FUTURITY OF SOCIAL SCIENCE

DOI: https://doi.org/10.57125/FS.2025.03.20.03

How to cite: Maguya, S., Chikuvadze, P., & Masocha, W. (2025). Artisanal Mining Practices and Their Impact on Environmental Management: Experiences from a Selected Marginalised Community in Zimbabwe. *Futurity of Social Sciences, 3*(1), 43-58. https://doi.org/10.57125/FS.2025.03.20.03

Artisanal Mining Practices and Their Impact on Environmental Management: Experiences from a Selected Marginalised Community in Zimbabwe

Susan Maguya

BScEd, Teacher, Mt Matedzi Secondary School, Mutare, Zimbabwe, https://orcid.org/0009-0005-1418-532X

Pinias Chikuvadze*

PhD, Lecturer, Faculty of Science Education Campus, Bindura University of Science Education, Shashi View, Bindura, Zimbabwe, https://orcid.org/0000-0002-8569-0009

Wonder Masocha

MScEd, Part-Time Lecturer, Faculty of Science Education Campus, Bindura University of Science Education, Shashi View, Bindura, Zimbabwe, https://orcid.org/0009-0008-2171-9002

***Corresponding author email:** *chikuvadzepinias@gmail.com.*

Received: October 23, 2024 | **Accepted:** January 19, 2025 | **Published:** February 12

Abstract: This study sought insight into the artisanal mining practices and their impact on environmental management in a selected marginalised community in Zimbabwe. The study was grounded on the pragmatist paradigm and mixed-method approach. This design enabled the study to inherently exploit the use of both qualitative and quantitative analysis procedures. The sample comprised 82 respondents selected using a stratified random sampling approach and five purposively selected village heads. The data were collected through a semi-structured questionnaire and key informant interviews. Numerical data were analysed using frequencies and percentages, and non-numerical data was analysed according to emerging themes. From the analysed and interpreted data, it was noted that the selected respondents had a diverse understanding of artisanal mining as a concept. Thus, some conceptualised it as a legal activity, while others highlighted it as illegal. In artisanal mining, various mining practices were used to extract minerals. In these activities, various challenges were encountered to the detriment of the environment. In this context, this study concluded that the artisanal mining practices being used in the selected community have, to a more significant extent, a negative impact on environmental management. The researchers recommended that artisanal miners be educated on the most effective practices that can be used to extract minerals with minimum environmental damage.

Keywords: artisanal mining practices, environmental management, impact, marginalised community

Introduction

The history of artisanal mining in Zimbabwe dates back to the period well before colonisation in the late 1890s (Maponga & Ngorima, 2003; Mberengwa, 2010). As in other African countries, mining can be considered the basis for wealth and power, fuelling the growth of artisanal farming on the continent (Mawowa, 2013). These mining activities in most countries range from small, medium to large scale. These mining projects require substantial capital investments, which, unfortunately, many local investors cannot afford; most local miners fall within the small to medium-scale category (Malinga, 2018; Mkodzongi, 2020). Despite the immense growth of artisanal mining over the years, especially since independence in 1980, the sector has essentially remained subsistence and a significant complimentary activity to communal and small-scale resettlement agriculture (Murwendo et al., 2011).

While environmental management and its integration with development has become high on the community agenda, there have been growing human-induced environmental changes altering the ability of the natural environment to provide services (Mayher, 2016). While mining legislation in Zimbabwe advocates due attention to be paid to environmental issues in the exploitation of minerals, starting from project inception to development stages, it seems there are some yawning gaps in official efforts to save the environment and local communities from the harmful effects (Mabhena, 2012; Mkodzongi & Spiegel, 2019). Existing environmental management and development studies (Bendi Information Services, 2014) emphasise listing problems, making warnings and voicing advocacy; this study, however, offers a different perspective.

Research Problem

Mining developments and activities in Zimbabwe are highly characterised by profit motives (Ncube-Phiri et al., 2015; Zvarivadza, 2018). This has resulted in conflicts and competition between

stakeholders (large scale, medium scale, small scale and the community (Mkodzongi, 2023). Hence, the crafting of various policy frameworks (i.e., Mines and Minerals Act (Chapter 21:05), Environmental Management Act, the Atmospheric Pollution Prevention Act, Hazardous Substances and Articles Act, etc. to regulate the mining activities (Njini & Mapira, 2018)). These mining activities are characterised by a range from a small scale to a large scale. Uncontrolled artisanal mining activities in the Chiadzwa Community have been rampant despite policy frameworks. However, there is a dearth of research studies on the impact of artisanal mining practices on environmental management in the targeted area.

Research Focus

This paper sought insight into this aperture from the selected respondents and literature sources to add value to the documented evidence concerning the identified issue. Hence, it sought insights into the impact of artisanal mining practices on environmental management in the targeted community.

Research Aim

The study's focus was narrowed to the following aim: to establish the impact of artisanal mining practices on environmental management in the targeted community.

Theoretical Overview

This paper was examined through a framework comprising the Marxist and Resource Curse theories (Antmann, 2025). The Marxist perspective advanced that the capitalistic economic system's approach to mining in the developing world can cause environmental and social degradation (Laing & Pinto, 2023). Thus, mining activities are not environmentally friendly and not conducive to sustainable development, though they are promoted in the developing world. On the other hand, the Resource curse theory postulates that the existence of mineral resources in the developing world has become more of a curse than a blessing (Gómez-Barris, 2017).

Artisanal mining often represents the most promising, if not the only, income-earning opportunity available (Malone et al., 2021). The informal exploitation of minerals, especially gold, has been described as one of the most challenging issues for the Southern countries due to its social and environmental impacts. Due to the socio-environmental risks that have increased and accentuated in recent years, many of them culminating in conflicts, the profits for both parties have been compromised. Numerous methodologies have been used in Zimbabwe to explore the environmental impacts of resource extraction (Chipangura, 2019). Most studies (Dube et al., 2016; Ngwenya et al., 2024; Singo et al., 2022) exploring the impacts of artisanal mining activities require evidence through interrogation of policy documents and other issues. This opened the gap for us to examine the effects of artisanal mining practices on environmental management in the targeted community.

Research Methodology

General Background

Data analysis and interpretation were grounded in pragmatist and mixed-method approaches (Solanki & Thomas, 2023). This enabled the researchers to interrogate and make arguments that led the researchers to come up with associations and interpretations of the issue under investigation.

Sample

The 82 respondents were selected according to the location of their mining activities using a stratified random sampling technique (Sutopo, 2025). This selection technique was chosen to ensure a representative sample of the targeted population (Mayasari & Usmeldi, 2023). Five village heads were purposively included in the study for triangulation purposes.

Instrument and Procedures

Data collection and analysis (policy documents, books, journals, etc.), interviews to generate village heads' experiences, and a semi-structured questionnaire were used to capture artisanal miners' experiences concerning the issue under investigation.

Data Analysis

In this study, qualitative data was analysed thematically. In this case, the analysis was inductive, seeking to derive meanings from the texts instead of imposing meanings on the gathered data (Hatch, 2023). On the other hand, frequencies and percentages were used to analyse quantitative data. Thus, the researchers used descriptive statistics to learn about the issue under discussion (Bingham, 2023). It's significant to acknowledge that ethical issues (privacy and confidentiality, anonymity, informed consent) were considered during data analysis and interpretation.

Results

In this section, the respondents were asked to share experiences concerning their conceptualisation of artisanal mining, minerals prospected in the selected marginalised community, artisanal mining practices used in prospecting mineral deposits in the targeted marginalised community and tools used to prospect mineral deposits in the targeted marginalised community. Apart from the selected respondents being residents of the targeted marginalised community, their interests and economic needs may have prompted their participation in mining activities, among other issues. Hence, their interest in participating in artisanal mining activities is at the centre of discussion in this section.

Respondents' conceptualisation of artisanal mining

This section presents the results under the theme of respondents' conceptualisation of artisanal mining. Table 1 below presents the opinions of artisanal miners who completed the distributed semi-structured questionnaire.

Table 1

Respondents' opinion about artisanal mining as a concept

Attribute(s)	Strongly Agree		Agree		Strongly Disagree		Disagree	
	(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)
Illegal extraction of minerals	40	48.8	20	24.4	5	6.1	17	20.7
Open pits	60	73.2	12	14.6	5	6.1	5	6.1
Mining without protective clothing	75	91.5	7	8.5	0	0	0	0
Promotes rural development	0	0	22	26.8	30	36.6	30	36.6
Alleviates poverty	40	48.8	25	30.5	10	12.2	7	8.5

Source: Field data 2024.

Illegal extraction of minerals

Table 1 shows that most respondents (48.8%) strongly agree that artisanal mining is an illegal extraction of minerals, followed by (24.4%) who decide, whilst only 6.1% disagree and 20.7% strongly disagree. Therefore, the presented statistics reveal that most artisanal miners and key informants (73.2%) conceptualised artisanal mining as an illegal extraction of minerals. This concurs with the following in-depth interview response from one of the respondents who acknowledged that:

"Chigweja (artisanal mining) has been going on since around 2006, and a lot of reactions (state security ambushes on illegal miners) have been going on leading to many arrests of the gas and buyers (people who buy the diamond from the artisanal miners" (Village Head 1)

From the above analogy, it can be deduced that artisanal miners and key informants conceptualise artisanal mining as the illegal extraction of minerals. This concurs with Mugenyi (2013), who postulated that artisanal mining is not regulated in most cases, is informal, and, in some cases, is done illegally.

Open pits

Table 1 shows that most respondents (73.2%) strongly agree that artisanal mining results in the formation of open pits in the environment of the selected community, and 14.5% of the respondents agree, whilst 6.1% disagree and strongly disagree, respectively. This concurs with the following response from one of the respondents noted that:

"Kumakomba (open pits) are a common phenomenon in the community. Chikwarukwaru (open cast mining) has led to vast land degradation, with the open pits causing sickness in people as the stagnant water in the open pits breeds mosquitoes, which causes malaria in our people. We have lost our livestock to this makomba, and they pose a danger to our children too as we have cases of drowning of our children in the open pits" (Village Head 2)

In addition, another respondent revealed that:

"In these areas, huge pits can be found and remain unfilled, posing a danger to our people. The nyamundas (land owners) only care about the money they get at the expense of the environment" (Village Head 1)

From the above analogue, it can be deduced that artisanal miners and key informants conceptualise artisanal mining as creating open pits. This concurs with Hilson et al. (2017), who stated that artisanal mining is often associated with various environmental problems, including surface water pollution, land degradation, and some socio-economic conditions that may significantly impact human health. Bansah et al. (2023) concur with the latter that surface mining involves extensive deforestation and environmental damage, which usually results in the creation of open pits which would, in the future, act as water-holding reservoirs, sometimes harbouring disease-causing parasites such as mosquitoes.

Mining without protective clothing

Table 1 shows that most respondents (91.5%) strongly agree that artisanal mining involves mining without protective clothing, with 8.5% agreeing, whilst 0% disagree and strongly disagree, respectively. Therefore, the statistics reveal that most artisanal miners and key informants (100%)

conceptualised artisanal mining as mining without protective clothing. This concurs with one of the respondents who indicated that:

"Vakomana (artisanal miners) do not care about their health and wellbeing; they only care about the money. They mine without helmets or masks. Many deaths due to suffocation in the so-called mingwawawa (strip mining) continue to happen" (Village Head 3)

Another respondent added that:

"These gwejas (artisanal miners) are suicidal; they do not wear any protective clothing when doing their thing" (Village Head 4)

From the above analogy, it can be deduced that artisanal miners and respondents conceptualised artisanal mining as mining without protective clothing. This concurs with Mujere and Isidro (2016), who postulated that artisanal miners often operate under hazardous, labour-intensive, and highly disorganised conditions and have few environmental concerns.

Promotes rural development

Table 1 shows that some respondents (0%) strongly agree and (26.8%) agree that artisanal mining promotes rural development in the selected community, whilst the majority of respondents (26.8%) strongly disagree and (36.6%) disagree. Therefore, the presented statistics reveal that some respondents and key informants (26.8%) conceptualise that artisanal mining promotes rural development, whilst (73.2%) of the respondents differ with this notion. This concurs with the following in-depth interview responses from the respondents in the community:

"Community members are tired of hoping for a better life out of diamonds. Lots of promises have been made, but no action. Our children walk many kilometres to schools, but the clinics are few and far away and have limited medication. Our roads are the worst, no tar to talk about" (Village Head1)

From the analysed data, it can be noted that if the extracted minerals are channelled through legal marketing processes, the community is highly likely to benefit from the proceeds from sales. This will give the community access to a quality health delivery system and contemporary education infrastructure, among other developmental activities.

Alleviates poverty

Table 1 shows that most respondents (48.8%) strongly agree that artisanal mining alleviates poverty in the selected community, with 30.5% agreeing, whilst only 12.2% strongly disagree and 2.1% disagree. Therefore, the presented statistics reveal that most artisanal miners and key informants (79.3%) conceptualised artisanal mining as a drive to alleviate poverty in selected communities. This concurs with the following in-depth interview response from one village head who acknowledged that:

"Due to high unemployment rates and climate change, most people have resorted to artisanal farming as an alternative livelihood strategy. Besides donor assistance, people in our community depend on artisanal mining for survival" (Village Head 2)

Another respondent added that:

"With this drought in our community, only artisanal mining can help our people as the donors only aid a limited number of people and they only bring food aid, yet we want money for school fees and others" (Village Head 3)

From the above analogy, it can be deduced that artisanal miners and key informants conceptualised artisanal mining as alleviating poverty. This concurs with Matsa (2011), who postulated that artisanal mining is mainly driven by poverty and high unemployment in Zimbabwe.

Minerals prospected in the selected marginalised community

This section centres on analysing and interpreting minerals being prospected by artisanal miners in the area under study.

Table 2

Minerals prospected through artisanal mining activities

Attribute(s)	Strongly Agree		Agree		Strongly Disagree		Disagree	
	(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)
Gold	0	0	45	54.9	15	18.3	22	26.8
Diamond	80	97.6	2	2.4	0	0	0	0
Copper	0	0	0	0	79	96.3	3	3.7
Lithium	0	0	0	0	81	98.8	1	1.2
Coal	0	0	0	0	82	100	0	0

Source: Field data 2024.

From the above table, it can be acknowledged that some respondents (54.9%) agree that gold is mined in selected communities. Whilst 18.3% strongly disagree and 26.8 disagree. This concurs with information from one of the respondents indicated that:

"Traces of gold are found in Save river beds, but the artisanal miners in our community mainly mine diamonds" (Village Head 4)

In the selected community, the table shows that the % of respondents, 97.6%, strongly agree that diamond is mined in the community, followed by 2.4% agreeing on the same aspect. This concurs with the following in-depth interview response from one village head:

"Diamond is the major mineral mined in this community, and the market is readily available; the buyers, nyamunda (land owner), gweja (artisanal miner) work in collaboration in the diamond deals" (Village Head 5)

The following minerals had 0% disagree and strongly disagree, respectively; this showed that copper, lithium and coal minerals are not mined in the community. Therefore, the presented statistics reveal that most artisanal miners and respondents (100%) conceptualise diamond as a significant mineral mined in selected communities with traces of gold here and there.

This concurs with the following in-depth interview response from a respondent noted that:

"Diamond is the main mineral mined in the community. We have no evidence of coal, copper, or lithium in Chiadzwa" (Village Head 4)

From the above analogues, it can be deduced that artisanal miners and key informants conceptualised artisanal mining as diamond and some traces of gold. This concurs with Hinton et al. (2003) and Gandiwa and Gandiwa (2012), who stated that artisanal mining targets precious minerals like gold, diamonds, and other minerals that are high in demand and, in most cases, on a small scale.

Prospecting mineral deposits in the targeted marginalised community

This section presents the results under the theme mining practices used in artisanal mining activities. Table 3 below presents the opinions of artisanal miners and respondents who participated in completing the crafted questionnaire.

Table 3

Mining methods are used to extract minerals in the targeted location

Attribute(s)	Strongly Agree		Agree		Strongly Disagree		Disagree	
	(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)
Open cast mining	70	87.8	12	12.2	0	0	0	0
Strip mining	50	60.9	28	34.1	0	0	4	4.9
Placer mining (mining in rivers)	17	20.7	40	48.8	0	0	25	30.5
Underground mining	0	0	30	36.6	20	24.4	32	39.0

Source: Field data 2024.

Table 3 shows that most respondents (87.8%) strongly agree that open-cast mining is the standard method used in artisanal mining, with 12.2% agreeing and 0% strongly disagreeing and disagreeing, respectively.

Therefore, the presented statistics reveal that most artisanal miners and respondents (100%) generally agree that open-cast mining is the primary method used in artisanal mining. This concurs with the following in-depth interview response from one of the respondents revealed that:

"Open cast mining has been the widely used method since the discovery of diamonds in this community, and later strip mining as the diamond was no longer found on the surface. A lot of open pits can be found all over the community as a result of open cast mining with detrimental effects to both the people and the environment" (Village Head 1)

From the above analogues, it can be deduced that artisanal miners and key informants agree that open-cast mining is a standard method in artisanal mining practices in the selected community. This concurs with Rushemuka and Côte (2024), who postulates that in Zimbabwe, open-cast mining is the widely used method where the mineral belt is close to the surface.

Table 3 shows that most respondents (60.9%) strongly agree that strip mining is used in artisanal mining, with some respondents 29.6% agreeing, whilst 0% strongly disagree and 4.9% disagree. Therefore, the presented statistics reveal that most artisanal miners and key informants (90.5%) generally agree that strip mining is used in mining activities.

This concurs with the following in-depth interview response from one of the respondents indicated that:

"Madeep (strip mining) is another common method after open cast mining. Strip mining is when the artisanal miners go underground and follow bhande (belt or strip), where the diamond follows. Strip mining is mainly practised in villages" (Village Head 3)

Another respondent added that:

"In strip mining, mine collapse is a huge challenge. Many deaths resulting from mine collapses have been recorded, with most cases not reported to the responsible authorities since it is an illegal practice. Also, the gwejas live in the tunnels, drinking water and relieving themselves, thus contaminating the underground water and posing a danger to their health and the villager's health. Cholera outbreaks are the order of the day in the community" (Village Head 4)

From the above analogues, it can be deduced that artisanal miners and respondents agreed that strip mining is a standard method in artisanal mining practices in the selected community. This concurs with Ngom et al. (2023), who state that artisanal mining includes strip mining, open pit or open cast mining, quarrying, alluvial mining, and mountaintop removal.

Table 3 shows that most respondents (20.7%) strongly agree that placer mining is a method used in community artisanal mining activities, with 48.8% agreeing, only 0% strongly disagreeing, and 30.5% disagreeing.

Therefore, the presented statistics reveal that most artisanal miners and respondents (69.5%) generally agree that placer mining is used in mining activities. This concurs with the following in-depth interview response from one of the respondents indicated that:

"Artisanal miners cattle their mistake (diamond soil) in the rivers, which leads to siltation of our rivers and river water contamination. Aqualife is affected, and river water is not safe for household use. Women artisanal miners go to the rivers after the scatted soil to look for diamonds. Also, gold traces can be found in Save River, which would have been washed along" (Village Head 5)

From the above analogues, it can be deduced that artisanal miners and key informants view placer mining as a method used in artisanal mining, but it is used at a very low scale. Open-cast and strip-mining methods are commonly used.

Tools used in prospecting mineral deposits in a marginalised community

This section presents respondents' contributions to tools used in artisanal mining practices.

Table 4

Tools used in artisanal mining activities

Attribute(s)	Strongly Agree		Agree		Strongly Disagree		Disagree	
	(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)
Shovels	82	100	0	0	0	0	0	0
Picks	75	91.5	7	8.5	0	0	0	0
Ranges	80	97.6	2	2.4	0	0	0	0
Graders	0	0	0	0	82	100	0	0
Axes	30	36.6	52	63.4	0	0	0	0
Helmets	0	0	0	0	0	0	82	100

Source: Field data 2024.

Table 4 shows that most respondents (100%) strongly agree that artisanal mining uses shovels in their artisanal mining activities, whilst 0% agree, strongly disagree, and disagree, respectively. Therefore, the presented statistics reveal that most artisanal miners (100%) generally agree that artisanal mining uses shovels in artisanal mining activities in the selected community. Most respondents (91.5%) strongly agree, 8.5% agree that artisanal mining uses picks in their artisanal mining activities, while 0% strongly disagree and disagree. Therefore, the presented statistics reveal that most artisanal miners (100%) generally agree that artisanal mining uses picks in artisanal mining activities in the community.

Table 4 shows that most respondents (97.6%) strongly agree and 2.4% agree that artisanal mining uses ranges in their artisanal mining activities, while 0% strongly disagree and disagree, respectively. Therefore, the presented statistics reveal that the majority of artisanal miners (100%) generally agree that artisanal mining uses ranges in artisanal mining activities in the community.

Table 4 shows that nil respondents (0%) strongly agree and 0% agree that artisanal mining uses graders in its activities, while most respondents (100%) strongly disagree and 0% disagree. Therefore, the presented statistics reveal that most artisanal miners (100%) strongly disagree that artisanal mining uses graders in its activities in the community.

Table 4 shows that most respondents (36.6%) strongly agree and (63.4%) agree that artisanal miners use axes in their artisanal mining activities, while nil respondents (0% strongly disagree and 0% disagree) disagree. Therefore, the presented statistics reveal that the majority of artisanal miners (100%) strongly agree that artisanal miners use axes in their artisanal mining activities in the community.

Table 4 shows that nil respondents (0%) strongly agree and (0%) agree that artisanal mining uses helmets in their artisanal mining activities, whilst most respondents 0% strongly disagree and 100% disagree. Therefore, the presented statistics reveal that the majority of artisanal miners (100%) strongly disagree that artisanal mining uses helmets in artisanal mining activities in the community.

Therefore, the overall presented statistics reveal that the majority of respondents (100%) generally agree that artisanal miners use shovels, picks, ranges, and axes in their artisanal mining activities, whilst 100% strongly disagree that artisanal miners use graders in their mining activities and 100% generally disagree that artisanal mining use helmets in their artisanal mining activities This concurs with the following in-depth interview response from a respondent indicated that:

"You can easily identify a gweja by their tools, like picks, ranges, and axes. Also, a gweja coming from the deeps and makomba can be identified by muddy, dusty and dirty clothing with dusty eyelids, face, and nostrils" (Village Head 5)

Another respondent added that:

"Only simple tools are used by these gwejas; heavy machinery can only be seen in the big mining companies that are extracting our minerals" (Village Head 4)

From the above analogues, it can be deduced that artisanal miners and key informants agree that artisanal mining uses simple tools like shovels, picks, ranges, and axes in their mining activities in the community. Limited access to advanced machinery like graders is used in artisanal mining, and protective clothing like helmets is not used. This concurs with Takyi et al. (2021), who postulate

that artisanal mining dates back to 2009 when illegal artisanal miners used simple hand-held tools like panning dishes, shovels, picks, and hoes.

Discussion

In this section, efforts are made to contribute towards the closure of the gap identified in the problem section by discussing the respondents' contribution towards the issues raised through the selected instruments in this paper. It can be acknowledged that artisanal mining using handmade tools in the marginalised community was targeted at extracting precious minerals like gold and diamond. This concurs with Owusu-Nimo et al. (2018), who indicated that this type of mining involves individuals or small enterprises who use rudimentary machines with low production and, in some cases, move from one site to the other depending on the mineral availability.

In other words, artisanal mining is more pronounced in poor, remote areas, major rivers and abandoned mine shafts through unregulated and illegal means (Ofosu et al., 2020). The unregulated nature of artisanal mining often leads to outdated and environmentally damaging mining methods (Essalhi et al., 2016). In addition, these mining activities are usually carried out under hazardous, labour-intensive and highly disorganised conditions and have few environmental concerns (Nopeia et al., 2022). It includes strip mining, open pit or open cast mining, quarrying, alluvial mining and mountaintop removal (Ngom et al., 2023). The mining activities are mainly poverty-driven, and most miners are rural people, lacking sufficient knowledge of mining techniques and safety measures (Odumo et al., 2018).

This type of mining, which is very harsh to the environment and 'unsustainable', is also well-known for the destruction of the natural landscape and mountains (where quarrying is done) and then replacing it with artificial hills and heaps of soil cleared from the residual material (Mtapuri, 2017). It also promotes soil erosion and siltation of water bodies where alluvial mining is carried out, as well as air, water, land, and noise pollution in surrounding communities (Bester & Uys, 2023). This is because artisanal mining activities release significant amounts of pollutants into the environment, some occurring naturally. In contrast, others result from human activities, potentially harming ecosystems and human health (Akabzaa & Darimani, 2001). From another angle, it can be noted that artisanal mining significantly shapes the socio-economic lives of people and communities involved directly or indirectly (Achina-Obeng & Aram, 2022).

Despite artisanal mining's positive contribution to poverty alleviation and rural development, it is often associated with environmental problems, including surface water pollution and land degradation (Mestanza-Ramón et al., 2022). Thus, artisanal mining activities carried out in the open air without appropriate safeguards and environmental standards released contaminated water into the surrounding environment, polluting nearby rivers, soils and vegetation.

It's imperative to acknowledge that this study had limitations in that it focused on a specific community and affected the generalisability of the findings to other communities with different environmental conditions or mining practices. In addition, the environmental impacts of artisanal are multifaceted, including water pollution, loss of biodiversity, etc. All these effects comprehensively can be technically challenging and require a broad interdisciplinary approach, which might not always be feasible.

Conclusions

The results revealed a diverse conceptualisation of artisanal mining. Thus, it was conceptualised as the legal or illegal extraction of minerals (i.e., diamond, gold, platinum, chrome, etc.) in the targeted areas. In addition, it was acknowledged that numerous mining tools were used in prospecting mineral deposits in the targeted marginalised community. In this context, this study concluded that the artisanal mining practices being used in the selected community have, to a more significant extent, a negative impact on environmental management. Based on the findings, it was recommended that all stakeholders establish synergies with the view of developing strategies that can be used to curb artisanal mining's effects on the environment.

Suggestions for Future Research

This paper was limited to studying four villages in this marginalised community in Zimbabwe. Therefore, we advocate for a study covering the other villages within this marginalised community to appreciate the gravity of the impact of artisanal mining activities on the environment and the community's livelihoods.

Acknowledgements

We want to acknowledge the respondents' contributions to this paper's success.

Conflict of Interest

None

Funding

The Authors received no funding for this paper.

References

Achina-Obeng, R., & Aram, S. A. (2022). Informal artisanal and small-scale gold mining (ASGM) in Ghana: Assessing environmental impacts, reasons for engagement, and mitigation strategies. Resources Policy, 78, 102907. https://doi.org/10.1016/j.resourpol.2022.102907.

Akabzaa, T., & Darimani, A. (2001). Impact of mining sector investment in Ghana: A study of the Tarkwa mining region. Third World Network, 11(2), 47-61.

Antmann, M. (2025). Capitalism and resource extraction: A Marxist value-theory approach to Latin American socio-environmental conflicts. The Extractive Industries and Society, 22, 101617. https://doi.org/10.1016/j.exis.2025.101617.

Bansah, K. J., Arthur-Holmes, F., & Assan, E. (2023). Climate induced transformation of agriculture to artisanal mining economy in dry regions. Journal of Rural Studies, 99, 11-19. https://doi.org/10.1016/j.jrurstud.2023.02.005.

Bester, V., & Uys, T. (2023). Artisanal mining and its drivers in the South African context. The Extractive Industries and Society, 15, 101278. https://doi.org/10.1016/j.exis.2023.101278.

Bendi Information Services. (2014). Mining in South Africa – Overview. Retrieved May 18, 2024, from http://www.mbendi.com/indy/ming/af/sa/p0005.htm

Bingham, A. J. (2023). From data management to actionable findings: a five-phase process of qualitative data analysis. International Journal of Qualitative Methods, 22, 16094069231183620. https://doi.org/10.1177/16094069231183620.

Chipangura, N. (2019). Towards the decriminalisation of artisanal gold mining in Eastern Zimbabwe. The Extractive Industries and Society, 6(1), 154-161. https://doi.org/10.1016/j.exis.2018.09.003.

Dube, N., Moyo, F., Sithole, M., Ncube, G., Nkala, P., Tshuma, N., Maphosa, M., & Mabhena, C. (2016). Institutional exclusion and the tragedy of the commons: Artisanal mining in Matabeleland South Province, Zimbabwe. The Extractive Industries and Society, 3(4), 1084-1094. https://doi.org/10.1016/j.exis.2016.08.006.

Essalhi, A., Essalhi, M., & Toummite, A. (2016). Environmental impact of mining exploitation: A case study of some mines of barite in the Eastern Anti-Atlas of Morocco. Journal of Environmental Protection, 7(11), 1473-1482. https://doi.org/10.4236/jep.2016.711124.

Gandiwa E., & Gandiwa, P. (2012). Biodiversity conservation versus artisanal gold mining: a case study of Chimanimani National Park, Zimbabwe. Journal of Sustainable Development in Africa, 14, 29-37.

Gómez-Barris, M. (2017). The extractive zone: Social ecologies and decolonial perspectives. Duke University Press.

Hatch, J. A. (2023). Doing qualitative research in education settings. State University of New York Press.

Hilson, G., Hilson, A., Maconachie, R., McQuilken, J., & Goumandakoye, H. (2017). Artisanal and small-scale mining (ASM) in sub-Saharan Africa: Re-conceptualizing formalization and 'illegal' activity. Geoforum, 83, 80–90. https://doi.org/10.1016/j.geoforum.2017.05.004.

Hinton, J. J., Veiga, M. M., & Veiga, A. T. C. (2003). Clean artisanal gold mining: a utopian approach? Journal of Cleaner Production, 11(2), 99-115. https://doi.org/10.1016/S0959-6526(02)00031-8.

Laing, T., & Pinto, A. N. (2023). Artisanal and small-scale mining and the low-carbon transition: Challenges and opportunities. Environmental Science & Policy, 149, 103563. https://doi.org/10.1016/j.envsci.2023.103563.

Mabhena, C. (2012). Mining with a 'Vuvuzela': Reconfiguring artisanal mining in Southern Zimbabwe and its implications to rural livelihoods. Journal of Contemporary African Studies, 30(2), 219–233. https://doi.org/10.1080/02589001.2012.664416.

Malinga, W. (2018). From an agro-based to a mineral resources dependent economy': A critical review of the contribution of mineral resources to the economic development of Zimbabwe. Forum for Development Studies, 45(1), 71–95. https://doi.org/10.1080/08039410.2017.1378711.

Malone, A., Smith, N. M., & Zeballos, E. Z. (2021). Coexistence and conflict between artisanal mining, fishing, and farming in a Peruvian boomtown. Geoforum, 120, 142-154. https://doi.org/10.1016/j.geoforum.2021.01.012.

Maponga, O., & Ngorima, C. F. (2003). Overcoming environmental problems in the gold panning sector through legislation and education: The Zimbabwean experience. Journal of Cleaner Production, 11(2), 147-157. https://doi.org/10.1016/S0959-6526(02)00034-3.

Matsa, M. (2011). Fast-tracked to prosperity or into poverty? An assessment of Zimbabwe's fast track resettlement programme on beneficiaries lives at Beacon Kop farm in Shurugwi District. Journal of Sustainable Development in Africa, 13(4), 197-212.

Mawowa, S. (2013). The political economy of artisanal and small-scale gold mining in central Zimbabwe. Journal of Southern African Studies, 39(4), 921–936. https://doi.org/10.1080/03057070.2013.858540.

Mayasari, A. & Usmeldi. (2023). Factors Affecting Junior High School Students' Scientific Literacy: An Empirical Study. Jurnal Penelitian Pendidikan IPA, 9(10), 8341–8350. https://doi.org/10.29303/jppipa.v9i10.5377.

Mayher, A. (2016). The Need for Model Mining Legislation: Case Studies on the Impact of Mining in Angola, Democratic Republic of Congo, Kenya and Zimbabwe. IANRA, International Alliance on Natural Resources in Africa.

Mberengwa, I. (2010). Human–environment relations in Zimbabwe: the case of land pre-colonial, colonial, and post– independence periods. Journal of Business and Administrative Studies, 2(1), 73-100. https://doi.org/10.4314/jbas.v2i1.63519.

Mestanza-Ramón, C., Mora-Silva, D., D'Orio, G., Tapia-Segarra, E., Gaibor, I. D., Esparza Parra, J. F., Chávez Velásquez, C. R., & Straface, S. (2022). Artisanal and Small-Scale Gold Mining (ASGM): Management and Socioenvironmental Impacts in the Northern Amazon of Ecuador. Sustainability, 14(11), 6854. https://doi.org/10.3390/su14116854.

Mkodzongi, G., & Spiegel, S. (2019). Artisanal gold mining and farming: Livelihood linkages and labour dynamics after land reforms in Zimbabwe. The Journal of Development Studies, 55(10), 2145–2161. https://doi.org/10.1080/00220388.2018.1516867.

Mkodzongi, G. (2020). The rise of 'Mashurugwi' machete gangs and violent conflicts in Zimbabwe's artisanal and small-scale gold mining sector. The Extractive Industries and Society, 7(4), 1480–1489. https://doi.org/10.1016/j.exis.2020.10.001

Mkodzongi, G. (2023). Artisanal and small-scale gold mining and rural transformation in post-land reform Zimbabwe: A broad overview. Journal of Rural Studies, 100, 103027. https://doi.org/10.1016/j.jrurstud.2023.103027.

Mtapuri, O. (2017). Re-thinking Mining in Embattled Africa: A Calculative Sociological Logic. Mining Africa. Law, Environment, Society and Politics in Historical and Multidisciplinary Perspectives, Chapter 7, 215-236.

Mugenyi, P. (2013). Understanding the Persistent Low Productivity of the Agricultural Sector in Sub Saharan Africa.

Mujere, N., & Isidro, M. (2016). Impacts of artisanal and small-scale gold mining on water quality in Mozambique and Zimbabwe. In Impact of Water Pollution on Human Health and

Environmental Sustainability, 101-119. IGI Global. https://doi.org/10.4018/978-1-4666-9559-7.ch005.

Murwendo, T., Rusinga, O., & Zinhiva, H. (2011). The role of small-scale gold mining in promoting sustainable livelihoods among local communities in Kadoma district of Zimbabwe. Journal of Sustainable Development in Africa, 13(7), 191-200.

Ncube-Phiri, S., Mucherera, B., & Ncube, A. (2015). Artisanal small-scale mining: Potential ecological disaster in Mzingwane District, Zimbabwe. Jàmbá: Journal of Disaster Risk Studies, 7(1), 1-11. https://doi.org/10.4102/jamba.v7i1.158.

Ngom, N. M., Baratoux, D., Bolay, M., Dessertine, A., Abass Saley, A., Baratoux, L., Mbaye, M., Faye, G., Yao, A. K., & Kouamé, K. J. (2023). Artisanal exploitation of mineral resources: remote sensing observations of environmental consequences, social and ethical aspects. Surveys in Geophysics, 44(1), 225-247. https://doi.org/10.1007/s10712-022-09740-1.

Nopeia, M., Mondlane, S., Takahashi, R., Jamal, D., Abdulgani, I., & Baptista, I. (2022). An integrated geoscience approach to effective formalization of artisanal mining in Mozambique: a case study of Namuno District, northeastern Mozambique. The Extractive Industries and Society, 11, 101098. https://doi.org/10.1016/j.exis.2022.101098.

Ngwenya, D. M., Matambo, S., & Phiri, K. (2024). The socio-economic impacts of artisanal mining on ordinary villagers in Insiza District, Zimbabwe. The Extractive Industries and Society, 17, 101422. https://doi.org/10.1016/j.exis.2024.101422.

Njini, N., & Mapira, J. (2018). Challenges of waste management at Jena mine, Kwekwe, Zimbabwe and their possible solutions. European Journal of Social Sciences Studies, 2(10), 75-90. https://doi.org/10.5281/zenodo.1165478.

Odumo, B. O., Nanos, N., Carbonell, G., Torrijos, M., Patel, J. P., & Rodríguez Martín, J. A. (2018). Artisanal gold-mining in a rural environment: Land degradation in Kenya. Land Degradation & Development, 29(10), 3285-3293. https://doi.org/10.1002/ldr.3078.

Ofosu, G., Dittmann, A., Sarpong, D., & Botchie, D. (2020). Socio-economic and environmental implications of Artisanal and Small-scale Mining (ASM) on agriculture and livelihoods. Environmental Science & Policy, 106, 210-220. https://doi.org/10.1016/j.envsci.2020.02.005.

Owusu-Nimo, F., Mantey, J., Nyarko, K. B., Appiah-Effah, E., & Aubynn, A. (2018). Spatial distribution patterns of illegal artisanal small-scale gold mining (Galamsey) operations in Ghana: A focus on the Western Region. Heliyon, 4(2), e00534. https://doi.org/10.1016/j.heliyon.2018.e00534.

Rushemuka, M. N., & Côte, M. (2024). Artisanal and small-scale mining through a "labour regime" lens: Consolidating a research agenda on labour exploitation. Journal of Rural Studies, 105, 103189. https://doi.org/10.1016/j.jrurstud.2023.103189.

Singo, J., Isunju, J. B., Moyo, D., Bose-O'Reilly, S., Steckling-Muschack, N., & Mamuse, A. (2022). Accidents, injuries, and safety among artisanal and small-scale gold miners in Zimbabwe. International journal of environmental research and public health, 19(14), 8663. https://doi.org/10.3390/ijerph19148663.

Solanki, M. S., & Thomas, J. (2023). A Mixed Method Approach of Quantitative and Qualitative Design in Analyzing the Trends of the Global Tourism Industry. Pacific Business Review International, 16(6).

Sutopo, A. H. (2025). Mixed Method Analysis Survey on Dreams of Digital Urbanism. Topazart.

Takyi, R., Hassan, R., El Mahrad, B., & Adade, R. (2021). Socio-ecological analysis of artisanal gold mining in west Africa: a case study of Ghana. Journal of sustainable mining, 20(3), 206-219. https://doi.org/10.46873/2300-3960.1322.

Zvarivadza, T. (2018). Artisanal and Small-Scale Mining as a challenge and possible contributor to Sustainable Development. Resources Policy, 56, 49-58. https://doi.org/10.1016/j.resourpol.2018.01.009.