mazowe and trading the gold to earn a living.

Artisanal Small Scale Mining/Miners (ASM)

Artisanal mining activities are defined as self-sufficient methods of mining that are practised by small individuals or groups of people, usually in informal establishments (Field and Mutemeri, 2021). In the context of this study artisanal mining comprises of both formal and informal individuals or syndicates using low cost and light machineries such as diesel powered compressors, harmer mills, stamp mills, jack hammers, picks and shovels to mine gold on small registered or unregistered mining claims with small gold deposits or alluvial gold mining along Mazowe river in Mazowe District.

Socio-Ecological Sustainability

Socio-ecological sustainability refers to the interconnectedness and inter-reliance of social factors and ecological components in promoting a symmetric and sensible development that achieves human needs without jeopardizing environmental factors (Folke, 2006), for the people of Mazowe District. This study understands the concept as an interaction between social activities and their impact on the environment emerging from policy reforms in ASM.

1.8 Conclusion

The ASM policy reforms are premised at achieving socio-ecological sustainability by regulating the activities of artisanal miners. The reforms are enshrined in some of the ASM governance frameworks that include the Gold Trade Act, Environmental Management Act, Mines and Minerals Act, and the Artisanal and Small-Scale Mining Policy, to mention just a few. The study notes a literature gap that examines the implications of ASM policy reforms on

socio-ecological sustainability in the Mazowe district, Zimbabwe. The findings are critical as they feed into the governance reforms that the government is undertaking and may assist the artisanal miners, the community, and the environment. The next Chapter focuses on literature review and theoretical framework.

CHAPTER 2: LITERATURE REVIEW AND THEORATICAL FRAMEWORK

2.1 Introduction

This chapter presents the literature review on the implications of artisanal mining policy reforms on socio-ecological sustainability. The chapter incorporates global and regional artisanal mining policy reforms that guarantee socio-ecological sustainability, coupled with case studies. This study is based on the Political Ecology Theory and the Institutional Analysis and Development Framework, which align with the research objectives which are to identify the ASM policy reforms underway in Zimbabwe, assessing the implications of the ASM policy reforms on socio-ecological sustainability in Mazowe District and determine factors that can enhance the impact of ASM policy reforms on socio-ecological sustainability in Mazowe. The literature review presents the gaps that necessitated this research.

2.2 Theoretical Framework

This study is located in the theories of Political Ecology propounded by Eric Wolf (1972) and the Institutional Analysis and Development Framework by Elinor Ostrom (2009). The Political Ecology Theory focuses on the relationship between political economy and environmental regulations. Its core tenets are grounded on establishing a nexus between the environment and the society with human activities playing a role in determining and influencing environmental outcomes, highlights how environmental concerns are created as a result of asymmetric power relations and that in most instances political factors serve as the invisible hand behind most environmental problems (Bryant 1997 and Peluso 1992). The underlying principles of the Institutional Analysis and Development (IAD) Framework orbit around the beliefs that institutions have a domineering role in influencing resource governance outcomes, the mining sector included (Walker 2006). The key variables in the theories are useful in examining the implications of ASM policy reforms on socio-ecological sustainability, as shall be explained in the ensuing sections. Further, the arguments enabled the researcher to design appropriate measures that can enhance ASM policy reforms in Mazowe. The next sections explain the two theories, establishing their relevance and limitations to the study.

2.2.1 Political Ecology Theory

This theory is relevant in understanding the interlinkages that exist between politics and environmental governance. Globally and in the context of Mazowe District the artisanal mining sector has not been immune to political interference. Political choices and decisions by the ruling elite in public policy reforms have an impact on socio-ecological sustainability. In some cases, political decisions and policies have come with social and ecological costs. This is

common during election time when populist policies often override everything. Political ecology is also useful in this study as public policies are largely shaped by the politics of the day. Accordingly, ASM policy reforms have been influenced for instance by the political transitions that happened in November 2017 when a 2nd Republic was born. Such transition was felt in mining policy reforms and had an impact on socio-ecological sustainability which was not researched but has been addressed in this study.

One of the factors that propelled this study includes persistent land and environmental degradation, which was being perpetuated by artisanal mining activities (Muronzi 2020) in Mazowe District. The Political Ecology Theory addresses this problem as it aims to provide long-lasting cures to the emerging environmental problems (Bryant 1997). Likewise, the theory is also equipped to address asymmetric power factors that emerge due to access to and control over resources (Guthman 1997). As such, it is grounded on environmental degradation and the plundering of natural resources in a bid to establish the nexus between political economy and global environment (Walker 2006). The theory stresses out that political ecology revolves around assessing how humanity is linked to the environment and, in turn, how communities resonate with it in economic terms (Ibid 2006). Political ecology provides a comprehensive basis for understanding types of disputes about the environment, with mining activities that disregard good environmental practices included (Bryant 1998).

It provides a framework for analysing Zimbabwe's ASM policy transition by examining the complex relationships between environmental change, political processes, and socio-economic conditions. This theory, as developed by Blaikie and Brookfield (1987) and advanced by scholars like Robbins (2019), emphasizes that environmental problems and their management solutions are inherently political, shaped by power relations and economic interests at multiple scales. In Zimbabwe's ASM sector, Political Ecology Theory helps explain how different stakeholders' power dynamics influence environmental governance decisions and their outcomes. These decisions are manifest in policy reforms debated and implemented through ministries and related agencies.

The theory is particularly relevant as it illuminates how the shift from supportive to restrictive ASM policies reflects broader political-economic forces rather than purely environmental concerns. It helps analyse how power asymmetries between state actors, large-scale mining companies, and artisanal miners influence policy formation and implementation. Moreover, the

theory's emphasis on multi-scalar analysis allows examination of how global environmental discourse and international pressure interact with national policy-making and local mining practices (Bryant and Bailey, 2021). Political Ecology Theory also provides analytical tools for understanding how environmental narratives are used to justify policy changes, often masking underlying political and economic interests. This theoretical lens is crucial for examining the factors that shaped Zimbabwe's policy transition on ASM, which have a bearing on socio-ecological sustainability. The theory shows a political ecology nexus but does not explain the extent to which it affects social and ecological impact. In other words, the theory brings an explanatory value to challenges undermining ASM policy reforms and fails to give a context-specific alternative. A limitation that is addressed in the Institutional Analysis and Development Framework.

2.2.2 Institutional Analysis and Development (IAD) Framework

The Institutional Analysis and Development (IAD) Framework, developed by Elinor Ostrom (1990) and refined by subsequent scholars, offers a systematic approach for analysing how institutions shape resource governance outcomes. This framework is particularly pertinent to Zimbabwe's ASM sector as it focuses on how formal and informal rules, norms, and strategies interact to influence natural resource management decisions and their implementation. The IAD Framework helps understand the complex institutional arrangements governing ASM activities and how these arrangements affect both environmental protection and livelihood security.

The framework's strength lies in its ability to analyse multiple levels of decision-making and action, from operational choices of individual miners to collective choice of rules at community level and constitutional choices at the national policy level. In Zimbabwe's context, this multi-tiered analysis is crucial for understanding how institutional changes, such as the shift to restrictive policies, affect behaviour patterns and outcomes at different levels (Ostrom and Basurto, 2018). The IAD Framework also emphasises the importance of understanding local context and community-level institutions, which is essential given the significant role of informal institutions in Zimbabwe's ASM sector. Furthermore, the framework's focus on institutional incentives and constraints helps explain why formal policies may fail to achieve their intended outcomes, particularly when they conflict with existing informal institutions or fail to account for local resource users' motivations and capabilities (McGinnis and Walker, 2020). The IAD framework is critical for this study's generation of ASM policy

recommendations that capture all stakeholders' views, which are ingredients to achieve socio-ecological sustainability in Zimbabwe.

2.3 Overview of Key Concepts

The theoretical framework provided is also complemented by a conceptual analysis. The study is underpinned by key concepts that shades clarity to the implications of ASM policy reforms on socio-ecological sustainability. The key concepts covered in this Chapter include artisanal small-scale mining, and socio-ecological sustainability. These concepts are analysed in the context of international standards, best practices, policies, conventions and SDGs that govern the mining sector as well as promotion of socio-ecological sustainability. The conceptual analysis will also include institutions that have a mandate in addressing ASM, and socio-ecological sustainability. Below is a detailed overview of the concepts and their relevance to the study.

2.3.1 Artisanal and Small Scale Mining (ASM)

Artisanal and small-scale mining are two diverging concepts that are, however, interrelated and have similar features and characteristics. The main difference between these two mining processes was expanded by research conducted by PACT (2019), which asserted that small-scale mining operations involve those types of miners who own blocks of claims, can employ individuals, and, in some cases, rely on less costly machinery for the exploitation of minerals. In addition, the Mines and Minerals Amendment Bill also defined small-scale mining as a mining entity covering around 40 hectares or below, whilst employing less than 50 individuals. On the other hand, artisanal miners are not owners of blocks of claims; they are usually unregistered and they exploit shallow and less costly mineral deposits, their operations can be part-time or on a seasonal basis (Ibid 2019). They involve mining activities that extract small mineral deposits, usually characterised by lack of funds to fully extract minerals, manpower-intensive, have poor access to markets and in some cases disregard good standards of health, safety and environmental practices during the extraction of minerals (Mining and Sustainable Development Report 2002:348). They are largely informal, in some scenarios driven by poverty and in worst cases contribute to environmental degradation, pollution as well as human rights violations (Field and Mutemeri 2021 and Gourex 2001). This study takes ASM as individuals or a syndicate that is self-sufficient, owning a block of gold claim and often employing a few employees from surrounding communities.

2.3.2 Mining

Mining is an essential pillar of the economy, which refers to the process by which several types of minerals are mined from the crust of the earth (Herbert 2022). The mining process is a synthesis of the extraction procedures and beneficiation, which entails separating the mineral ore from the slag as well as putting more value on the extracted minerals (Perez 2020). The country is endowed with more than 60 minerals, but around 40 of them are mined and explored (PACT 2019). Minerals in Zimbabwe fall under six categories according to mining legislation and policies. These categories are precious minerals (gold, platinum group of metals and silver), precious and semi-precious stones (diamonds and gemstones), base metals (copper, nickel, iron and tantalite), industry minerals (limestone, phosphate, magnesite), quarry material (sand, clay, basalt) and energy minerals (coal, natural gas and petroleum), (Ibid 2019). Mining is conducted by making use of various and diverging methods that encompass open-pit, strip mining methods, which are usually used when conducting surface mining, and room and pillar, sub-level stopping, block caving, which are exploited for underground mining (Brown 2018, Zipf *et al* 2009). This study departs from a general analysis of the whole mining sector and focuses on policy reforms that have been undertaken in the ASM and their impact on socio-ecological sustainability. ASM was chosen given that Mazowe District is dominated by these actors and their activities have had a profound effect on socio-ecological sustainability.

2.3.3 Socio-ecological sustainability

The concept of socio-ecological sustainability can be traced to the 1970s. At the height of oil-fuelled development, environmentalists became concerned with the ‘natural limits of growth’ (Dale, Mathai and Puppim de Oliveira, 2016). During this period, scholars, environmentalists, and development agencies sought ways in which economic development could be made compatible with social goals and environmental protection. Socio-ecological sustainability is understood as a politically oriented phenomenon that resolves the anomalies in the distribution of resources, interlinking environmental aspects and social factors (Redclift 2005). The aforementioned definitions imply that socio-ecological sustainability embeds good environmental practices, together with social factors. Equity and justice are some of the cardinal principles of this phenomenon (Agyeman *et al*, 2003).

Scholars are of the view that socio-ecological sustainability can be achieved through formalization, multi-tier classification of mining licences, compliance with mining, environmental and health and safety regulations and technical support and capacity (Arthur-Holmes and Ofosu, 2024). According to Owusu, Bansah and Mensah (2019:38) ‘sustainable

reforms such as increasing local participation in decision making, education and training, adoption of improved technology, strengthening regulatory institutions, legislation and enforcement of enactments, and the provision of technical support and logistics could ensure socio-environmental sustainability.’ The ultimate goal of a more sustainable artisanal mining sector can be achieved by a cascade of changes to policy and practices (Sinding, 2025).

2.4 Global Mining Policy Frameworks and Artisanal Mining

This section presents the global mining frameworks that set the benchmarks for mining policies which can result in sustainable mining practices. Review of the global benchmarks is critical as there will be need to align national to international mining policy frameworks. The mining policy framework was activated by an Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development (IGF), a platform that is comprised of 81 countries, and Zimbabwe is also part of this initiative (IGF 2023). This policy requires that the operations of the artisanal miners desist from advancing land, air and water pollution during the exploitation of minerals, encourage the formalisation of the ASM sector so that it can effectively be bound to comply to the relevant mining governance frameworks, calls for the banning of toxic chemicals which are used in the mining sector and instruct countries to implement policies that are in tandem with this policy (IGF 2023 and Hilson and Maconachie 2020). This research is circled around the problem that contemporary artisanal mining policy reforms are premised at formalising the sector, promotion of good and sustainable environmental practices which have been obstructed by weak enforcement mechanisms, corruption and rampant environmental degradation. This policy framework in turn houses some best mining practices that serves as the panacea to the harm that the activities of some artisanal miners have caused to the environment and nature which amplify the realisation of socio-ecological sustainability. In addition, no study in the Zimbabwean context has assessed the implications of the policy on socio-ecological sustainability. A gap that is addressed in this study. Below is a review of the key features that underpin the MPF.

2.4.1 Tenets of the MPF

Social and environmental protections are features that MPF emphasizes. The tenet encourages countries to craft, model, and administer regulations that guard against water, land, and air pollution, which is caused by artisanal mining activities, mitigate habitat loss, and manage tailings (IGF 2023). The socio-environmental requirement is an element that applies to the mining sector in general, including ASM. It urges the elimination of utilising mercury in the mining processes due to its hazardous effects, development of robust ways of utilising disused

mines as well as shunning child and forced labour in mining, and making an end to deforestation (Hilson 2009). This guide is important in regulating the activities of ASM since they are often found wanting in protecting society and the environment during mining.

Another requirement that MPF places is a functional legal system. The framework encourages the development of a legal policy that formalise all the operations of the miners, providing adequate training, financial and material support, and inspires the setting up of ASM associations (IGF 2023). To adequately resolve various disputes between artisanal and small-scale miners and other stakeholders, this policy encourages the creation of dispute resolution mechanisms to successfully curb such conflicts (Lahiri-Dutt 2018, IGF 2023). Countries are urged to design and implement robust enforcement mechanisms with stringent and deterrent sanctions that guarantee compliance with the dictates of this policy (Ibid 2023). In this context, socio-ecological sustainability rests on a sound and clear legal system. Illegality undermines sustainability hence the need to examine how Zimbabwe's mining legal framework has promoted sustainable mining.

The supply of adequate geological information is also a critical element of the MPF. Geological information equips miners, in particular ASM, with knowledge about the minerals and quantities in a specific area. Miners and mining firms should be adequately equipped with sound geological information to map and identify areas that have abundant mineral deposits (IGF 2023). Geological information is essential in mineral exploration as it improves precision, certainty, and ensures that the mining business remains lucrative (Afrodad 2017). This knowledge enables ASM to avoid haphazard mining, which is damaging to the environment. Such knowledge is also critical in knowing the value of minerals, which can guide future mining and economic development of a country. Thus, alignment of national mining policies with the MPF tenets is important as it can result in environmental sustainability.

While the global mining policy frameworks provide benchmarks for good mining practices, they however, lack contextual realities. ASM is a global practice yet the conditions through which the mining is done is dependent on political to economic factors prevailing within a context. According ASM policies need adjustment from a rigid best practice to best fit models. In this study ASM in the Jumbo area was fuelled by closure of big mine and yet this could be a different scenario in other contexts within and outside the country. These scenarios become

clear in Chapter of the study. Apart from MPF key features, an evaluation of empirical cases becomes prudent.

2.5 Global case study on the implementation of the Mining Policy Reforms

Artisanal mining provides livelihoods to millions of people around the world. The negative social and environmental impacts of artisanal mining have been well documented. There is an increased effort to identify long-lasting solutions to the challenges, hence attempts at formalisation and regulation of the sector (Hentschel et al, 2002; Smith et al, 2016). Artisanal mining policy reforms include licensing policies, environmental regulations, formalization programs, enforcement mechanisms, and institutional support. Formalisation has been championed as key in enhancing the sustainability of artisanal mining activities to ensure equitable sharing of benefits in communities and the minimisation of the negative socio-ecological impacts (Smith et al, 2016). A large number of countries in the world face the challenge of formalizing the Artisanal and Small-scale mining sector in a way that promotes livelihoods whilst preserving the environment. As such, many countries around the world are adopting artisanal mining sector reforms. There is an understanding that the consistent implementation of mining policy reforms can transform the sector into an efficient business that minimizes negative environmental impacts and increases positive social impacts (Sinding, 2025).

At the global level, actors are pursuing strategies to minimise the usage of harmful resource extraction and processing techniques. One such effort is the Minamata Convention on Mercury Use of 2013. According to the World Health Organization (2016), the Minamata Convention ‘obligates parties as applicable to develop public health strategies on the exposure to mercury of artisanal and small-scale gold workers and their communities.’ Mercury has emerged as a global challenge, with the majority of anthropogenic emissions coming from the artisanal and small-scale gold mining sector. The Minamata Convention recommends several policy interventions like capacity building, awareness campaigns, measures to promote adoption of cleaner and mercury free technologies, provision of financial and technical assistance (Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development, 2017).

2.5.1 Case of Bergslagen in Sweden

Bergslagen is one of the leading districts in Sweden that conducts iron mining, which is mostly conducted by artisanal miners while respecting socio-ecological sustainability measures (Ericsson and Lof 2019). The legal frameworks that regulate the conduct of artisanal miners in

Sweden are the Mineral Act and the Environmental Code which call for the utilisation of best mining practices that encapsulate good environmental practices, amongst them conducting environmental impact assessments (EIA) by artisanal miners before commencing mining operations, make use of mining methods that discourages all forms of pollution and use mining techniques that houses models that prioritise environmental rehabilitation during the post mining activities (Ibid 2019). In this regard, the artisanal miners who are scattered across Bergslagen joined forces with large-scale mining institutions in rehabilitating disused iron mines, various mines are now tourist resorts owing to the renewable energy projects which were pioneered by the artisanal miners (Nilsson et al 2020). The government has also conducted nation-wide capacity building and environmental training workshops targeting artisanal miners which has aided in formalizing the sector as well as initiating environmental sustainability (Lebre et al 2020). The case of Bergslagen provides insightful lessons for Zimbabwe where ASM should join hands with large scale mining companies who have the finance and knowledge they can impart on good mining practices that result in socio-ecological sustainability. At policy level, the government can make a deliberate policy that compels large scale miners to collaborate with ASM as part of the Environmental Social Governance (ESG) obligations. The case of Bergslagen shows that ASM in the iron sector has, to a greater extent, observed the requirements of the MPF tenets. However, no evidence shows the impact of these observances on MPFs on socio-ecological sustainability, which will be addressed in this study.

2.5.2 Regional Mining Policy Frameworks and ASM

Apart from global mining frameworks, a review of regional policy benchmarks is valuable. Regional mining frameworks are designed to suit the context of a region; however, this does not mean they will discard the international best practices. The next section examines the Africa Mining Vision.

2.5.3 Africa Mining Vision (AMV)

The policy was crafted by the African Union in 2009 (Oxfam 2017, AU 2009). This policy framework is premised on tactically reforming the mining sector by instituting comprehensive and elaborate mining reforms that activate equity, sound environmental practices, and industrial collaborations (Carmody 2016). The policy was also designed to promote fair natural resource governance principles that can spearhead industrialisation and development across the continent (ACEP 2014). It acknowledges the contribution of mining towards the development trajectory of the continent and seeks to usher in a multi-sectoral approach to mining governance

which accommodates artisanal miners in the entire mining processes (ACEP 2014). A review of mining policy reforms to the continent policy is necessary to check if the process and policies are in response to the continental trends. Promotion of fair natural resources governance is strongly linked to sustainable socio-ecological governance.

2.5.4 AMV Principles On ASM

The policy pushes for a mining governance agenda that is environmentally friendly, respects biodiversity and ecosystems as well as snubbing the use of mercury in the processing of minerals (AU 2009, Viega 2014). It also takes on board the ASM and echoes that the sector is important in achieving sustainable development and best mining practices particularly in the remote areas where these mining activities are rampant (AU 2009). The policy is alive to the negative consequences that are linked to the artisanal mining activities which in some occurrences cause great harm to the environment. Likewise, a study conducted by (ACEP 2014) noted that this policy advocates for the setting up of durable artisanal mining policies that accommodate rural development because this is where most of these mining activities take place, which then goes a long way in eradicating poverty and bringing about development. African countries are instructed to set up sound legislation and policies that strongly monitor the artisanal mining operations as well as dismantle vices that include child labour, which are part and parcel of this sector across various African countries (ACEP 2014). These policies and legislation must equally ensure the formalization of artisanal mining activities, which is necessary in curbing tax evasion, illicit financial flows, and other challenges that continue to thrive within this sector (Bloch and Owusu 2012). The artisanal miners should also be provided with technical and financial support (AU 2011).

2.5.5 Regional Case Study on the Implementation of the AMV and Artisanal Mining Policy Reforms

This section presents the case of Ghana on how they have implemented mining policy reforms in ASM. The case provides insights into how other countries have done in mining policy reforms and the extent to which it has resulted in socio-ecological sustainability.

2.5.6 Case study of Ghana

The Ghanaian government and its development partners have provided training to artisanal miners to encourage them to pursue alternative livelihoods outside artisanal gold mining (Takyi et al, 2021). It has also undertaken land reclamation and plantation programs in affected areas like the Apramprama forest reserve. Ghana has also taken a coercive approach towards artisanal

mining through Operation Vanguard in 2017 which sought to curb illegal artisanal gold mining (Takyi et al, 2021). Adomako (2024) discusses the illegal entrenchment of the Chinese in Ghana's ASM through bribery and corruption despite the fact that the sector is reserved for Ghanaian locals. Ghana's interventions reveal that reforming the artisanal mining sector is complicated. Despite this, Ghana has made pivotal strides in implementing the precepts of AMV on artisanal mining policy reforms, which foster socio-ecological sustainability. The starting point was the enactment of the Mineral and Mining Act, which formalised ASM activities (Crawford and Botchwey 2017). Further, this policy obliges the community to grant the artisanal miners environmental authorizations to conduct mining operations within their respective areas after conducting a thorough EIA in which the benefits of the mining activities are expected to outweigh the costs or implications of the projects (Ibid 2017).

The formalization of the sector was also enhanced by a unit that was established by the government for the specific purposes of providing expert advice to the artisanal miners in technical, environmental and policy issues (Banchirigah 2020). The government also taught and educated more than 4 000 artisanal and small-scale miners against the use of mercury in the mining operations which threaten socio-ecological sustainability (Ibid 2020). This policy was accompanied by 75% decrease of mercury use and conservation of more than 220 hectares of land which was vulnerable to land degradation in the Ghanaian Tarkwa area (Yakovleva 2022). In addition, environmentally responsive areas were mapped across the country and are usually utilised for the purposes of artisanal mining operations which stimulate an appetite of good environmental practices in the mining sector (Aryee et al, 2021).

2.6 An Overview of the ASM in Zimbabwe

Artisanal mining in Zimbabwe predates the colonial period (Maponga and Ngorima, 2003 Maguya, Chikuvadze and Masocha, 2025). The current policy approaches and legislation are largely a colonial legacy which is biased towards foreign-owned large and small scale mining (Chawatama and Oleyana, 2019, Hlungwani, Yingi and Chitongo, 2021). During the 1990s period the Zimbabwean government officially pursued the formalisation of artisanal gold mining (Spiegel, 2015). These efforts include the Statutory Instrument 275 Mining (Alluvial Gold) (Public Streams) Regulation which sought to formalize small-scale gold panning in the country. SI 275 also empowered rural district councils (RDCs) to regulate and control gold panning (Zwane et al, 2006). The government in conjunction with the United Nations Department for Economic and Social Affairs introduced the internationally acclaimed Harare Guidelines on Small-scale Mining (Spiegel, 2015, Hlungwani, Yingi and Chitongo, 2021).

Hlungwani, Yingi and Chitongo are of the view that the 1990s reforms were in vain. Despite the efforts of various development partners to promote sustainable artisanal mining, the sector remained largely informal.

The early and mid-2000s are a remarkable chapter in the history of artisanal mining in Zimbabwe. The early 2000s saw a dramatic shift in policy. Spiegel (2015) notes how the government changed its stance from a decentralized to a recentralized approach. It is also within the same period that a large number of people were turning to artisanal mining because of the economic downturn, whose height was in 2008 (Mangena, 2014, Spiegel, 2017). During this period, the government introduced *Operation Chikorokoza Chapera* in 2006 (Spiegel, 2014). Among other reasons, the authorities argued that the operation was meant to curb the environmental degradation arising out of artisanal mining activities (Spiegel, 2014, Spiegel, 2017). Whilst the dominant discourse has sought to justify the environmental necessity of conducting operations like *Chikorokoza Chapera*, Spiegel (2014) argues that the violent displacement was part of a broader ‘strategy of state rule’.

The government was mainly frustrated by the Gold Trade Act (1940) amendment, that required that all gold should be sold to the Reserve Bank of Zimbabwe. However, during Zimbabwe’s hyperinflationary period, the RBZ was offering less competitive prices as compared to the parallel market and hence gold was sold through informal channels. Government treated the illegal gold mining and smuggling as a security threat. This saw the increased role of the Central Investigations Department (CID) and Central Intelligence Organisation (CIO) in policing gold mining sub sector. The RBZ governor decried the ‘rampant illegal gold dealing by small scale miners and custom millers’ (Spiegel, 2014:7). The environmental threats posed by artisanal miners were then used as a pretext for the nationwide crackdown. The then Minister of Tourism and Environment, Mr Francis Nhema argued that government had banned gold panning since the environmental effects far outweighed the benefits accrued by the miners (Spiegel, 2014). Mining thus required EIAs. However, this requirement proved to be costly to ASM. EIA regulatory requirement became a barrier to most artisanal miners. Lack EIA compliance came with an ecological sustainability costs, as ASM continued mining without conducting EIA.

Operation Chikorokoza Chapera did not only fail to curb illegal mining and its associated socio-ecological impacts. It exposed the weakness of the Zimbabwean government’s command and control approaches (Maponga and Ngorima, 2003, Spiegel, 2017). Furthermore, it highlighted the policy inconsistencies and lack of institutional coordination amongst various

arms of government. Spiegel (2017) details how the Ministry of Mines and Mining Development was not consulted prior to the enactment of Statutory Instrument 7 of 2007. Furthermore, this period saw a rollback on previous efforts to improve governance of the artisanal mining sector. The government repealed Statutory Instrument 275 Mining (Alluvial Gold) (Public Streams) Regulation thereby criminalising artisanal mining. During this period Zimbabwe graduated from its accommodative stance that it had adopted in the 1990s to repressive command and control measures in dealing with the artisanal mining sector.

Several reforms after 2010 reflect the government's bias towards gold mobilisation and revenue collection. To that end, the Zimbabwean government decriminalised artisanal mining in 2013 (Mberi, Mazwi and Chambati, 2022). In 2014, there was the introduction of artisanal mining permits (Pact, 2015). The permits aimed to curb the illegal buying and selling of gold. These permits were free and issued at gold service centres, Fidelity Printers and Refiners sites, and licensed millers' offices. In recent years, the gold output of artisanal miners has risen significantly to compete and, at times, exceeded levels of their large-scale mining counterparts. In 2012, the gold output of the sector amounted to 30% of the total gold output, whilst in 2016 it reached 45% (Chikwanha, 2023). The increased gold output has seen the Reserve Bank of Zimbabwe (RBZ) warming up to artisanal miners. The RBZ introduced a policy of buying gold on a 'no questions asked basis' (Nyavaya, 2021). This stance contradicts previous approaches where the RBZ has led operations to stem illegal artisanal mining through *Operation Chikorokoza Chapera*. Chikwanha (2023) argues that the increased gold production and deliveries have come at a great cost to the environment. Notable environmental impacts have been recorded in Manicaland, where illegal miners destroyed 600 hectares of prime timber belonging to Allied Timber company in Chimanimani (Chikwanha, 2023).

At present Zimbabwe lacks a concise ASM policy. The mining sector is regulated through the Mines and Mineral Act (21:05). The government came up with a draft minerals policy in 2013 (Pact, 2015). The draft policy recognises three tiers of mining which is artisanal, small and large scale mining. The draft contains strategies to promote sustainable mining activities through the golden triangle of finance, marketing and financial assistance. Efforts are underway to reform the current Mines and Minerals Act (1961). The Act has been heavily criticized for its failure to accommodate indigenous artisanal miners (Mutemererwa, 2016). The reform efforts have resulted in the Mines and Minerals Amendment Bill (MMAB). Amongst other improvements the MMAB has provisions for a computerised mining cadastre and stronger environmental governance. The bill has been challenged for its failure to give ASM full

recognition and address its related challenges (Nyavaya, 2021). Furthermore, the MMAB contains a vague description of artisanal and small-scale mining.

In addition to the activities of the Ministry of Mines and Mining Development, other line ministries have taken roles in promoting artisanal mining activities. Ncube-Phiri et al (2015), attribute the growth of artisanal mining to the active role of the Ministry of Small Scale and Medium Enterprises. Ncube-Phiri (2015) state that, ‘policies have overlooked key issues, such as equipping and training small-scale miners in a bid to help minimise the adverse impacts on the environment.’ In addition, the Ministry of Women and Gender launched an initiative to promote the participation of women in small scale mining in 2006 (Chikwanha, 2023). The ministry sponsored women to register mining claims and paid for prospecting costs. In the Banket mining area in Mashonaland West province, the ministry paid for access to the geological maps provided by German settlers. One can note that by paying prospecting costs, the ministry mitigated the environmental damages that emanate from trial and error. The historical context is important as it provides a background of the strides and deficiencies faced in the mining policy reforms that have a bearing on socio-ecological sustainability. An examination of the acts that promote socio-ecological sustainability in the mining sector follows.

2.6.1 Legislative Provisions in ASM

The Mines and Minerals Act (CHAPTER 21:05) is the main legal framework that governs and regulate all mining activities in Zimbabwe. There are a series of duties and responsibilities that are imposed on various stakeholders and administrative authorities which ensure and guarantees best mining practices as well as socio-ecological sustainability (Afrodad 2017, Munyoka 2020). Part of the key takeaways of this law include the legal position that all mineral rights are vested in the hands of the President (Ibid). The law also stipulate that the following processes are the legally accepted procedures that must be followed during the mining processes, that is prospecting, pegging, registration, EIA, and operation (The Act). The law further enshrines that mining rights are supreme over any other land use rights (PACT 2019). It also embraces the importance of small-scale miners and encourages the state to embrace this constituency by providing them with adequate aid in terms of licensing processes (Mlia 2023). One of the immediate shortcomings of this policy framework is related to the fact that it is too intricate for the artisanal miners to fully understand the dictates of this legislation taking note of the position that most artisanal and small-scale miners are illiterate and uneducated (Dube et al 2016). A knowledge and literature gap of note which this study intends to fill is based on the fact that

this legal framework does not adequately provide for a policy that regulate artisanal miners as an independent sector coupled by the fact that most local mining policies are mute and do not fully address the concerns of the ASM industry artisanal miners.

2.6.2 Environmental Management Act (CHAPTER 20:27)

This law was passed in a bid to facilitate good environmental practices in the mining sector and across all other developmental sectors. This law instructs that all mining operations must pass through the environmental impact assessment (EIA) procedures, prior to their implementation in order to deter and avoid the dumping of hazardous waste and land degradation (Muvingi and Mugadza (2023). The Act also dictates that miners must be awarded with an environment clearance certificate valid for two years after the successful EIA and must take strong measures in order to rehabilitate the environment after the conclusion of the mining activities (PACT 2019). The gap in line with this policy reform emerges against a backdrop where EMA merely obliges the artisanal miners comply with the Environmental Management Plans (EMPs) which are less strict when juxtaposing them with the EIA (Ibid 2019). As such, this research intends to fill this gap by methodically interrogating the implications of the artisanal miners EMPs policy reform in promoting socio-ecological sustainability. Contemporary studies delve much on the institutional incapacitation of the Environmental Management Agency (EMA) which is understaffed and underfunded accompanied with the shortage of vehicles thereby restricting its operations and mobility (Mapira 2017). Nevertheless, this study adds to this scant body of knowledge by proffering practical solutions which can be implemented in order to yield environmental sustainability.

2.6.3 Standards Association of Zimbabwe Code of Practice for Mercury Use

The Standards Association of Zimbabwe crafted the nation's Code of Practice for the storage and use of mercury by artisanal and small-scale miners (PACT 2019). With regards to the storage, packaging and labelling of mercury the policy stipulates that safe handling of the chemical must be promoted at all cost as well as adhering to the practices that protect the environment and the community from the destruction that is brought about by mercury (SAZ 2016). The artisanal and small-scale miners should also be trained on the appropriate use of the substance with the safety of the employees being prioritised and all the relevant stakeholders must be consulted in relation to the mercury management practices which are administered (Ibid 2016, PACT 2019).

2.7 Artisanal Mining Policy Reforms in Zimbabwe

Several artisanal mining policy reforms have been activated to control and regulate this sector, which is essential in advancing economic development at large. Some of these policy reforms guarantee the promotion of sustainable mining practices, land and environmental protection, and economic development (Mawowa 2013). One of the primary reasons behind the artisanal policy reforms in Zimbabwe emanates from economic factors as the sector is important in capacitating the mining sector, which serves as an engine of economic development in the country (ZELA 2020). The sector is of paramount importance because it produces more than 60% of the gold delivered to government (PACT 2019). In addition, most artisanal and small-scale miners are predominantly based in the rural parts of the country, where mining has been serving as a key source of livelihood and as a coping strategy to poverty (ZELA 2020). Regardless of these economic benefits, most studies on artisanal mining (Afrodad 2017, PACT 2019, Dube 2024 and Masocha 2025) have been focusing on the illegalities that are associated with this sector, as such this research intends to fill in this gap by focusing on the importance of formalizing the sector to circumvent some of these policy challenges.

Another topical reason behind the establishment of artisanal mining policy reforms in Zimbabwe is grounded on the desire to merge environmental management and sustainable development which then call for the recognition of good environmental practices in the mining sector (Mayher 2016). This is expressly enhanced by the enactment of the Environmental Management Act (Chapter 20: 27) which establish mining, environmental friendly benchmarks that seek to eradicate pollution, dumping of hazardous waste and land degradation (Mapfumo 2016, Muvingi and Mugadza 2023). In addition, Zimbabwe ratified the Minamata Convention which came into force in 2017 which is aimed at eliminating the use of mercury in the mining operations due to its negative effects on the environment at large (PACT 2019). Conventional studies have been particularly focusing on the effects of mercury on the environment without paying due attention to the importance of enacting and implementing water-tight and home grown policy frameworks that deter the use of mercury which is important in guaranteeing the realisation of socio-ecological sustainability, a literature gap that this study fills.

2.8 The Implications of ASM Policy Reforms On Socio-Ecological Sustainability

This section presents the implications of the ASM policy reforms on socio-ecological sustainability in Zimbabwe. While there is vast literature on this, there is scant review of the implications in the context of Mazowe District which this study is hinged.

2.8.1 Land Degradation

The disregard of ASM policy reforms by the artisanal miners has negatively impacted on the socio-ecological sustainability thereby causing overwhelming harm to the environment. Land degradation which is one of the major challenges brought about by the artisanal mining activities to socio-ecological sustainability (ZELA 2011, Munyoka 2020). Land degradation which is mainly perpetrated by artisanal miners is attributed to the mining methods they use, which include open pit mining which leaves the land with open pits or shafts thereby advancing erosion of the soil, loss of soil fertility and depreciating the value of the soil (Eklund et al 2016 and ZELA 2011).

Open pit mining is associated with the removal of the cover soil of the surface to gain access to the ore, it disrupts the ground thereby negatively affecting the soil, animals, plants, water sources which can also adversely impact on other land uses for instance farming and residential use (PACT 2019). Most artisanal miners resort to rudimentary mining initiatives and abandon disused pits, causing great harm to both human beings and livestock, a case in point are mining areas that include Zvishavane, Kadoma and Kwekwe where most artisanal miners are heavily engaged in the mining of gold and chrome (Munyoka 2020). The healthy and sustainable ecosystem which prioritises socio-ecological sustainability is disturbed by deforestation whereby artisanal miners clear large tracts of land in preparation of their mining activities despite the fact that the Environmental Management Act prohibits such activities (Ibid 2020). The aforementioned studies have been biased towards Zvishavane, Kadoma and Kwekwe, in order to avoid generalisations of data which in some cases can be misleading, this research intends to examine the implications of mining activities utilised in Mazowe district together with other intervening variables, amongst them land degradation, on the attainment of socio-ecological sustainability.

2.8.2 The Destruction of Nature and Vegetation

Land degradation which is closely linked to the activities of the artisanal miners also has austere effects on the production of livestock mainly because it depletes the quality of livestock, the expanding mining fields are in turn dwindling grazing lands due to the excessive burning of grass and deforestation, this is exemplified by mining activities in Gwanda and Insiza (Chari 2021). The immediate implication of this loss of organic pastures is that it has led to high productive cost as some farmers found the livestock feed to be expensive (Ibid 2021). Agricultural activities are in some cases compromised by artisanal mining activities mainly because both farming and mining require large tracts of land and this has resulted in land

disputes between miners and farmers in areas like Gwanda (Marume 2023). A study conducted by (PACT 2019) depicted that turbulent disputes between farmers and artisanal and small-scale miners occurred in Chinhoyi which resulted in the destruction of gold milling project worth USD 200 000. This study fills in this literature gap by examining the extent at which ASM has threatened nature and vegetation in Mazowe yet there exist some ASM policies regulating the sector.

2.8.3 Pollution

Environmental challenges that are fuelled by artisanal mining activities include water pollution and they have thrived regardless of the existence of a number of artisanal mining policy reforms on socio-ecological sustainability which depicts negative implications of these policy reforms. It is well documented that artisanal and small-scale miners do not make frantic efforts to protect nature, their primary focus and basis is merely the extraction of minerals (PACT 2019). Artisanal mining activities have also led to the contamination of underground water bodies as a result of leaching, use of explosives, discharge of cyanide and mercury especially along Ngezi, Save, Mutare and Odzi Rivers (Marume 2023, Munyoka 2021). Heavy chemicals that include mercury are used by miners in the extraction and processing of minerals which are dangerous to vegetation, wildlife and human beings as well (Bergon et al 2021). This is further worsened by the facts that most artisanal miners do not have proper storage facilities to store these hazardous chemicals which then leach into the soil and water (Marume 2023). Air pollution is also accelerated by mining methods that include open cast mining, blasting and processing of mineral ore, deforestation and movement of vehicles causing a lot of dust thereby polluting the air (Mtisi 2010, Munyoka 2020).

2.9 Factors Impeding Effective Implementation of ASM Policy Reforms

A review of the challenges towards effective implementation of ASM policy reforms is key as it provides an idea on how the current efforts can be rectified to bring sanity in the sector and achieve socio-ecological sustainability.

2.9.1 Corruption

Despite the fact that there are institutions and frameworks in place that are mandated to implement restrictive artisanal mining policies, they have not been adequately exploited pursuant to the realisation of this mandate. This can be explained well by the findings of studies that were conducted by (Hlungwani et al 2021, Fellet et al 2019) which underscored that authorities charged with environmental impact assessments are mainly corrupt and merely

authorizing mining projects that have severe environmental impacts which explains why activities of both artisanal mining and large-scale miners have been at the centre stage of polluting water bodies, thereby resulting in the siltation of rivers as well. Corruption, abuse of office, absence of transparency and greedy are the defining features of artisanal mining activities and processes because proceeds from artisanal mining have been used in some instances to sponsor money laundering and other illicit practices (Chipangwa 2019 and Hlungwani et al 2021). A case in point was the arrest of Ms Rushwaya at the Robert Gabriel Mugabe Airport in 2020, the President of the Zimbabwe Miners Federation on charges of allegedly trying to smuggle 6kilogrammes of gold to Dubai (PACT 2021). Whilst contemporary studies have been focusing much on various corrupt activities that are part and parcel of the artisanal mining activities, this study is also grounded on sealing this gap by providing pragmatic techniques that can be enforced in order to combat corruption within the sector.

2.9.2 Lack of Compliance to ASM policies

One of the challenges hindering socio-ecological sustainability in mining areas is lack of compliance to mining policies and regulations. ASM in particular the informal groups have not attempted to comply with mining policies. This has also been coupled with some implementation gaps which points to the inefficiencies of the institutional frameworks and enforcement mechanisms in implementing restrictive artisanal mining policies. This is documented by a study that was conducted by Masocha (2025) which underpinned that there is a plethora of policy frameworks in place that obliges artisanal miners to pay due respect to the environment and biodiversity in the exploitation processes but there are cavernous gaps in the implementation of such measures, an institutional weakness of the enforcement agencies. The country is plagued by weak legal frameworks that regulate the mining dumps and disposal which has handicapped the institutional frameworks and enforcement mechanisms in implementing restrictive artisanal mining policies (Musemwa 2019).

2.9.3 Lack of Political Will

The efficacy of the institutional frameworks and enforcement mechanisms in implementing restrictive artisanal mining policies is curtailed by the primacy of politics over respect of authorized bodies. Most artisanal mining activities especially in mining towns that include Kwekwe, Kadoma, Chegutu, Gwanda and Esigodini are run by powerful and influential politicians who in turn victimize law enforcement agencies who try to halt or flag out their illegal operations which has in turn sustained the artisanal mining activities (Chipangura 2019).

In addition to this, owing to the fact that some artisanal miners are employed by the elites they found the business lucrative because they do not comply with all the legal formalities which in some instances obliges miners to pay taxes, as such, this explains why there has been lack of political will to formalise the sector which in turn cripples the artisanal miners from observing good environmental practices and sustainable development (Zvarivadza 2018). This buttresses the failure of institutional frameworks and enforcement mechanisms in implementing restrictive artisanal mining policies. Likewise, this study will deviate from finger pointing but will opt for a solution-based interventionist strategy aimed at strengthening state institutions in order to withstand these vices through ASM policy reforms that promote socio-ecological sustainability.

2.9.4 Lawlessness and Impunity

Lawlessness and impunity are some of the major impediments that continue to threaten the institutional frameworks and enforcement mechanisms in implementing restrictive artisanal mining policies. According to Tinho (2020), the levels of impunity in the artisanal mining activities are unprecedented, enforcement agencies are compromised and in most instances opt to let go the whims and caprices of illegal artisanal miners. This is further enhanced by the lawlessness that is part and parcel of artisanal mining which is tantamount to the rules of the jungle marked by violence, conflicts, disdain of good environmental practices and disrespect of biodiversity with the enforcement agencies do less in order to restore sanity within the sector especially in areas that include Kwekwe, Kadoma, Chegutu and Bindura (Hlungwani et al 2021). Moreover, (Chakuya et al 2023, Gandiwa and Gandiwa 2012) further voiced that the law enforcement agencies have been lagging behind in terms of controlling the rampant illegal artisanal gold mining activities nation-wide. The factors above generally apply in Zimbabwe but have not been explored adequately in the context of Mazowe. This exploration will be pronounced in Chapter 4 of the study.

2.10 Conclusion

This chapter provided an inclusive the review of literature on of the implications of the artisanal mining policy reforms on socio-ecological sustainability, in Mazowe district, Zimbabwe. This viewpoint has not been adequately covered in literature in particular the context of Zimbabwe and Mazowe District and Zimbabwe at large. Prevailing studies in relation to this topic have been largely focusing on the illegalities, environmental and land degradation caused by artisanal mining activities, rampant corruption and impunity that is part and parcel with this sector. This gap is covered in the findings Chapter 4 of the study and the subsequent recommendations that

are proffered. This Chapter was based on the global and regional policies that embed artisanal mining policy reforms on socio-ecological sustainability. The study was grounded in the Political Ecology Theory and the Institutional Analysis and Development Framework which aligns well with the research objectives. Empirical case studies where ASM policy reforms were done, was covered and lessons that Zimbabwe may adopt were noted in the Chapter. The next Chapter focuses on the methodology and data collection procedures that underpin the study.

CHAPTER 3: METHODOLOGY

3.1 Introduction

This chapter is comprised of the methodology that informed and guided this research. The study is grounded in qualitative methodology where the researcher sought to examine the implications of ASM policy reforms on socio-ecological sustainability in Mazowe District. The methodology is consistent with the purpose of the research where a review of ASM policies was done together with bringing out the lived experiences of the people in Mazowe District and the impact the reforms have had on their environment. The study was also rooted in a case study where context-specific and relevant recommendations were drawn. The case study was Mazowe District which is situated in Mashonaland Central province, the area is endowed with vast mineral deposits, especially gold. The area has both large, medium to small scale artisanal miners. However, the researcher was limited to small scale artisanal miners. Interviews, participatory observations and Focus Group Discussions (FGDs) were conducted in this study. Case study research design was also used to cater for in-depth analysis. The study embraced both primary and secondary data collection methods. Utilising both primary and secondary data collection methods was important in enhancing the validity of the findings. This Chapter also presents the data analysis methods.

3.2 Study Area: Mazowe District

This research was conducted in Mazowe District. According to World Food Program (2022), Mazowe District is situated in Mashonaland Central Province, which is less than 40 kilometres from Harare, the capital city of Zimbabwe. The district is bordered by the Muzarabani District in the Northern side, Mt Darwin District in the Southern side, Bindura District in the Eastern direction as well as the Goromonzi District from the South. The total size of the District is nearly 451 000 hectares (Ibid 2022). Both mining and farming are the backbones of the District. The people's livelihoods are mainly dependent on the two economic activities. Below is a map of the Mazowe District indicating the mining areas where the study took place.

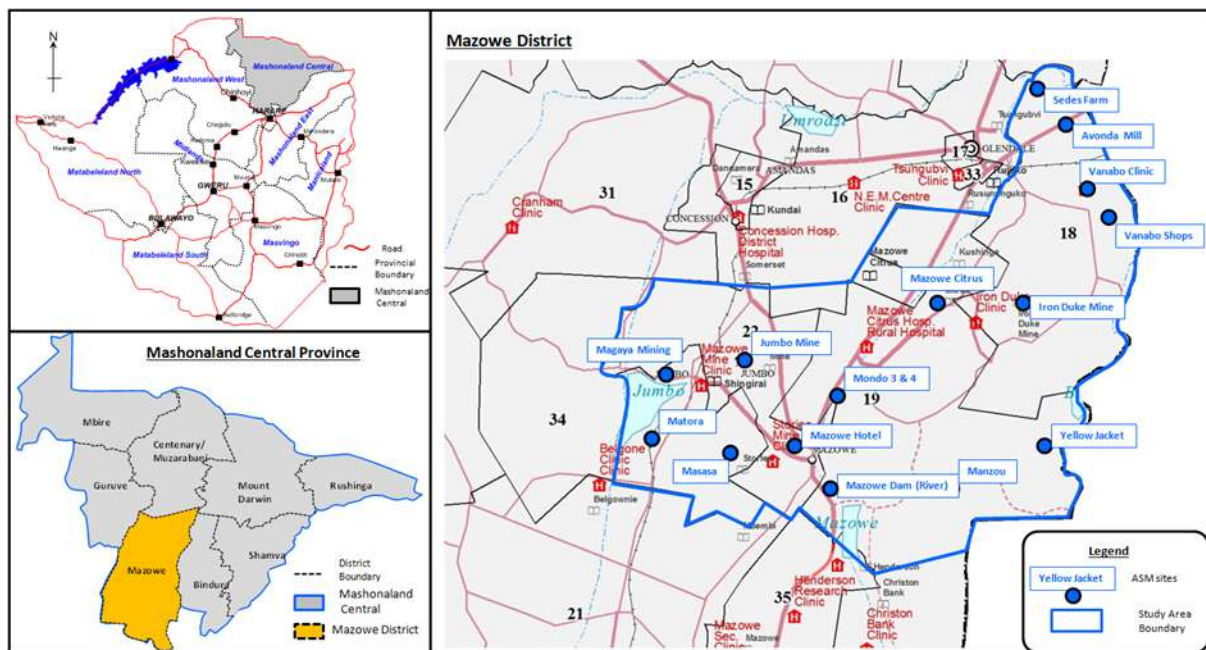


Fig 3.1 Location of the Study area- Mazowe District: Source: Designed by the author

Mazowe District is comprised of 35 wards. Out of these the study focused on wards 18, 19 and 22 where there is dominant ASM of gold. Ward 18 constitute areas such as Vonabo and surrounding A1 farms, while ward 19 covers Manzou, Mazowe Flowers, Mazowe Citrus, and Yellow Jacket, lastly ward 22 include Jumbo mining area. Mazowe District is characterized by high unemployment and absolute poverty which have resulted in the surge in artisanal mining activities. Unemployment rate rose after the closure of Jumbo mine hence fueling massive ASM which has had detrimental effects on socio-ecological sustainability.

Artisanal mining activities are the main coping mechanisms to poverty and economic hardships in the district (Masocha 2025). In the process, artisanal miners have been pre-occupied with the goal of making a living out of mining whilst not practicing best mining practices, this has led to the transgression of artisanal mining policy reforms which consequently accelerated the suffocation of socio-ecological sustainability (Ibid 2025). These socio-economic features of Mazowe District have played a role in shaping this research problem which asserts that the continued negative socio and ecological problems stemming from artisanal mining speaks to a lack of ASM policy reforms. The problem necessitated an empirical study on the implications of ASM policy reforms on socio-ecological sustainability and proffering policy interventions that can result in socio-ecological sustainability in Mazowe District.

3.3 Research design

This study adopted a case study research design. A case study research design provided a detailed and overwhelming account of the implications of ASM policy reform in the Mazowe District. The case of Mazowe was handy in that the District is comprised of artisanal miners who have flocked the area to mine gold. Further various negative social and ecological issues have been reported which are linked to artisanal mining and weaknesses of the ASM policy reforms. Socially, Mazowe in particular the Jumbo area has been a hive of child labour, prostitution, theft and other criminal activities involving machete violence. Ecologically there have been damages to the land often leading to farmer-miner conflicts, abandoned open pits which have put the livestock of the people in danger, hazardous disposal of mercury in the rivers etc.

Bandari (2025) argues that a case study research design is linked to a specific geographical location, community or organisation. Case studies are important in examining the least undertaken studies or accounts (Oranga and Matere 2023), likewise most studies in Zimbabwe have been focusing on the implications or effects of artisanal mining activities on the environment. This study coupled with this research design closed this gap by exploring an understudied topic in the Mazowe District combining both social and ecological sustainability. Case studies play a formidable role of developing rich data, as such findings which this research produce can be rich and insightful this therefore positions case studies as pivotal in the crafting of sound recommendations which can influence the reformation of mining reforms in general and artisanal mining policy reforms in particular.

Similar studies where case study research design was used include a study conducted by Zimbabwe Environmental Law Association (ZELA) in 2023. ZELA's study utilised the case study research design as it unearthed how artisanal mining activities were responsible for causing land degradation in Mazvihwa community, Zvishavane District. Nonetheless, this study has been propelled by the researcher's zeal to unearth the implications of artisanal mining policy reforms on socio-ecological sustainability in Mazowe District. As such, case study research design is relevant in addressing the research scope and the research problem by particularly scrutinising these policy reforms with a particular focus on Mazowe District. The case study research design is also vulnerable to bias and in order to eliminate this research obstacle, the researcher will cross-check, filter and triangulate data so that the findings will be valid. Related to design is the research approach.

3.4 Research Approach

This research was firmly grounded in qualitative research. Qualitative research was relevant in gathering non-numerical information and was exploited for the purposes of getting rich and thick descriptions that answered the research questions. Valid research findings could not be generated through random sampling of respondents. The study required experts who were purposively selected. Further the need to generate thick and detailed data could only be achieved through qualitative methods. Thus a quantitative approach was not in sync with the research aim or purpose of the study.

One of the merits of this research approach emerged from the basis that it is empowerment centred as it allowed for the marginalised voices to be heard. As in this case, the voices of the artisanal miners were important to this study against a backdrop where artisanal mining has been associated with various illegal activities. More so, their input should be accommodated in order to craft representative and all rounded artisanal mining policy reforms. In addition, qualitative research facilitated the development of an impactful artisanal mining policy reform through by providing viable policy recommendations which help in resolving the gaps and anomalies that are associated with the prevailing ASM policy reforms. Moreover, this research approach was highly flexible (Cresswell 2014), which allowed the researcher to be innovative and adaptive in order cope up with the emerging demands during the fieldwork. By making use of this research approach, the researcher was able to scrutinise and assess the available policy and legal frameworks, reports and publications that informed this study. However, qualitative research approach was time consuming, and to thwart this challenge, the researcher carefully selected key informants and interviewed them through both physical and virtual platforms. Qualitative research approach had the potential to be prone to bias and this was guarded through triangulation of data collection methods.

3.4.1 Research Paradigm

This research is hinged on the interpretivist paradigm. The paradigm is appropriate in addressing the research problem. The study fills the literature gap by outlining the impact of ASM policy reform in a particular geographical area (Mazowe). The socio-ecological impact also warranted an interpretivist approach since other studies had focused on one variable, either social or ecological. According to Cresswell (2014) interpretivist research paradigm is based on the belief that knowledge is socially manufactured through understanding people's experiences and is highly subjective, and the researcher's role is to bring out the labels and meanings that the individuals attach to their experiences. This paradigm positively impacted

this study in several ways. Chief amongst them being the notion that reality was socially constructed via human experiences. The researcher managed to make sense of the research findings and construct new meanings about the impact of ASM policy reforms on socio-ecological sustainability in Mazowe District. It is through this research paradigm that the researcher managed to construct context-specific findings.

The researcher had an opportunity to document the accounts of all the relevant players in the artisanal mining sector (artisanal miners, local communities, local and traditional leaders, Mazowe RDC, EMA, Ministry of Mines and Mining Development and other government agencies as well as organisations like ZELA and Centre for Natural Resource Governance (CNRG) thereby championing a localised research that takes into considerations the insights and perspectives of all the relevant stakeholders. This provided the meeting of the minds amongst stakeholders in tackling the research problems and questions.

The interpretivist research paradigm was closely associated with qualitative research, and this ensured that the researcher exploited qualitative research data collection methods that include focus group discussions, key informant and in-depth, field observations and documentary analysis, which are critical to the generation of sound research findings. In addition, this paradigm generated in-depth information, which allowed the researcher to gain a comprehensive overview of the implications of ASM policy reforms on socio-ecological sustainability. These findings were socially constructed in particular the policy perspective.

3.5 Sampling Methods

The sampling method that forms part of this research was non-probability. Non-probability sampling methods was the method used to select research participants in which the target population did not have an equal chance of being selected but the researcher had control over the entire selection process (Galloway 2005 and Bryman 2016). As alluded before, not everyone was an expert in the field of ASM policy reforms and socio-ecological sustainability. This study utilised a combination of purposive, and snow-balling sampling methods. This combination assisted in identifying key experts in the area around ASM policy reforms and socio-ecological sustainability in Mazowe District. Below is a presentation of the non-probability sampling methods that were used to select the research participants in this study.

3.5.1 Purposive Sampling

The researcher used purposive sampling methods to identify participants for interviews purposes. These participants were drawn from Mazowe District, Bindura, and Harare. The

method did not result in random selection of participants. Random selection would lead to a situation where a clueless participant in ASM policy reforms would be selected and would not add value to the findings of the study. In purposive sampling, the obligation of the researcher was to select informants who were well knowledgeable about the variables under study which is the foundation of generating in-depth information (Cresswell 2014). One of the strengths of purposive sampling was its ability to generate rich data basing on the position that the informants were highly knowledgeable of the research scope and objectives. Basing on this, this sampling method facilitated the generation of valid data. The sampling method was also cost-effective (Galloway 2005), because it permitted the researcher to wilfully select experts and participants who were well-versed with the issues under study, than to randomly select a big sample with people who are not knowledgeable about the study. The fundamental purpose of this sampling method was to generate in-depth data that corroborates with the scope of this research which was to examine the implications of ASM policy reforms on socio-ecological sustainability in Mazowe District.

Research participants were drawn amongst artisanal miners in Mazowe District, local communities, local and traditional leaders, academics in socio-ecology studies, representatives from Mazowe RDC, EMA, Ministry of Mines and Mining Development, and environment-related CSOs. This is in tandem with the submissions that were brought forward by a study conducted by Palys (2008) which articulated that because the researcher carefully recruits informants who are well-versed with the scope and the objectives of the research findings generated from key informant interviews are usually impactful. Similar studies, including the one conducted by Matsa et al (2024), made use of purposive sampling in order to document the implications of the artisanal mining activities on the environment in Matobo District, Matabeleland South Province. This can be replicated by this research basing on the benefits that purposive sampling brings to a qualitative-based research including the generation of rich data and saving time, among others.

3.5.2 Snowballing

The study also relied on snowballing. The sampling method complemented the weaknesses of purposive sampling where the researcher did not have full contacts and knowledge of other key experts in the field of study. The researcher got referrals of some of the key respondents. The method was handy in cases where respondents were difficult to reach and whose contacts were not accessible to the researcher. While the researcher was aware of some of the key informants, there were some experts in particular legal offices in environmental law whose contacts were

not available but the experts were reached through snowballing. The legal experts were made known to the researcher through referrals from a mining policy expert in Harare. Other participants made known through this method were key CSO officials who have done research on ASM and its impact on the environment in Zimbabwe. Snowballing was critical in saving time and identifying key resourceful persons that adequately answered the research questions.

3.6 Data Collection Methods

This section presents the data collection methods adopted in this study. The study used the following methods, in-depth interviews, FGDs, participatory observations, and documentary review. These methods were consistent with qualitative research approach which the study is situated in. The methods helped to obtain rich data within a shortest possible time. The use of multiple methods enhanced the validity of the findings. The ensuing section provides a detailed account of the data collection methods and their relevance to the research.

3.6.1 In-depth Interviews

The researcher made use of in-depth interviews. In-depth interviews are described as lengthy, physical or virtual interviews that are exploited for the purposes of furthering the objectives of the study or research (Parveen and Showkat, 2017). In-depth interviews aided the researcher in extracting detailed information which addressed the aims of the study. Both physical and virtual platforms like google meet and telephone calls were used in the study. Physical interviews were carried out in Harare and the majority in Mazowe District and Bindura. The researcher resorted to virtual or telephone interviews in cases where the respondent was not physically available or reachable. A total of 17 interviews were conducted. The total sample of participants was guided by the principle of data saturation where the researcher had to stop when similar information was now repeating over and over. 11 respondents were male while 6 were female. The gender-imbalance is normal given the nature of the ASM sector that is dominated by males. The researcher conducted in-depth interviews with the artisanal miners, local communities, as well as with local and traditional leaders in Mazowe District.

An interview guide was used as tool in the interview process. This data collection tool was instrumental in collecting social oriented variables that include the perspectives of artisanal miners, nearby farmers, the perceptions of the local populace on artisanal mining policy reforms, ecological variables, which encompass the nature of the land, vegetation, and water quality. Policy and sustainability-oriented variables were also addressed in the interview guide.

Rapport was created between the researcher and the research participants. In-depth interviews were important because they gave the researcher an opportunity to probe the informants on pertinent aspects arising out of the research interviews. Each particular interview lasted a maximum of 35 minutes. In-depth interviews were complemented by FDGs to eliminate bias. Informant interviews complemented the data that was collected through in-depth interviews. Thus data triangulation aided to enhance the validity of findings.

3.6.2 Focus Group Discussions (FDGs)

To enhance data validity, the researcher also employed two FDGs presented as FGD1 and FGD2 in Chapter 4. FDGs are interviews done with a group of people ranging from 5 to 12. FGD1 comprised of 8 people from ward 18 while FGD2 had 7 members drawn from ward 22. FDGs were done to validate research findings from other data collection methods. The researcher intended to have a gender balance within the FDGs but could not be achieved given that artisanal mining is male-dominated. A FDG guide was used to guide the research questions in line with the research objectives.

The researcher sought to ask questions on the knowledge of the participants around ASM policy reforms that have been implemented in their District and their implications on socio-ecological sustainability. Challenges and recommendations were also asked during the process. The researcher had an assistant who took notes during the FDGs. The FDGs lasted for about an hour, where every participant was accorded a chance to say something in the area of study. The FDGs were done physically and this enabled the researcher to adequately probe the participants.

The FDG and interview guides were pre-tested to address errors or vague questions. Pre-testing or pilot testing enhanced the reliability of the data collection instruments. Three pilot interviews were conducted for each instrument. The researcher stopped at three since no errors were now being detected. The researcher also translated the data collection instruments into Shona for easy of understanding by other research participants.

3.6.3 Participant Observations

Participant observations were another key data collection method used by the researcher. The researcher used the method to deal with bias that would have emerged from the interviews and FDGs. The bias was about the state of the socio-ecological environment of Mazowe District. The researcher observed a tendency of bias when it came to the impact that artisanal mining had on socio-ecological sustainability. Some of the respondents in a FDGs thought the findings would be used to stop artisanal mining and as such gave biased responses that suggested that

mining was being done following good practices that were not affecting socio-ecological sustainability. Accordingly, during fieldwork, the researcher had an observation guide where variables such as unfilled mining pits, state of the land, rivers, vegetation and contaminated water/rivers were observed. The researcher took images of such sites and these were used to neutralise bias that emerged from the FGDs.

3.6.4 Documentary Analysis

Documentary analysis was used in this study. The method was useful in review of literature and theoretical underpinnings of the study. The method helped to identify literature gaps that were filled in this study. Some of these documents analysed in this study include CSO reports, academic publications, government reports and newspaper articles. This data collection method was also helpful in identifying legal and policy frameworks that have been formulated in regulating ASM sector. Data that is gathered through documentary analysis is usually limited in scope (Flick 2009). For example, there was limited literature on ward-specific data in Mazowe District that covers ASM policy reforms. The researcher addressed this weakness through interviews and FGDs with local people in wards 18, 19 and 22 of Mazowe District.

3.6.5 Ethical Considerations

The researcher adhered to the following research ethics informed consent, confidentiality, anonymity, voluntary participation and the right to withdraw from the study. The ethics were followed in interviews and FDGs. The participant even sought consent to take photographs within the claims of registered artisanal miners.

Written consent was sought from all the respondents. The consent forms were in English and in cases where the participant could not understand, Shona was used. Participants were assured of their ethical rights to withdraw whenever they felt uncomfortable, voluntary participation, and confidentiality were assured by informing the participants that the findings were between the participant and researcher, and were to be used for academic purposes. All the findings were kept on a flash disk that was locked with a password and only accessed by the researcher. This was done to secure the access of raw findings from other people apart from the researcher. Access by other people compromises confidentiality of findings. The research did not involve minors or other vulnerable groups. All respondents were above 18 years. The assumption was that these people had knowledge in ASM policies as well as the socio-ecological impact that arise from mining in Mazowe District. The nature of study resulted in all the participants resorting anonymity in the presentation of findings. The observation was that mining appears

to be politically sensitive and found comfort in codes which has the same effect of pseudonyms. Table 1 below illustrates the codes of participants that were used in presentation of findings in Chapter 4.

Table 3.1: Codes of Respondents and positions

Position of the respondent	Code assigned	Gender	Method of Interview
Ministry of Mines and Mining Development Official 1	MMO1	M	Physical
Ministry of Mines and Mining Development Official 2	MMO2	F	Telephone
Legal Expert	LE	F	Physical
Academic 1	Aca1	M	Telephone
Artisanal Miner	Art1	M	Physical
Education Official	EO	F	Telephone
Community Health Worker	CHW	F	Physical
Nurse in Mazowe	NM	F	Physical
Natural Resources Governance Academic	NRGA	M	Virtual
Local Leadership 1	LL1	M	Physical
Local Leadership 2	LL2	M	Physical
Local Leadership 3	LL3	M	Physical
Environment Expert	EE	M	Physical
Academic 2	Aca2	M	Physical
Civil Society Officer 1	CSO1	M	Virtual
Civil Society Officer 2	CSO2	F	Virtual
Security Officer 1	SO1	M	Physical

3.7 Data Analysis Methods

Data were analysed using thematic and content analysis. This study utilised thematic analysis for data that was collected through interviews and FGDs whilst data gathered through documentary analysis was subjected to content analysis. In thematic analysis the researcher sought recurring themes from the responses emanating from interviews and FGDs. Thematic analysis is concerned with the organisation of data into various themes that would have emerged during the collection of data which also tally with the research objectives (Dawadi 2020). The main advantage of using thematic analysis is that it facilitates in the production of detailed, comprehensive and reliable research findings (Ibid 2020). The researcher observed the following steps to ensure the success of thematic analysis and these encompass data familiarisation, coding of the gathered data, searching and reviewing of themes, as well as the labelling of themes (Ibid 2020). Thematic data analysis was utilised in other similar studies, that is Matsa et al (2024), where data was categorised into various themes revolving around the implications of artisanal mining activities in Matobo District.

Data gathered through documentary analysis was subjected to content analysis. The researcher analysed the content in the policy documents or reforms, literature around socio-ecological sustainability and empirical cases related to the topic at hand. Similarly, a study conducted by Muvungi and Mugadza (2023) examined the legal frameworks that regulate the Zimbabwean mining sector and exploited thematic analysis as a viable data analysis method because it is more efficient and practicable in analysing data gathered through documentary analysis.

3.8 Conclusion

In conclusion, this Chapter focused on the methodology. The researcher made use of qualitative research approach. The Chapter outlined the study area that is Mazowe District, in particular wards 18, 19 and 22 where there is thriving artisanal gold mining activities. The data collection methods that were used include in-depth interviews, FGDs and participatory observations. Findings from the methods were analysed using thematic and content analysis. Data triangulation was used to enhance the validity of findings while pre-testing of interview and FGD guides was done to enhance reliability of the instruments. The researcher adhered to all the necessary research ethics that include, informed consent, confidentiality, right to withdraw and anonymity of the participants. The next Chapter presents the findings and analysis of the research.

CHAPTER FOUR: PRESENTATION, DISCUSSION AND ANALYSIS OF RESULTS

4.1 Introduction

This chapter focuses on data presentation and analysis on artisanal gold mining activities in Mazowe. The findings are presented thematically as guided by specific objectives. The main focus was on ASM policy reforms, implications of ASM policy reforms on socio-ecological sustainability and factors for enhancement of ASM policy reforms on socio-ecological sustainability in Mazowe District. Through data analysis methods like thematic analysis, the researcher searched for recurring themes that became sub-themes under each research objective of the study. Data from conventional literature was subjected to content analysis where the researcher validated the findings from interviews, FGDs and participatory observations. Further the researcher interpreted and analysed the findings in relation to the research objectives and research problem.

4.2 The Artisanal Mining Policy Reforms in Mazowe District

The study sought to assess the ASM policy reforms in Mazowe District. This was done to explore the extent at which they are compatible with global mining policies and frameworks that promote socio-ecological sustainability. The section covers the Mines and Minerals Act, regulation policies of the ASM, and the Environmental Management Act.

4.2.1 ASM policy reforms implemented

Several players in the mining sector formulated and implemented mining reforms related to artisanal mining. The primary responsibility of mining policies lies with the Ministry of Mines and Mining Development in Zimbabwe. An official from the Ministry (MMO1) in an interview indicated that, “*policies related to mining are drawn from the Mines and Minerals Act (Chapter 21:05). The Act broadly apply to Zimbabwe’s mining sector and has been implemented in the Mazowe District. Further the Act covers all the mining players from large, medium to small scale*”. The same sentiments were shared in an interview by CSO respondents (CSO1, CSO2) who noted that, “the Mines Act is the primacy instrument that governs the sector covering all the minerals mined in Zimbabwe”. In an interview that was conducted with a Ministry of Mines and Mining Development Official 2 (MMO2), it was held that:

The Act is the key legal and policy document that houses artisanal policy reforms. The Act recognizes the existence of artisanal miners as important players in the Zimbabwean mining industry. It does so by legally permitting artisanal miners to register their claims with the Ministry of Mines and Mining Development, and artisanal and small-scale miners are those kind of miners whose mining claims are below 10 hectares.

The importance of the ASM sector is visible through their 65% of the 13.8 tonnes production of gold deliveries in the first quarter of 2025 (Musaidzi 2025). It follows that the government through the ministry is serious of ASM policy reforms that can boost the mining sector and the nation's development.

Apart from the Act, ASM policy reforms manifested through government policies and operations. A Legal Expert (LE) noted in an interview that, *"ASM policy reforms have also been covered in government policy pronouncements such as the Operation Chikorokoza Chapera (loosely translated to an Operation to end illegal mining)"*. MMO1, MMO2 and Security Official (SO) confirmed that *"the Operation was carried out in some of the mining areas in Mazowe that include Jumbo and along the Mazowe river"*. The operation was triggered by *"an influx of illegal gold mining that was causing serious environmental challenges among others"* (interview from SO). However, the operation fell in the restrictive ASM policy reforms that characterised the 2006 epoch when the Mugabe regime was harsh to informalisation. Such operations have been called off under the wave of supportive ASM policy reforms under the 2nd Republic, a period which this study covers in detail.

Other reforms that have been implemented in Mazowe District relates to the recognition and registration of artisanal miners. An academic (Aca1) at a local university noted in an interview that *"the Provincial Mining Directors are empowered by the Mines and Mineral Act to take charge of the registration of all mines including those that are owned by the artisanal miners"*. The registration policy is complemented by *"the recognition of Mining Associations and Federations that represent artisanal miners in Zimbabwe. This recognition promotes formalisation which is key for stability in the sector and development of a nation"* (ibid). Formalisation ensures that artisanal miners are acting in line with the confines of the law especially the pillars that promote social responsibility and good environmental practices. This is so because the Ministry usually conduct compliance inspections around Mazowe District and beyond in order to ensure that artisanal miners are complying with the dictates of the law with sanctions and penalties being imposed to all those who are non-compliant.

MMO2 in an interview further highlighted that *"the formalization of the artisanal mining activities is an important policy reform because it enabled artisanal miners to be assisted by the Ministry in form of financial support through the Mining Industry Loan Fund and technical assistance on best mining practices, good social practices that must be observed by artisanal miners"*. Formalisation of the artisanal mining activities is important because it ensures that the

activities of the artisanal miners comply with regional and global mining standards which spearhead best mining practices. This is similar with the developments in 2013 when the nation adopted a new Constitution. In 2013, the government decriminalized the activities of around 350,000 artisanal miners. The purpose was to boost gold deliveries to the Fidelity Printers and Refineries, the sole official gold buyer in Zimbabwe (Sibanda, 2021).

The existence of the ASM policy reforms is continuation of mining policy reforms that were enacted since the 1990s. For example, the Government promulgated the Mining (Alluvial Gold) (Public Streams) Regulations: 1991 Statutory Instrument Number 275, hereby referred to as SI 275/1991. SI 275/1991's had requirements, like the backfilling of trenches and pits, promoted socio-ecological sustainability. However, the impact of these regulations have not been assessed in the context of socio-ecological sustainability in Mazowe District. This left a literature gap that motivated the conduct of this study.

The gap was resolved by the research findings which encourage the alignment of existing ASM policy reforms to global mining frameworks. For instance, the global mining frameworks that include the Mining Policy Framework (MPF) calls for and urges member states (Zimbabwe is part of this framework) to implement policies and legislation that specifically regulates artisanal and small-scale miners, formalise the ASM sector as well as implementing effective deterrent mechanisms that prevent all forms of pollution as well as the use of mercury during mining operations.

Another key ASM policy reform implemented in Mazowe District relates to the Environment Management Plans (EMPs). During the data collection exercise, the researcher discovered that the ecological aspects of the mining activities in general and artisanal mining activities in particular are regulated by the Environmental Management Act (Chapter 20:27). Information that was gathered from the key informant interviews conducted with MMO1 and a Natural Resource Governance Academic (NRGA) revealed that the Environmental Management Act is an important legal framework that houses artisanal mining policy reforms that are ecologically-oriented. As such, the findings reveal that the Act requires that unlike medium and large scale miners who are required to conduct Environment Impact Assessments (EIAs), as a matter of policy, artisanal miners are mandated to conduct EMPs.

The EMA stipulates that prior to the commencement of artisanal mining activities, all artisanal miners are required to conduct EMPs which relates to steps and moves that the artisanal miners must implement in order to reduce and more importantly eradicate the negative implications of

mining activities to the environment and these include all forms of pollution, land and environmental degradation. The EMPs must in turn give a detailed overview of the mining operations that will be undertaken by the miners, the methods they will employ, they must also pre-empt the possible environmental risks that can emerge out of such activities and viable solutions that can be activated in order to circumvent such ecologically driven challenges. Consultations with the local populace are also at the cornerstone of the EMPs and failure to abide by these requirements attracts a fine that can span up to level 7. The researcher established that some of the registered artisanal miners in Mazowe District conducted the EMPs.

The submissions that were brought forward by the aforementioned research participants depicted that good environmental practices form part of the artisanal mining policy reforms. Thus, artisanal miners are obliged at law to conduct EMPs which are less costly and at the same time cascade sustainable mining practices by preventing pollution, singling out measures that can be put in place in order to address various environmental challenges. These findings were crucial addressing the gap since past studies focused on the institutional incapacitation of the Environmental Management Agency (EMA) which is understaffed and underfunded accompanied with the shortage of vehicles thereby restricting its operations and mobility (Mapira 2017). This study departs from these previous studies by incorporating the institutional analysis and development framework that focuses on the interplay between individuals to institutions regulating problems within the public space. In this context the IAD framework was handy in determining the implications of ASM reforms done by the Ministry and other related institutions on socio-ecological sustainability in Mazowe District. An area covered in the next research objective.

4.3 The implications of artisanal mining policy reforms of on socio-ecological sustainability in Mazowe District

The uniqueness of this study emerges from this objective. The following section presents the positive and negative implications of ASM policy reforms on socio-ecological sustainability. The section presents how formalization, compliance with the law, good water management, reforestation among others have positively impacted socio-ecological sustainability. Further negative implications arising from the policy gaps and the existence of illegal or informal artisanal miners are also presented. The negatives include, abuse of the weaknesses of the policies, lack of effective compliance, and ignorance of illegal miners have suppressed socio-ecological sustainability in Mazowe District.

4.3.1 ASM Registration and Social Sustainability

The socio-ecological impact of ASM policies was two-fold. Firstly, it was experienced within the mining areas or claims and outside the mining zones in Mazowe District. Formal artisanal miners interviewed in a FGD1 noted that “we follow good mining practices within our mining claims. Some of the practices are related to addressing the social well-being of our employees. We provide social safety measures through provision of clean and safe water, protective clothing among others. We believe that social sustainability in the mining industry begins from the safety and health of our employees”. These views were confirmed by a formal Artisanal Miner (AM) in an interview that *“they conduct quarterly tests of water quality and safety on their claim. These test are done to ensure that there are no spillages or leakages of hazardous chemicals which can affect the employees, the environment and neighboring communities”*. These tests are consistent with sustainable mining practices that result in socio-ecological sustainability in Mazowe District.

4.3.2 Adherence to Standard and Safe Mining Practices

Another way that promote social sustainability within the claims include adherence to proper and safe mining practices. FGD1 members articulated that, “the first thing done by formal miners is to procure protective and safety clothing to our employees. Safety of workers is secured prior mining commences”. Through participatory observations, the researcher observed the employees wearing safety hats, work suites, safety shoes, googles, masks and gloves. Consistent with safety of the employees was standard timbering of the open shafts at some of the mining claims for instance at Mondo 3. The mining shafts were secured with timber, concrete and steel structures. They were well lit and had good circulation of oxygen. The safety for the employees and the mining shafts were in line with social sustainability principles.

4.3.3 Employment Creation and Social Sustainability

The researcher noted social sustainability that was experienced outside the formal mining claims in Mazowe District. Outside formal mining claims relates to the communities that surrounded areas where ASM was taking place. The researcher conducted a FGD2 with local A1 farming community in ward 18. Members in FDG2 argued that “the formal ASM were following good mining practices in line with the law. This manifested through employment of local youths in the mining claims and this has prevented drug abuse in the area. Further the formal ASM were commended for not employing child labour a practice that appear to have been present in mining areas”. The communities have not been recording school dropout cases

where children will be working in the registered mining claims (a view shared by a local Education Official (EO) in an interview).

4.3.4 Formalisation and a Decline in Child Pregnancies and Sexually Transmitted Infections (STIs)

Related to social sustainability was a decline in early child marriages and pregnancies. A Community Health Worker (CHW) postulated in an interview that, “in areas where formal ASM has been taking place there have been no or few cases of child marriages and pregnancies. The same applies to low cases of Sexually Transmitted Diseases”. A nurse in Mazowe (NM) in an interview confirmed this observation stating that, ASM in formal mines were less active in sexual activities since they earn on a monthly basis compared to illegal miners who can earn money any day and spend it unwisely. The researcher also observed condoms within the toilet premises of one mining claims where employees freely accessed them. This could mean that while they could have been sexually active, the miners could be using protection which minimised the cases of STIs in the communities.

4.3.5 Formalization of ASM and ecological sustainability

Government policy towards the formal recognition of ASM in the Mines and Mineral Act among other policy pronouncements have yielded positive results on ecological sustainability in Mazowe District. Like social, ecological sustainability thrives in formal and legal ASM. Responses from FDG1 indicated that “formalization of the ASM sector was consistent with the supportive government attitude and stance towards artisanal miners in Zimbabwe”. Similar sentiments were raised in an interview with an academic (Aca1) who noted that “*the government officials began to view artisanal miners not as a problem but a solution and opportunity to grow the mining sector and develop the country*”. While there is abundant literature on formalization of ASM in Zimbabwe, there are gaps with regards its impact on ecological sustainability in Mazowe. The next section fills the gap with the following findings.

4.3.6 Compliance with ASM policy reforms

During an in-depth interview with one of the biggest artisanal miners (ArtM1) who operates in Ward 19, that is around the Mondo area, stressed out that they fully comply with the ASM policy reforms related to the environment. ArtM1 argued that “*ecological sustainability starts within a claim going out to the surrounding communities. Despite penalties associated with ecological damages, following good mining practices was beneficial both to the employees and the environment*”. During a tour of the mining claim, the researcher observed organized

planning on the claim where the miner had a section where they grew vegetables distant from the mining processing, also visible were sugarcane plantations, lawn, and banana plants within the claim. The miner made good use of abundant water within the claim. The miner also refilled some of the open casts which was in line with good ecological practices in mining. Below is an image taken by the researcher showing part of the sugarcane plantation.



Fig 4.1 Ecologically-friendly mining practices

The research participant further echoed that revegetation within mining areas is one of the ecologically-friendly mining practices that is important in achieving ecological sustainability. An academic (NRGA) concurred with such sentiments postulating that “*revegetation in mining areas enhances soil stabilization and guard against erosion and landslides, sugarcane release organic substances to the soil which promote soil health*”.

Apart from the planation of vegetation and fruit trees, the miner also practiced safe and standard water management practices. This is shown in another image that the researcher captured during the participatory observations.



Fig 4.2 Sustainable water management

The above image demonstrates ecological sustainability in action at the mine as this canal was established in order to mitigate water losses coming from the Mazowe dam through the mining claim. The miner renovated the canal to ensure a smooth flow of water which irrigates Mazowe Citrus and other farming neighbouring farming communities. The practice is not only in line with ecological sustainability but also is a testimony of social responsibility that the miner is conducting in the area.

ASM policy reforms promotes ecological sustainability through regulations on standard dump processing or leaching. Leaching involves the management of mining dumps or waste that is processed using chemicals to extract gold. The process can be ecologically harmful if it is not done in a manner that tallies with best mining practices and national mining policies. A tour of small leaching plants in Mazowe showed the compliance of ASM to these regulations. A picture taken during participatory observations confirms this.



Fig 4.3 Gold Leaching process

During a FGD1, members confirmed that most miners who are leaching gold have adhered to best leaching practices. This has been made possible due to the awareness of the serious harm that cyanide can pose to the environment and livestock. For instance, a local leader (LL1) in an interview highlighted that in ward 18, 37 cattle died due to leakage of cyanide at a leaching plant. These experiences have taught ASM a big lesson. A ministry official (MMO1) also confirmed in an interview stating that “*incidents of cyanide leakages are now low in the District*”. An environment expert (EE) also stated that “*EMA has had a few cases of leakages in Mazowe showing the effectiveness of ASM policy reforms in protecting the environment and safety of the people*”. Accordingly, water and land quality appears not to have been compromised in cases where formal artisanal mining has taken place. This confirms how adherence to ASM policy reforms in gold leaching has promoted socio-ecological sustainability in Mazowe. Standard gold leaching process is a critical ingredient of the scientific process of carbon sequestration which has a methodical track record of thwarting climate change and this also serves as a preventative measure to soil erosion (Mutchek and Hall 2016).

Outside the mining claims, formal artisanal miners have contributed to ecological sustainability in surrounding communities through afforestation. Registered artisanal miners in wards 18 and 19 have planted gum trees outside their mining claims. Local leadership (LL1 and LL2) indicated in an interview that some of the artisanal miners work hand in hand with the Forestry Commission and local communities by establishing gum tree plantations. In a FGD2, participants noted that artisanal miners face financial challenges which limit them to buy gum polls from areas such as Mvurwi and this has resulted in deforestation.



Fig 4.4 Timbering of a mining shaft

It also emerged in FGD2 that formal artisanal miners have resorted to afforestation. ArtM1 stated in an interview that “they have resorted to buying gum poles from Penhalonga in order to minimize deforestation in Mazowe. While this is costly and cannot be afforded by many artisanal miners it was a necessary pain to save the environment. Further I believe that *miti hupenyu* (loosely translated trees are life)”. Sustainable gold leaching and afforestation practices fit in to the global mining policy frameworks. For example, the practices satisfy the MPF tenets on social and environment protection which encourages countries to craft, model, and administer regulations that guard against water, land, and air pollution, which is caused by artisanal mining activities (IGF 2023). The crafting of policies by the Ministry of Mines and Mining Development and related institutions coupled with compliance by formal artisanal miners confirms the arguments that underpin the institutional analysis framework. To this end, the developments and practices in ASM in Mazowe District are in sync with good mining and environment practices. Although ASM policy reforms have been effective in the formalized mines in Mazowe, the informal sector has shown a different story.

4.4 Shortcomings of the ASM policy reforms in the context of illegal mining

Indeed, the ASM policy reforms cannot be blamed on illegal mining but it is worth to present how socio-ecological sustainability has been compromised by illegal artisanal miners in

Mazowe District. The study noted that ASM that take place in illegal settings have huge negative effects on socio-ecological sustainability, a development that ASM policy reforms have failed to adequately address. The section presents the social and ecological harm emanating from illegal artisanal mining in Mazowe District.

4.4.1 Increase in farmer-miner disputes in illegal settings and social sustainability

Unregistered or informal artisanal miners by nature are not loyal to a place and are always nomadic in their operations. These people follow where money is or in other words where abundant gold deposits have been reported. The crop of miners disregards any socio-ecological principles ahead of money. Accordingly, conflicts between illegal miners and farmers have been the norm in Mazowe District. The conflicts have negatively affected the society. Informants who took part in a FGD2 asserted that the unregistered artisanal miners have been invading A2 farms that are located within the wards. They recalled that,

At one point the illegal miners surveyed the Bricon farm and found good gold samples, in the aftermath they then invaded the farm which disturbed the maize production project that was being conducted at a medium scale at the farm. The case was later resolved by a local Chief. This was then followed by the invasion of farms around the Chikirivhayo area where the illegal artisanal miners have been conducting destructive mining practices, mostly open cast mining leaving big and uncovered pits which are amplifying environmental degradation. To date, this conflict has not yet been resolved.

The findings demonstrate a strong nexus between illegal mining and unsustainable mining practices that threaten social harmony in Mazowe District. One security official (SO1) noted in an interview that these acts trigger a relaunch of restrictive mining enforcements like Operation *Chikorokoza Chapera*. Such operations revive the tight Statutory Instruments in mining in the early 2000s, where SI 275/1991 condemned and criminalized artisanal mining activities.

The above findings also establish an aberration of the domestic artisanal mining policy reforms with the global mining policy reforms. For instance, the Mining Policy Framework (MPF) encourages member states to institutionalize dispute resolution mechanisms that mitigate and curb conflicts between the miners and other stakeholders, farmers included (Lahiri Dutt 2018 and IGF 2023). Nonetheless, the Zimbabwean policy reforms are plagued by an implementation gap in line with these types of disputes as they have been mostly relying on traditional leaders which might impede conflict resolution as noted in the case of the dispute between artisanal miners and farmers around the Chikirivhayo area. In addition, studies that were conducted earlier on by (Marume 2023 and Chari 2021) focused on the conflicts between artisanal miners and farmers in Gwanda and Chinhoyi. As such, this study filled this literature gap by examining

the shortcomings of ASM policies in the context of illegal mining and socio-ecological sustainability in Mazowe District.

4.4.2 Disregard of social responsibility

Social sustainability in mining also emerges from good social responsibilities by miners. However, this has not been evident in cases where illegal gold mining has taken root in Mazowe District. This was revealed by informants in FGD2 who submitted that there were Chinese are conducting gold mining activities across various sites in the District. These foreigners who can be classified as illegal artisanal miners have disregarded good social responsibility practices instance drilling boreholes for the communities considering the fact they are also contributing towards the pollution of water bodies. In addition to these submissions, a local leader (LL2) stated that “*Chinese artisanal miners have been employing their fellow Chinese nationals, and in one case less than 7 locals have been employed*”. These research findings depict the policy cracks that exist within the Zimbabwean ASM policy reforms which treat foreign nationals the same as locals in critical sectors such as mining.

Other African countries that include Ghana have taken protectionist measures to ring-fence the artisanal mining sector, through the Mineral and Mining laws and policies where only the locals can be awarded the artisanal mining licenses (Crawford and Botchwey 2017). This may help promote socio-ecological sustainability as locals are more responsible, and would jealously protect and sustainably mine resources in the land where they umbilical codes are tied to.

4.4.3 Destruction of social amenities

Related to a disregard of good social responsibility was destruction of social amenities and public infrastructure in Mazowe District. This manifested through activities of illegal artisanal mining that has not been adequately addressed through ASM policy reforms. Destruction of social amenities is inconsistent with social sustainability. The findings were recorded in interviews with CSO1, CSO2 and Education Official (EO). The respondents noted that the illegal artisanal miners in Jumbo area in Ward 22 invaded the Shingirirayi Secondary School and have been mining gold, the houses of teachers have been threatened by their activities since mining occurs a stone-throw away from them. EO stated in an interview that “*some of the teachers feared that they may find their houses underground since some of the mining appears to be happening under the school premises*”. The participant further added that the classrooms and the entire infrastructure at this school is also at risk.

In addition, through both participant observation and in-depth interviews, the researcher established that artisanal mining activities have caused massive destruction to the road network which is a greater cause for concern that affects social sustainability. For instance, the following roads are in a terrible state, that is the dust roads in Jumbo Mine that connects to the Southern parts of the mine (Ward 22) and the dust roads that connect to Virginia (Ward 18). In these aforementioned roads, artisanal miners are mining in areas that are proximate to these connecting roads which affects good transport network. Some mining activities have also occurred near or under the railway line in the Jumbo and areas near the Magaya mining claims. Previous studies have been mainly environmentally grounded, that is they have focused much on depicting the environmental impact of the artisanal mining activities across the country. This study, migrated from this purely ecological approach by also focusing on the impact that the artisanal mining activities on social amenities in Mazowe District. The researcher analyses the scenario in relation to ASM policy reforms.

4.4.4 Influx in prostitution and STIs

Compared to formal mining settings, areas where illegal mining occurred resulted in an influx of prostitution and STIs. Social sustainability has been eroded by prostitution and STIs in Mazowe District. A Community Health Worker (CHW) and a Nurse in Mazowe (NM) confirmed that the District is characterised by an influx in prostitution and STIs. The hotspots where areas where illegal mining took place in particular the Jumbo, and Doxford shops (CHW and NM added). The illegal artisanal miners are the primary targets as they earn money every day and use it irresponsibly through immoral activities. Findings from FDGs showed that most illegal miners do not use protection, this could be out of carefree behavior or lack of access to free condoms a situation that prevails in formal mining settings. NM also confirmed a rise in child marriages and pregnancies in these informal settings. According to the Ministry OF Health and Child Care in 2023, the Province in general and the Jumbo mine area in particular recorded the highest number of new HIV infections with nearly 12% of the Mazowe residents living with HIV. Thus prostitution and STIs in illegal artisanal mining areas threaten social sustainability. This is a manifestation of lack of formalization in the ASM sector in Mazowe District.

4.4.5 Land degradation

Apart from social impact of illegal mining, ecological harm was also recorded in this study. Ecological damage was noted as the unregistered artisanal miners mostly resort to unsustainable mining practices. The shortcomings of the ASM policy reform within this illegal sector manifested through land degradation in Mazowe District. Through participatory observations

the researcher noted the massive damage to the environment. A picture below depicts the situation in one ward in Mazowe District.



Fig 4.5 An unfenced and open cast mining shaft

The image shows how illegal mining has negatively affected the land and safety of people and animals in Mazowe District. Findings from FGD2 confirmed the existence of rampant artisanal gold mining in the ward where illegal miners degraded the land through haphazard open and unfilled mining pits.

A similar study was conducted in Midlands province which outlined that abandoned and disused mining pits were causing great harm to both human beings and livestock and made reference to mining areas that include Zvishavane, Kadoma and Kwekwe where most artisanal miners are heavily engaged in the mining of gold and chrome (Munyoka 2020). However, Munyoka's study did not focus on the experiences of Mazowe District in particular the Jumbo area where illegal mining high.

4.4.6 Ecological damage to Mazowe River through illegal mining

The researcher was drawn to conduct this study in Mazowe District due to illegal alluvial mining in Mazowe river, and other small rivers in Mazowe District. From a policy perspective, the study noted inconsistency in application of mining regulations which somehow led to ecological damage of the rivers. ASM policies oscillates between restrictive to supportive when it is convenient to the political elites, an argument that is advanced in the political ecology theory. This negatively shape human behavior that affects the well-being of the environment. Data gathered through FGDs confirm the existence of illegal alluvial gold miners by locals and foreigners in particular the Chinese. The presence of foreigners was also confirmed by CSO1 and 2 officials in an interview.

Unsafe and illegal alluvial mining has contributed to water pollution among other negative effects. Through participatory observations the researcher witnessed dirty water that was flowing in one of the rivers where illegal artisanal mining was conducted in ward 18 and 19. This study revealed that rivers and other water bodies that are situated around the areas where artisanal mining activities are conducted are prone to contamination and pollution because they serve as base stations of these illegal miners. This also has severe environmental impact. Besides This observation is also contained in studies by (Marume 2023, Munyoka 2021) which asserted that artisanal mining activities have led to the contamination of underground water bodies along Ngezi, Save, Mutare and Odzi Rivers. However, these scholars did not cover Mazowe District as done by this researcher.

4.5 Deficiencies of the ASM policy reforms and their impact on socio-ecological sustainability

This section examines the weaknesses in the ASM policies that have negatively undermined socio-ecological sustainability in Mazowe District. The weaknesses presented include absence of ecological conditionalities during mineral exploitation, and ASM policy content that is thin in socio-ecological sustainability. Such policy weaknesses have not been explored in academic literature, a lacuna that is covered in this section.

ASM policy reforms implemented in Mazowe District have not been short of some deficiencies which have negatively impacted socio-ecological sustainability. Such policy gaps have resulted in the continued harm to the environment. An academic in the mining discipline (Aca1) argued in an interview that “the process of registering a claim gives room for harm to the environment.

In particular, prior registration of a claim, an individual can get a prospecting license. The license enables one to prospect for gold by digging shallow pits which have often been left open and unfenced after prospecting. The pits cause serious damage to the environment as well as potential hazard to livestock which undermine social harmony. The deficiency arises as the prospecting license does not come with conditions related to refilling of pits or other good prospecting practices”. During the fieldwork, the researcher was also shown some of the open and unfenced pits that were left open after prospecting. One of the local leadership (LL1) narrated in an interview that *“there is a mountain which is now almost at ground level that has been mined by foreign individuals under the guise of prospecting for a period of four years”*. This example confirms the deficiency or how the gaps in the policy are being abused by individuals at the expense of socio-ecological sustainability in Mazowe District.

Another gap in the ASM policy reforms emanates from a seemingly mining centric approach that does not put emphasis on ecological sustainability. A case in point is the levels of deforestation in Mazowe District. An environment expert (EE) noted in an interview that, *“unlike in tobacco farming where some tobacco buying firms put conditions of plantations in cases where curing is done by wood, the mining policies or practices are silent on this yet ASM use wood for the timbering processes”*. The same sentiments were shared by an academic (Aca2) who noted in an interview that *“most trees are vanishing at a faster pace in Mazowe as more ASM activities are taking place”*. It follows that there is strong nexus between deforestation and abundance of gold deposits in Mazowe District where ASM is largely at play. Despite this nexus, the ASM policy reforms have not been strongly addressing this. Through the political ecology theory one can conclude that policy makers maybe lacking ecological appreciation required to influence ASM policy reforms that addresses this challenge.

4.6 Challenges that threaten ASM policy reforms in promoting socio-ecological sustainability

The study notes that the limitations of ASM policy reforms and the challenges associated with illegality in mining paints a gloomy picture of socio-ecological sustainability in Mazowe. This picture made possible due to challenges related to political interference, and lack of will that blocks effective ASM policy reforms towards socio-ecological sustainability.

4.6.1 Name dropping or Political interference

Name dropping is one of the challenges that has sustained illegal and destructive artisanal mining activities in Mazowe District which undermine the efficacy of the current artisanal

mining policy reforms on socio-economic sustainability. One of the local leaders (LL3) in the district emphasized that “the law enforcement agencies randomly conduct raids at some prominent artisanal mining areas, that include the Mazowe River (Ward 19) where illegal miners are usually arrested as their activities violate the law in general and artisanal mining policies”. However, such arrests “are weakened and compromised by the fact that some illegal artisanal gold miners resort to name dropping which make them immune to arrest. A case in point is a prominent artisanal miner called Tawaz (pseudonym) who is one of the kingpins mining along the Mazowe River illegally” LL3 added. Tawaz continues with his illegal activities since he claims to be a relative of a senior mining official (ibid). Findings from the FGDs echoed the same sentiments that the ASM sector was characterised by political interference and name dropping in particular the Jumbo area. Such excuses have undermined ASM policy reforms in promoting socio-ecological sustainability in Mazowe District.

This challenge is connected to the arguments in the Political Ecology Theory. The theory establishes the interlinkages between politics and ecological factors. The theory also addresses asymmetric power factors that emerge due to access to and control over resources (Guthman 1997). Impediments such as name dropping and political interference are enabled by the connectedness of politics and natural resource governance with politics occupying a superior place within this matrix. Past conventional wisdom has not utilized this theory in the context of ASM policy reforms, a gap that has been addressed in this study.

4.6.2 Lack of will

During the data collection exercise, it emerged that most artisanal miners, especially the unregistered ones have been conducting their activities at the expense of socio-ecological sustainability as a result of the lack of will to implement sustainable and best mining practices. This is so because EMA frequently conducts awareness outreach across all mining wards in the district, informing the artisanal miners about the good mining practices, occupational health and safety measures that must be observed. An official from the Ministry of Mines and Mining Development (MMO2) further asserted that this lack of will is even triggered by the lack of buy-in from artisanal miners when these outreach and awareness programs are being rolled out, recalling that,

They once conducted an awareness campaign educating the artisanal miners in the Jumbo area (Ward 22) about sustainable and environmentally-friendly mining methods. When they arrived, there was a group of around 300 artisanal miners and when the Ministry of Mines and Mining Development delegation arrived, they started dispersing as they thought that the delegation was part of the undercover police who had come to

arrest them. By the time they started the outreach campaign, a handful of between 30 – 50 artisanal miners remained.

The artisanal miners are knowledgeable about the best mining practices, but lack of will withstand their capacity to implement them because they are preoccupied with the zeal to extract means without paying particular attention to sustainable mining methods. Against this background, a focus on factors that enable the positive impact of ASM policy reforms on socio-ecological sustainability is necessary.

4.7 Factors that can enhance the impact of ASM policy reforms on socio-ecological sustainability in the Mazowe district.

This section presents the factors that can enhance ASM policy reforms to promote socio-ecological sustainability in Mazowe District. The factors include punitive sanctions, institutional interventions that reverse damage to the environment, harmonization of farmer-miner disputes, and afforestation and environment protection.

4.7.1 Punitive sanctions that promote socio-ecological sustainability

ASM policy reforms are a product of political ecology theory where political actors design policies to curb harmful mining practices thereby protecting the people and environment. The ASM policy reforms implemented in Mazowe District have also been accompanied by penalties in cases of breach of the mining law or policies. A legal expert (LE) interviewed indicated that,

The Mines and Mineral Act as well as the Environment and Management Act provides sanctions against breach of mining and environmental laws. For instance, there are penalties that address non-compliance which include fines which do not go beyond level 14 or a jail term of not more than 2 years. Further the Minister of Mines wield powers to either cancel or suspend the mining licenses, or have the mining claim seized by the State.

Muvingi and Mugadza (2023) confirm the presence of penalties that involve the rehabilitation of the land that would have been damaged through mining. Voices from FDG1 aired that, some of the registered artisanal miners have fenced or refilled their claims in fear of these punitive measures. Such developments have promoted ecological sustainability in Mazowe District. Studies by Munyoka 2020, Pact 2019, ZELA 2011 largely focused on the negative effects of ASM in Zimbabwe without paying attention on how punitive measures embedded in the policy reforms can enhance socio-ecological sustainability in Mazowe District. This deficiency in literature was cured in this study through the use of political ecology theory and institutional analysis and development framework.

4.7.2 Institutional interventions in river rehabilitation

Institutions play a key role in promoting socio-ecological sustainability in the mining areas. As part of the mining policy, the Ministry of Mines and Mining Development has not only enforced but intervened with measures that can reverse adverse damages to the rivers and land in ASM areas. The data that was gathered by the researcher during an interview with an official in the Ministry of Mines and Mining Development (MMO2), showed that,

The Ministry has been taking some steps to guarantee that the artisanal miners shun environmental degradation by conducting what are known as the SHE campaigns, that is Safety, Health, and Environmental campaigns. They have been mainly conducted in Ward 19, where illegal artisanal gold mining along the Mazowe River is rampant. Thus, the SHE campaigns managed to reverse the damage caused by artisanal miners along the Mazowe river.

Further through mining inspections and conducting EMPs in formal mining claims have aided the ASM policy reforms to minimize damage to socio-ecological sustainability. Such institutional interventions have also been done by EMA through educational campaigns on good environmental practices. These institutional interventions are explained through the lens of the IAD framework. Studies on artisanal mining activities in Zimbabwe have been biased towards the activities of the artisanal miners, mostly their negative impact on nature and the environment (Marume 2023) as well as criticizing the capacity of institutions that regulate the mining and environment sector. This study deviates from this position by streamlining the interventions that have been made by various government agencies in resolving socio-ecologically oriented problems that are caused by artisanal miners in Mazowe District.

4.7.3 Harmonisation between artisanal miners and farmers

Another factor that has the potential to enhance ASM policy reforms and socio-ecological sustainability is the harmonization between farmers-miners through an effective dispute resolution mechanism. In line with this, an interview with MMO1 confirmed that “the Mines and Minerals Act (Chapter 21:05) caters for the co-existence of both artisanal mining activities and agricultural activities”. Further the Act aims to strike a balance between both land and surface rights thereby enabling farmers and miners to reach a consensus at to their preferred terms of conditions (MMO1 added). However, a legal expert (LE) in environment noted in an interview that “*While there exist laws which provides that in cases of disputes between the two parties, a registered miner can go ahead with mining since their activities will be underground. There is lack of dedicated structures that addresses these disputes*”. A case in point that was reported during fieldwork was in Ward 19. A local leader (LL2) highlighted in an interview

that “around the Iron Duke and Mazowe flower areas farmer and miner disputes have been witnessed. Despite efforts to resolve the conflicts a relapse of the cases continue to be witnessed in the District”. A recurrence of the conflicts can partly be explained by a lack of permanent structures that resolve mining disputes and this threaten socio-ecological sustainability. From the above, it can be noted that these policy reforms are alive to the importance of both mining and agricultural activities, even though it is to some extent biased towards the mining sector, the elements of socio-economic sustainability remain dominant through the harmonization of farmers and miners’ activities. In addition to this, there are no studies on the harmonization of farmers and miners in Mazowe district, a gap that was filled by this study.

4.7.4 Afforestation and environmental protection

Part of the artisanal mining policy reforms encourages artisanal miners to promote environmental protection through programs like afforestation. During a FGD1 with locals from Ward 18 it emerged that adequate steps had been taken to plant around 3 500 gum trees in the Virginia area in Ward 18 and other hundreds of gum trees in the Mondo mines. These observations were confirmed by CSO1 and 2 officials who argued that ASM policy reforms that incorporate afforestation mining practice can help in achieving ecological sustainability. The practice curb soil erosion, provide habitats to other living organisms and assist in regulating the water flow within mining areas. Prevailing literature by Marume (2023), PACT (2019) and Hlungwani et al (2023) cited the negative implications of artisanal mining activities that encompass deforestation and exposed its consequences on nature, vegetation. However, this study deviated from this conventional approach and focused on how afforestation initiatives by artisanal miners can serve as a policy reform that promotes socio-ecological sustainability in Mazowe District.

4.8 Conclusion

This chapter focused data presentation and analysis, the data was collected by the researcher in Mazowe District, particularly wards 18, 19 and 22 where artisanal mining activities are being conducted. The primary aim of this study was to examine the implications of artisanal mining policy reforms on socio-ecological sustainability in Mazowe District. It emerged from the research findings that a number of artisanal mining policy reforms have been implemented and are housed in the Mines and Minerals Act (Chapter 21:05) whilst the aspects are governed by the Environmental Management Act (20:27). There has been a positive impact of ASM policy reforms on socio-ecological sustainability in formal or registered mining cites in Mazowe district. The reverse has been true in unregistered mining areas. It was noted that, the ASM

policy reforms had some loopholes that resulted in negative socio-ecological impact. Further political interference and lack of will by artisanal miners blocked the potential positive effect of ASM policies on socio-ecological sustainability. The Chapter provided factors that can enable ASM policy reforms to positively impact socio-ecological sustainability in Mazowe. The findings from the Chapter fills an academic gap from a geographical location point of view, theoretical and issue based perspective. The next Chapter presents the conclusion and recommendations.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary, conclusions and recommendations of the study. The summary is presented in line with the research aim and objectives. The summary feeds into the conclusions on the implications of ASM policy reforms on socio-ecological sustainability in Mazowe District. Lastly, the Chapter provides context-specific recommendations which is a departure from previous studies in literature.

5.2 Summary of findings

The section presents a summary of findings. Some of the key highlights include ASM policy reforms implemented in Mazowe District, implications of ASM policy reforms on socio-ecological sustainability and lastly factors that can enhance ASM policy reforms to yield socio-ecological sustainability in Mazowe District.

The study found out that ASM policy reforms are reflected in major legal acts such as the Mines and Minerals Act. However, the act does not give greater attention on ASM sector. This has resulted in weak promotion of socio-ecological sustainability among the ASM sector. To cover the limitations of the Mines Act was the Environment and Management Act which satisfies the ecological aspect. The Act compels miners, ASM included to conduct mining in line with good environmental practices. The breach of the Mines and Environment Act in particular by illegal artisanal miners has resulted in government implementing restrictive ASM policy reforms like Operation Chikorokoza Chapera in 2006 amongst other operations. These operations are a reflection of government policies implemented by multiple state agencies to curb environmental harm in Mazowe District.

The study established that ASM policy reforms implemented in Mazowe District has positively contributed to socio-ecological sustainability in wards 18, 19 and 22. The socio-ecological sustainability was witnessed in areas where formal and legal ASM was taking place. Socially, there was a decline in ASM related violence, STIs, farmer-miner disputes, ASM related accidents and fatalities related to mining and decline in child labour. Ecologically, there was an improvement on the refilling of mining shafts, planting of trees, decline in water pollution, decline in deaths of animals due to standard gold leaching practices. Formal ASM have been fencing their claims in line with good mining practices. These efforts are a testimony of the positive effect that ASM policy reforms has had in formal mining claims. The study also established that socio-ecological damage has been rampant in Mazowe District where illegal

ASM takes place. There was a strong link between informalisation and negative socio-ecological impact. Illegal artisanal miners by nature do not regard ASM policies, laws and mining best practices. Evidence of this stems from the social ills witnessed in the form of increased cases of violence, prostitution, diseases, school drop outs and child labour. The same problems were witnessed in terms of ecological harm through pollution of water and river, degradation of land, deforestation among others.

The study sought to establish factors that can enhance ASM policy reforms to yield socio-ecological sustainability in Mazowe District. The factors include, harmonisation of farmer-miner conflicts through dedicated dispute resolution structures is key to enhance ASM policies. Another ingredient is introduction of stiffer penalties or sanctions that are linked with socio-ecological breaches in ASM. This is also complemented by practices that promote afforestation and environmental protection. Support from institutions in mining is critical in building the capacity of ASM in Mazowe District.

5.3 Conclusions

This research concludes that ASM policy reforms that include Mines and Minerals Act, and the Environment Management Act have been implemented in Mazowe District. The Acts have been supplemented by government policies that at some point banned ASMs to recognition and formalisation of the sector. The study noted that the ASM policy reforms are consistent with the global mining policy frameworks and conventions. Despite the existence of ASM policy reforms socio-ecological sustainability has not been fully realised in Mazowe District. Part of the explanations lie an outdated Mines and Minerals Act, weak or lean mention of ASM in existing mining policies, lack of ecological bias in mining legislations and lack of best fit ASM policies as the existing ones reflect the best practices that are not reflective of the ASM realities in Mazowe District.

Another conclusion drawn from the study related to the implications of ASM policy reforms on socio-ecological sustainability in Mazowe District. The manifestation of the research problem showed socio-ecological ills recorded in the District such as child labour, prostitution, conflicts, deforestation, and water pollution. Thus, the study concludes that ASM policy reforms have positively enhanced socio-ecological sustainability in areas where formal and legal ASM has been conducted. Formalisation and registration of ASM was consistent with the global mining standards. The study also noted that greater socio-ecological harm emerged from illegal ASM activities in Mazowe District. While the ASM policies do not promote illegality, the

deficiencies within the policies coupled with political interference, name dropping, and lack of will have contributed to the research problem.

The study concludes that the factors that can enhance ASM policy reforms to attain socio-ecological sustainability lie in policy consistence where the government should not sit on the fence between restrictive and supportive policy positions on ASM. Further there is need to establish effective structures that can address farmer-miner disputes and strengthen punitive measures in breach of socio-ecological sustainability in Mazowe District. The section below details the recommendations that should be implemented to address the research problem.

5.4 Recommendations

Existing mining legislation and policies should fully recognise the existence of ASM. The current pieces of policies appear to be stuck in colonial hangover which did not recognise the ASM sector. Thus, the Ministry of Mines and Mining Development, policy makers in particular the Parliamentary Portfolio Committee on Mines and Mining Development and other mining stakeholders should influence adequate reflection and debate for the full inclusion of ASM in the Mines and Mineral Amendment bill.

The police, EMA and other security agencies should not highly securitise their operations against artisanal miners rather they should adopt a human and corrective approach to change the mind-set and behaviour of artisanal miners in promoting socio-ecological sustainability. EMA should conduct awareness and educative campaigns in areas where artisanal miners operate.

Non-state actors, ranging from UNDP, CSOs related to mining and environment should lobby for funds that can be used to incentivise artisanal miners that comply with the legislations and policies that promote socio-ecological sustainability. Incentives could be light machineries or other supplements used in mining.

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APPENDICES

Appendix 1 Letter to conduct a study

6358 MORNINGTON

KADOMA

07 May 2025

CHIEF EXECUTIVE OFFICER

MAZOWE RURAL DISTRICT COUNCIL

BOX 35

CONCESSION

Dear Sir,

RE: PERMISSION TO CONDUCT AN ACADEMIC RESEARCH STUDY IN MAZOWE DISTRICT

My name is Polite Kambamura, a Master of Science in Natural Resources Management, and Environmental Sustainability student at Bindura University of Science Education, (BUSE). I am conducting an academic research entitled 'The Implications of Artisanal Mining Policy Reforms On Socio-Ecological Sustainability in Mazowe District, Zimbabwe'. The study is in partial fulfillment of the requirements of my Masters programme. I humbly seek your permission to conduct the study in Mazowe through conducting interviews with your RDC, Chiefs, councilors, local people and other relevant stakeholders within your jurisdiction. The proposed period is between 12 to 19 May 2025.

The findings are aimed at sharpening mining policy reforms that can yield socio-ecological sustainability in Mazowe District. This may boost the country's mining sector as well as the social and ecological setting in the District.

For further details, do not hesitate to contact me or my University.

I look forward to your favorable response.

Yours Faithfully



Hon. Polite Kambamura

0712907401/ pkambamura@gmail.com

Appendix 11 Permission to conduct a study

Mazowe Rural District Council

HEAD OFFICE Tel: 0662192251 Cell: 0778703684/0779490952 P.O. BOX 35 CONCESSION TSUNGUBVI SUB-OFFICE P.O. BOX 79 GLENDALE Cell: 0774869928 ROADS WORKS AND PLANNING Cell: 0777852486 Email: mazo@ccco@gmail.com Our ref:		DANDAMERA SUB-OFFICE Cell: 0776344943/0773653389 CONCESSION CHIWESHE SUB-OFFICE P.BAG 3010 GLENDALE Cell: 0772620223 CHRISTON BANK SUB-OFFICE Cell: 0773653389/0773301858
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8 May 2025

Hon. Polite Kambamira
6358 Mornington
KADOMA

Dear Sir

PERMISSION TO CONDUCT AN ACADEMIC RESEARCH STUDY IN MAZOWE DISTRICT

Reference is made to the above subject.

You have been authorized to carry out your academic research. Could you please avail your findings after you complete your research.

Yours faithfully


L. MUFANDAEDZA
CHIEF EXECUTIVE OFFICER

CHIEF EXECUTIVE OFFICER
MAZOWE RURAL DISTRICT COUNCIL

8 MAY 2025

P.O. BOX 35, CONCESSION
Email: mazo@ccco@gmail.com

Appendix 111: Consent Form

My name is Polite Kambamura. I am a student at Bindura University of Science Education (BUSE), enrolled for a Master of Science Degree in Natural Resources Management and Environmental Sustainability. I am currently doing an academic research entitled “Implications of Artisanal Mining Policy Reforms on Socio-Ecological Sustainability in Mazowe District, Zimbabwe”. The study is in partial fulfillment of the requirements of my Masters programme. I am kindly seeking your consent to have an interview with you on the subject matter. You have the right to withdraw from the study, skip some questions that you may not be comfortable with during the interview. Your responses are kept in strict confidentiality and will only be used for academic purposes. You have the right not to disclose your identity. For data presentations I will use a pseudonym to ensure that you remain anonymous. Feel free to ask any question before we commence the interview. If you agree to be part of the interview, please sign on the space below.

Name.....

Signature.....

Date.....

Thank you.

Appendix 1V: Interview Guide

Topic: Implications of Artisanal Mining Policy Reforms on Socio-Ecological Sustainability in Mazowe District, Zimbabwe.

Objective 1: To identify the ASM policy reforms that have been implemented in Zimbabwe

1. What is your understanding of artisanal miners?
2. What are some of the main ASM policy reforms that have been implemented in Zimbabwe?
3. In what ways have these reforms impacted on the ASM industry in Zimbabwe?
4. Can you illustrate the efficiency or inefficiencies of the ASM policy reforms that have been implemented to date?

Objective 2: To assess the implications of ASM policy reforms on socio-ecological sustainability in Mazowe District, Zimbabwe

1. In what ways did the ASM policy reforms impacted the socio-ecological sustainability in Mazowe District?
2. What are some of the impacts of the artisanal mining activities in Mazowe District to the environment?
3. How successful was the implementation the ASM policy reforms in Mazowe District?

Objective 3: To determine factors that can enhance the impact of ASM policy reforms on socio-ecological sustainability in Mazowe District

1. What are some of the factors that can assist in enhancing the efficacy of ASM policy reforms in advancing socio-ecological sustainability in Mazowe District?
2. What measures can the relevant mining stakeholders initiate in order to guarantee the successful implementation of the ASM policy reforms.

Appendix V: Focus Group Discussion Guide

1. Briefly explain your understanding of ASM?
2. Kindly explain the ASM policies that have been implemented in Mazowe District.
3. In what way have these reforms been effective in promoting socio-ecological sustainability in Mazowe District?
4. What challenges have been encountered by relevant stakeholders to implement ASM reform policies that promote socio-ecological sustainability in Mazowe District?
5. What measures can be put in place to enhance ASM policy reforms to promote socio-ecological sustainability in Mazowe District?
6. Do you have any other comment to add to the topic under study?

Appendix VI: Observation Guide

The following were the variables that the researcher sought to observe during field work

Use of child labour within a mining claim

Safety standards for workers

Safety Instructions

Toilets and showering

Proper waste and chemical disposal

Timbering of mining shafts for support

Plantations of trees

Open shafts

Fenced shafts

Contaminated or dirty rivers

Land degradation