



Artisanal and Small-Scale Mining in Zamfara State: Causes and Economic Implications

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Abstract

This research work aims to examine the impact of artisanal and small-scale mining on environmental degradation in Zamfara State, Nigeria. A sample size of sixteen (16) participants comprising miners, community leaders, residents of mining communities and environmental activists was drawn using a snowball sampling technique. The study adopted a qualitative method using a semi-structured interview to collect pertinent data concerning participants' views, opinions and experiences about the factors responsible for ASM and its economic impacts on the mining communities of Jabaka, Mutunji and Kanoma in Maru Local government of Zamfara State with compliance to research ethics and conducts. The study adopted the Braun and Clarkes six-phase thematic analysis data analysis. However, the analysis revealed that; economic, cultural and social influence and systemic and structural issues were responsible for artisanal mining practices in the communities under study. Furthermore, the study found that ASM has a dual economic implication. While it provides employment and means of livelihood for the teeming youth and the unemployed within and around the host communities, its operations have also led to a decline in agricultural production, revenue loss to the government, increased disputes between farmers and miners, and infrastructural damages. Consequently, the study suggests that government and mining stakeholder should develop sustainable mining practices like land rehabilitation or afforestation to redeem mining effects. Again, stricter enforcement of environmental regulations and tougher penalties for illegal mining activities are important for sustainable mining practices.

Key Words: Artisanal and Small-Scale Mining (ASM), Economic Implication, Maru Local Government, Zamfara State, Nigeria,

I. Introduction

The Nigerian mining sector is characterized by informal mining, that is; conducted without regard to legal requirements (Auwal, 2012). This informality is popularly referred to as artisanal and small-scale mining, defined as a mining process that employs a few people or groups and uses primitive or simple equipment such as hammers, pickaxes, shovels, and pans and operates principally outside the legal framework (Owusu-Nimo et al., 2018; Bansal et al., 2018). In recent years, there has been a massive surge in ASM activities due to poverty, insurgency, unemployment, and increasing market demand for mineral resources (Chukwudi, 2021). Zamfara State, located in Northwestern Nigeria, is known to have a large deposit of mineral resources, including gold (Brown & Woolf, 2022). However, with a poverty rate of 91.9% and without established industries to effectively exploit its gold and other mineral resources, artisanal mining has become widespread in Zamfara State, with thousands of individuals engaging in small-scale mining operations to extract gold and other minerals (Olasunkanmi, 2017; Mulaba-Bafubandi et al., 2023). Although Ofose et al. (2020) argued that, if properly managed, ASM practices may boost income and the living standards of the locals, cautioned on the effect on the environment. Similarly, Achina-Obeng & Aram (2022); Gyamfi et al. (2021) maintained that ASM practices are often operated without proper environmental safeguards will lead to environmental degradation and severe threats to the health of miners and communities in the area.

Adamu et al. (2022) exert that the failure to adhere to global standards and regulatory frameworks prescribed by the Nigeria Extractive Industries Transparency Initiative (NEITI) constitutes a major problem in the operation of artisanal mining. More worrisome is the ability to effectively enforce mining regulations and ensure compliance with international best practices



standards in remote and resource-rich like Zamfara State (Azubuike et al., 2023). Consequently, illegal mining has continued unabated in areas of local governments like Anka, Bukkuyum, Birni Magaji, Maru, Kaura-Namoda, and Tsafe, of the state leading to environmental degradation, economic losses and health hazards (Auwal, 2012).

Against this backdrop, this study aims to investigate the causes and the economic implications of artisanal and small-scale mining activities in mining communities like Jabaka, Mutunji and Kanoma in Maru Local government of Zamfara State.

II. Literature Review

2.1 The Concept of Artisanal and Small-Scale Mining

Mining is recognized as a crucial industry for providing materials and energy, but it faces significant environmental and social challenges (Carvalho, 2017). Artisanal and small-scale mining has caused significant damage, especially to surface water resources (Kazapoe et al., 2023). Small-scale mining involves simple technical requirements, usually operated by individuals or small companies, which have a small output of mining products and relatively often change the location of their work related to the discovered deposits (Owusu-Nimo et al., 2018). Such mining is usually uncontrolled, poorly managed and most often considered unlawful (Moretti & Garrett, 2018). It involves basic technologies, is hardly professionally planned, and is sometimes seasonal and temporary (Dethier et al., 2019). ASM is mining operations where few people or groups engage and/or no mechanical tools, and most operations are classified as illegal (Starke, 2016). Many workers in this sector come from the lower classes, extracting marginal deposits with high risk and negatively impacting the environment (Agustina et al., 2021). Some features of artisanal mining include the use of chisels, hammers, pickaxes, shovels, and pans (Schwartz et al., 2021). In other words, artisanal mining is an informal mining activity (Bansal et al., 2023).



Figure 1.1: Photos of Artisanal miners at mining site.



Photo Credit: Ololade (2023)

In conclusion, Artisanal and small-scale mining (ASM) is characterized by its informal nature, minimal machinery use, and reliance on manual labour. While ASM provides livelihoods for impoverished communities, it is often driven by poverty and unemployment. However, ASM also leads to severe social and environmental consequences, such as water resource damage and hazardous working conditions.

2.2. Factors Responsible for Artisanal Mining Activities and Its Economic Implication on the Host Communities

Several factors have led to the rise of informal mining activities. Arthur-Holmes & Abrefa-Busia, (2022); Bansah, (2023) saw graduate unemployment, the lack of alternative livelihoods, corruption in law enforcement, and political leniency as the main factors responsible for ASM activities. Most notably, poverty is the primary motivator for people engaging in informal mining (Bansah et al., 2018). According to World Bank (2019) and Pokorny et al. (2019), rural dweller and youths in mining communities adopts artisanal and small-scale mining (ASM) as a poverty alleviation strategy for many impoverished rural communities (Pokorny et al., 2019; World Bank, 2019).

In regions like Nigeria, Zimbabwe, Ghana, and Mozambique, artisanal mining is influenced by poverty and high unemployment (Omotehinse and Ogunlade, 2022). Illegal gold mining is common in impoverished, remote areas, along major rivers, and abandoned mine shafts (Achina-Obeng and Aram,

2022). According to Fisher et al. (2009); World Bank, (2020), ASM provides livelihoods for more than 130 million people globally and is a major source of employment for many unemployed youths. In addition, Bansah et al., (2023) noted that vulnerable farmers engaged in ASM as a source of income to cater to their household needs. Empirical research suggests that artisanal and small-scale mining provides the most important and sometimes only income in rural areas for households, health care, and shelter (Bansah et al., 2018; Verbrugge, 2016).

Despite these benefits, informal mining is highly destructive and needs immediate attention. It raises major repercussions for ecosystem continuity and ecological integrity, thus requiring action from mining and environmental actors, including policymakers, researchers, and governments (Muhirwa, et al., 2023).

Ahmed & Oruonye (2016) in a study that examined the socio-economic impact of artisanal and small-scale miners in the Mambilla Plateau of Taraba State, Nigeria using a mixed method involving 175 ASM operators found that ASM activities generate income and are largely poverty-driven. However, the noncompliance of ASM operations to mining rules, regulations and environmental laws accounted for the socioeconomic impacts like conflict between miners and other land users, child abuse and women labour, traffic congestion, odour, noise and dust.

Suhartini & Abubakar, (2017) in a study on the impact of ASM activities on Sekotong of West Lombok in Indonesia noted that one of the major economic implications of ASM activities with



regards to gold mining in the area is the use of mercury, an ingredient that separate sand, water and mud. This amalgamated material contaminates agricultural lands and affects the growth of plants.

small-scale mining and contribute to sustainable development.

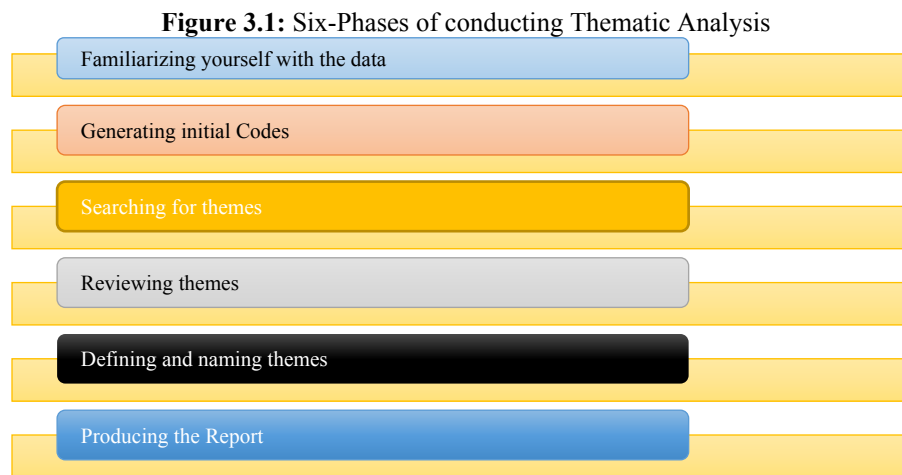
Nda et al., (2018) in their study on the socio-economic impact of artisanal and small-scale mining in Niger State, Nigeria found that ASM is not just for the unemployed, as the employed also involves, in scouting for these minerals since there are ready buyers to mine and sell for self-sustenance. However, their activities remain a huge loss to the government as the operators rarely pay taxes or royalties due to the unorganized nature of their activities.

Isung et al., (2021) investigated the socio-economic impact of artisanal and small-scale mining on Nangodi, Duusi and Gbane, mining host communities in Northern Ghana using a mixed method. The study found that ASM has provided direct or indirect jobs for over 80% of the host community members. However, mining activities in the area have displaced over 500 farmers due to the competing nature of mining and agriculture regarding scarce land and labour leading to land degradation, seizure of farmlands for mining companies, water pollution, siltation of rivers and the destruction of economic trees.

III. Research Methodology

This study is underpinned by the interpretivism philosophical assumption. It adopts the inductive research approach to explore the factors responsible for artisanal and small-scale mining and its economic implication on the host communities of Jabaka, Mutunji and Kanoma in the Maru Local government of Zamfara State. However, the data for the study was collected through semi-structured interviews with 16 stakeholders comprising community leaders, affected residents, environmental experts and local officials selected using the snowball sampling technique.

Data analysis was conducted following Braun and Clarke's (2006) six-step thematic analysis. This analytical technique will help the researcher to identify patterns, themes and relationships from participants' responses. Furthermore, this method ensures a thorough examination of qualitative data, capturing the diverse experiences and perceptions of the stakeholders while maintaining ethical rigours. This study aims to generate actionable insights and context-specific recommendations that address the multidimensional implications of artisanal and



Source: Braun & Clarke (2006)

IV.

V. Data Presentation and Analysis of Findings

This study presents an in-depth analysis of the factors responsible for artisanal and small-scale mining as well as its economic implication using a qualitative research technique and a semi-structured interview questions carefully crafted to answer the research questions. The study involves Sixteen (16) participants comprising three (3) community leaders, six (6) artisanal miners, six (6) and one (1) environmental experts/activist from the three communities under study.

Consequently, the data collected was analysed using six-phase thematic analysis approach suggested by Braun and Clarke (2006).

4.1. Data Presentation and Analysis

Main Theme	Sub-Themes	Supporting Comment	Participant(s)
Factors Responsible for ASM Practices			
Economic Drivers of Artisanal Mining	Lack of Employment Opportunities	"The main factor is the lack of other job opportunities."	P2
		"There are no factories or businesses around that we can work for."	P3
	Poverty and Economic Survival	"The major reason for artisanal mining in this area is poverty."	P5
		"Mining is dangerous, but it's the only way for us to survive."	P 9
	Demand for	"There's a demand for the minerals we	P 6



	Minerals	extract, so as long as there are buyers, we'll keep mining."	
		"The demand for minerals in the global market also plays a role, as it incentivizes continued mining activity."	P15
Cultural and Social Influences	Tradition and Cultural Practices	"We grew up seeing our fathers and grandfathers mining, so it's something we've learned to do."	P3
		"It's not just a job, but a way of life for many families here."	P15
	Accessibility of Mineral Resources	"The minerals are accessible here, and we don't need to travel far to mine them."	P2
		"We have easy access to the mineral-rich land. It's right here in our backyard."	P8
Systemic and Structural Issues	Systemic Failures/Government Inaction	"The government hasn't provided any real support or alternatives for us."	P9
		"The lack of regulation, enforcement, and support for alternative livelihoods creates an environment where artisanal mining thrives."	P3
	Informal Nature of Artisanal Mining	"The informal nature of artisanal mining means that it often operates outside of legal and regulatory frameworks."	P6
Economic Implication			
Economic Impact	Increased income opportunities	"Mining has boosted small businesses, especially for food vendors and transporters."	P1, P4, P6
	Agricultural decline	"Farming has suffered due to reduced land availability and focus on mining." "There are frequent conflicts over land usage between miners and farmers."	P5, P16, P13
	Damage to roads and facilities	"The mining trucks have damaged roads, making transportation difficult."	P4, P9, P10
	Loss of Revenue	"There's an increase in trade, but I think tax policies on mining are poorly enforced." "Artisanal mining is largely unregulated and therefore not easy to level tax on miners and operators"	P2, P11, P15

Source: Author's compilation from the Transcript interview conducted with study participants

4.1.1 Factors Responsible for Artisanal and Small-Scale Mining

Artisanal mining in the community is driven by a complex interplay of economic, cultural, and systemic factors, each contributing to the persistence of this activity. This report delves into the identified themes and integrates supporting comments from the participants to provide a comprehensive analysis.

4.1.1.1 Economic Drivers of Artisanal Mining

The economic factors that force the members of the community into practising artisanal mining are evident in the majority of the responses collected from the participants. The lack of employment opportunities is a critical factor, as highlighted by **Participant 2**: *"The main factor is the lack of other job opportunities."* This was corroborated by **Participant 3** who observed that; *"There are no factories or businesses around that we can work for."*

This is a true indicator of the economic-stringent circumstances that push people to engage in



artisanal mining for survival. Artisanal mining becomes one of the only available ways to make an income in areas where formal employment may not be available. Since the mining industry may be mainly informal, it offers the opportunity for survival.

Participant 5 further emphasises the role of poverty as a driving force: *"The major reason for artisanal mining in this area is poverty."* **Participant 9** further stressed that; *"Mining is dangerous, but it's the only way for us to survive."*

This comment emphasised the hard economic times which leaves residents with no other option than mining. The lack of government support prolongs this scenario which results in people continuing mining despite its inherent danger and low returns.

This activity is equally supported by the demand for minerals extracted by artisanal miners. Most of the mineral products of artisanal mining end up in the local markets in developing countries. According to **Participant 6**: *"There's a demand for the minerals we extract, so as long as there are buyers, we'll keep mining."* Similarly, **Participant 15** mentioned that; *"The demand for minerals in the global market also plays a role, as it incentivizes continued mining activity."*

This clearly shows that external economic factors facilitate local mining. The world market is always a ready market for the extracted mineral resources thereby consolidating the practice among the locals.

4.1.1.2 Cultural and Social Influences

Cultural norms and social structure are reasons that continue to fuel artisanal mining. **Participant 3** response sheds light on the cultural transmission of mining practices: *"We grew up seeing our fathers and grandfathers mining, so it's something we've learned to do."* Corroborating this point is **Participant 15** who observed that; *"ASM is not just a job, but a way of life for many families here."*

This comment illustrates that ASM practice has a long tradition within the culture of the community; therefore, the knowledge and skills are passed from one generation to another. This cultural dependence makes it hard for a country to transform from mining even despite the adverse effects associated with the sector.

Participant 2 further elaborates on the accessibility of mineral resources as a social influence: *"The minerals are accessible here, and we don't need to travel far to mine them."* In a similar vein,

participant 8 said: *"We have easy access to the mineral-rich land. It's right here in our backyard"*

This statement looks at the geographical and practical aspects of mining as the reasons behind it. Minerals are easily available and are within close reach. More so, it requires little capital and a viable source of income for the practitioners.

4.1.1.3 Systemic and Structural Issues

Institutional factors as well as organisational factors are also relevant in explaining why artisanal mining endures. These were supplemented by Participants 3 and 15 who also identified the absence of government control.

Participant 15, an environmental expert, remarked: *"The government hasn't provided any real support or alternatives for us."* Again, **participant 3** said; *"The lack of regulation, enforcement, and support for alternative livelihoods creates an environment where artisanal mining thrives."* These comments give an insight into how the absence of the government and their lack of readiness to offer other job opportunities keep the artisanal mining industry going. The lack of regulation allows mining activities to continue unchecked, leading to various socio-economic and environmental issues.

Additionally, the informal nature of artisanal mining plays a significant role in its persistence.

Participant 6 said: *"The informal nature of artisanal mining means that it often operates outside of legal and regulatory frameworks."* By its nature, the informal sector, where artisanal mining belongs is highly unregulated and can therefore support risky practice, which is currently prevalent in the community.

Collectively, participants revealed that; artisanal mining in these communities is motivated by economic, traditional, systemic, and demand factors. Factors like unemployment, and poverty push people to go for mining since it is a source of economic income. The other practices that support the practice of mining include cultural and social support, transmission of mining knowledge through generations and the accessibility of mineral resources, further, sustaining the practice.

Peculiarities of a systemic and structural nature that include but are not limited to the absence of regulation, government failure and policy gaps, make the activity go unnoticed perpetually. These are exacerbated by the acute social, environmental, and health effects of mining which are quite provocative to the community.



Finally, analysing the causes and nature of artisanal mining, revealed a multifaceted problem with multiple causes, which may entwine and overlap one another, therefore requiring a detailed approach to the subject matter in order to address all the potential solutions to the problem.

4.1.2. Economic Implications of Artisanal and Small-Scale Mining

4.1.2.1. Increased Income Opportunities

The economic benefits of artisanal and small-scale mining are evident in participants' responses, with many noting how it has stimulated local business activities. Participant 1 emphasized, *"Mining has boosted small businesses, especially for food vendors and transporters."* Participant 4 and Participant 6 corroborated this observation by highlighting the rise in demand for services linked to mining operations.

This reflects the significant role mining plays in creating income-generating opportunities for community members, particularly for those engaged in auxiliary businesses that support mining activities.

4.1.2.2. Agricultural Decline

A notable socio-economic implication of artisanal mining is the decline in agricultural activities within the community. Participant 5 remarked, *"Farming has suffered due to reduced land availability and focus on mining,"* further reinforced by Participant 16 and Participant 13, who echoed similar concerns about the reduced commitment to farming. This shift in focus higher how mining, while providing short-term economic benefits, diverts attention and resources away from sustainable livelihoods such as agriculture, threatening long-term food security in the region.

4.1.2.3. Damage to Roads and Facilities

Artisanal mining has also had a detrimental effect on infrastructure, particularly roads. Participant 4 pointed out, *"The mining trucks have damaged roads, making transportation difficult,"* a sentiment shared by Participant 9 and Participant 10, who highlighted how this affects movement within the community. This indicates that while mining activities may contribute to local economic growth, the degradation of critical infrastructure hampers broader development and access to essential services.

4.1.2.4. Loss of Revenue

Artisanal mining in the rural areas is often done informally and unregulated. This leads to a loss in

revenue to the government as operators or small-scale miners rarely pay taxes or royalties to the government on mined resources. Participant 2 noted that; *"There's an increase in trade, but I think tax policies on mining are poorly enforced."* A point echoed by Participant 15, who mentioned that: *"Artisanal mining is largely unregulated and therefore not easy to level tax on miners and operators"* Generally, this represents a revenue loss to the government.

4.2. Discussion of Findings

The study found that artisanal and small-scale mining (ASM) in the community is primarily driven by economic factors such as unemployment, poverty, and the demand for minerals, aligning with studies by Arthur-Holmes & Abrefa-Busia (2022); Bansah (2023), who also found ASM to be a critical income source and a poverty alleviation strategy for impoverished communities. However, a contrasting view by Verbrugge (2016), argues that ASM's low returns and high risks limit its potential for long-term economic improvement. Cultural norms and social structures were found to play a significant role, as ASM is embedded in the community's cultural identity and often passed down through generations, as noted by Hilson (2016). However, researchers like Bryceson and Jönsson (2010) argue that cultural factors alone cannot explain ASM's persistence, which is also sustained by economic and structural dependencies.

Furthermore, systemic and structural issues, including weak government regulation and the lack of alternative livelihoods, further enable ASM, as supported by Azadi et al. (2020) and Odell et al. (2018). Global and local demand for minerals perpetuates ASM activities, making it economically viable despite its informal and often unregulated nature. While the World Bank (2020) and Bansah et al. (2018) emphasize ASM's role in supporting local economies, other studies, such as Muhirwa et al. (2023), highlight the environmental and social costs of unchecked mining practices. These findings underscore the multifaceted nature of ASM as both an economic necessity and a socio-environmental challenge, necessitating a holistic approach that integrates poverty alleviation, governance reforms, cultural sensitivity, and sustainable regulation of global mineral demand.

Artisanal and small-scale mining (ASM) has positive and negative economic implications for host communities. On the positive side, ASM significantly enhances local livelihoods by creating income opportunities and stimulating auxiliary



businesses such as food vending, transportation, and retail trade. Empirical studies, including Fisher et al. (2009) and the World Bank (2020), corroborate that ASM is a critical livelihood source for millions globally, especially in rural areas where it often provides the primary income for households. However, these economic gains come with substantial trade-offs. ASM activities frequently lead to the decline of agriculture, as arable land is converted to mining sites and labour shifts away from farming. The contamination of agricultural land through mining practices further exacerbates this decline, as highlighted by Suhartini and Abubakar (2017), threatening long-term food security and sustainable livelihoods. Additionally, the competition between miners and farmers for scarce land resources often leads to disputes, as noted by Ahmed and Oruonye (2016), emphasizing the need for regulatory frameworks to manage land use effectively.

The informal nature of ASM also results in challenges like infrastructure degradation, land-use conflicts, and significant revenue loss for governments. Mining trucks and equipment cause damage to roads and facilities, limiting access to essential services and broader economic activities. Furthermore, the lack of tax enforcement on ASM operations leads to substantial revenue loss for governments, as mining activities remain largely unregulated. While ASM undeniably provides short-term economic benefits, these findings highlight the need for balanced policy interventions to address its negative impacts, ensuring sustainable development and equitable resource management in host communities.

VI. Conclusion

Mining in Nigeria is grossly conducted illegally and in small scales across mining communities. Zamfara State, one of the states blessed with enormous mineral resources is not exempted from this trend. This study categorically examined the causes of artisanal and small-scale mining in three mining communities of Jabaka, Mutunji and Kanoma in Maru Local government of Zamfara State and the consequential economic impact. As noted by previous researches, it found that economic drivers like unemployment and poverty were major causes of ASM. However, the study discovered that cultural, social influence and systemic and structural were other factors responsible for ASM in the communities under study. Furthermore, these activities have had a great economic impact on farmers in the community as a result of the land use struggles leading to decline in food production. Other issues like loss of revenues

to the government in form of tax and royalty dues to the unorganized nature of ASM in the environment were major economic implication. Consequently, to ensure sustainable mining practices, government and stakeholders by encouraging mining practices like land rehabilitation and afforestation, create a body of registered ASM practitioners to effectively managed their activities and strictly enforce environmental regulations and tougher penalties for illegal mining.

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