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THE IMPACT OF ARTISANAL MINING ON HUMAN SECURITY IN AWE, LOCAL GOVERNMENT COUNCIL OF NASARAWA STATE FROM 2015 TO 2023

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Abstract

Artisanal mining expands economic activity in developing countries. Despite the geographical diversity, the pattern in artisanal mining is often similar; small scale, labor-intensive, and application of low level of technology. Although it significantly contributes to livelihoods of communities, it also constitute a substantial threats to human security. Numerous literature on artisanal mining exist however, inadequate attention was given to the complex relationships between artisanal mining and human security in the Awe Local Government Area of Nasarawa State. This research gap was addressed in this study by investigating the impact of artisanal mining on human security in the area. Quantitative and Qualitative data collection method were adopted. 383 respondents were drawn from the projected population of 174,600 through stratified random and snowball sampling techniques. The data collected consists of both qualitative and quantitative data. Guided by the theory of the Human Security, the response were analysed using percentages, Standard Deviation and Regression Analysis. The study find out that artisanal mining resulted in grave consequences and threats to it sustainability as well as livelihood, food, health and environmental security. Thus, the study recommends effective and efficient collaboration between the enforcing agencies, traditional leaders and community members to design, implement and improve regulations and monitoring of mining activities.

Key words: Artisanal Mining, Mining, Human Security, Local Government

1. Introduction

The spread, drift and sticking to artisanal mining as a major source of livelihood is not only peculiar to Awe Local Government Area of Nasarawa State, Nigeria but it is a prominent feature of the developing world. Mining in developing countries generates much-needed employment and infuses revenue not only in the local community but also into the national economy. Along with other flowing benefits; access to education, healthcare and better living condition. It also facilitates the emergence of other business and springing up of related industries, provides communities with infrastructure among other benefits. Mining, however, tends to have impact on the social structure and traditions of communities. Another

downside of mining as stressed by Schwartz, Lee, and Darrah (2021) is the inherent feature of environmental degradation, risky work practices, pervasive poverty, child labour, and other forms of social vices, these situations undermine both environmental, social, health and economic security. Despite the gloomy reality, Akper & Adediran (2023) posits that artisanal mining remains an important source of livelihood to many people. Tunji (2025) described artisanal and small-scale mining (ASM) sector in Nigeria as “a paradox of potential and peril”. A sword with double sharp edges generating a lot of prospects side by side dangerous threat to human security. He further observed that ASM is a main source of income for a number of communities in Nasarawa and Plateau

states, where it serves as an alternate source of income to farming.

Artisanal mining in Nigeria is continuously experiencing substantial increase over the past decade, with a notable proliferation of mining sites. As of 2019, a total of 1,759 artisanal mining sites were identified across the country, indicating a significant presence of artisanal miners, estimated to be in the hundreds of thousands (Atoyebi, 2024). Artisanal and Small-scale mining accounts for over 90% of solid minerals in Nigeria, the operation produced minerals such as gold, barite, limestone, gemstones, gypsum e.t.c in more than 107 identified different sites (MMSD, 2011). Corroborating, Tunji (2025) submits that Artisanal and small-scale mining generally, accounts for the 70% of Nigeria's mining activities, generating 500,000 direct employment and supports millions indirectly. He further asserts that the sector currently consists of 393 registered ASM cooperatives, representing 4,663 miners. This figure is aside the unregistered and unregulated activities that generally characterise the operation of artisans.

In Awe Local Government Area, people engage in both mining (especially artisanal mining) and agriculture as alternate livelihood strategies (Genyi, Gbaden, Binat-Sarwar, & Murray, 2022). Which suggests competition for land resources between food production and mining activities. Mining generally appears to be defined by environmental degradation among other threats to human security such food security, health and safety, and the livelihood itself. Against this backdrop, this study examines the impact of artisanal mining on human security in Awe Local Government Area of Nasarawa State.

2. Literature Review

Artisanal mining: Artisanal mining and small-scale mining (ASM) is often used interchangeably. The Mineral Council of South Africa (2001) distinguished artisanal from small-scale mining based on the level of technology involve and the legality of the operation. Thus, Hentschel *et al*, (2003), described artisanal mining as the mining of minerals by individuals or groups with little or no mechanization and often informally (Illegal) for market consumption. Similarly, the Nigerian Minerals and Mining Act (2007) conceptualised artisanal mining as “mining

operations limited to the utilisation of non-mechanised methods of reconnaissance, exploration, extraction and processing of mineral resources within a small-scale mining lease area” the act situated artisanal mining as one form of small-scale mining operation. Expatriating, the Federal Government of Nigeria in a publication titled ASM Handbook for Nigeria (2011) construe artisanal mining as a ‘livelihood strategy’ primarily in the rural areas. The fact that artisanal miners mostly operate within the informal or semi-formal frameworks. While most artisanal miners used elementary tools, others employ some advanced technologies, such as mechanized crushers and mills.

Artisanal mining in Awe Local Government Council (LGC) of Nasarawa State, Nigeria, constitutes a pivotal socioeconomic phenomenon, reflecting a complex interplay between economic opportunity and human security challenges. Renowned for its deposits of salt, barite, and, more recently, lithium, Awe LGC has witnessed a marked expansion of informal mining activities, propelled by national economic diversification policies and localized subsistence imperatives. This surge, while bolstering livelihoods amidst a fluctuating agrarian economy, has precipitated significant human security concerns, spanning livelihoods, health, and environmental sustainability.

The health dimensions of these threats to human security in Awe LGC encompasses occupational and community health risks, the role of environmental pollutants such as heavy metals, and the consequences of inadequate governance structures. Despite the richness of broader Nigerian mining research, Awe-specific data remain scarce, necessitating extrapolation from proximate contexts and underscoring a significant gap in the academic literature. By integrating these elements, this review elucidates the health-related human security challenges in Awe LGC, laying the groundwork for further localized inquiry and policy development.

Artisanal and small-scale mining (ASM) poses multifaceted challenges to human security, surrounding livelihoods, public health, and environmental sustainability. Although ASM contributes to economic opportunities and enhanced

living standards in certain communities (Tseer et al., 2024; Marume, 2023), it simultaneously engenders considerable environmental degradation and health hazards, notably through the application of mercury in gold extraction processes (Meutia et al., 2023), devastating sounds from explosives, among others.

The accelerated expansion of ASM further exerts pressure on food security, as it may compete with agricultural land use and food productivity (Marume, 2023). Moreover, the financial inflows derived from informal mining activities have been associated with adverse social consequences, including substance misuse, violence, and increased criminality (Tseer et al., 2024). Collectively, these studies underscore the imperative for balanced policy frameworks and enhanced governance mechanisms to ameliorate the deleterious effects of ASM while safeguarding its economic contributions to vulnerable populations.

Despite the documented human security challenges linked to mining in Awe Local Government Area (LGA), the existing literature lacks specific analyses of artisanal mining operations. Artisanal mining has emerged as a significant socioeconomic activity In Awe LGC, driven by two major drivers; the region's rich deposits of minerals such as salt, barite, etc and current challenge of unemployment bedeviling Nigeria. While contributing to local livelihoods, these informal mining practices have precipitated notable human security challenges, particularly in the domain of public health, food security and environmental challenges.

Occupational Health Risks

Artisanal mining in Awe LGC, characterized by rudimentary tools and minimal safety measures, exposed miners to significant occupational health hazards. Regional studies indicate that miners in similar contexts faced risks such as respiratory ailments from dust inhalation, physical injuries from unregulated digging, and chronic fatigue due to prolonged labor (Kyowe et al., 2024). In Awe, the extraction of barite, salt and led likely generated fine particulate matter, increasing the incidence of silicosis and other pulmonary conditions among workers, a trend consistent with findings in northern Nigeria (Ahmad et al., 2023). The absence of protective

equipment, a common feature of informal mining set-ups, exacerbated these risks, with child laborers prevalent in artisanal mining sector facing heightened vulnerability to long-term health deterioration (UNICEF, 2018).

Environmental Contaminants and Community Health

The health of Awe's broader population was jeopardized by environmental contamination linked to artisanal mining practices. Heavy metal pollution, notably from lead and mercury, constitutes a primary concern, as these substances are associated with barite processing and potential gold extraction in Nasarawa (Bako et al., 2023). Soil and water analyses from comparable mining zones suggest that Awe's proximity to the Rafin Jaki River, a vital community resource, increased the risk of heavy metal leaching into drinking and fishing waters (Adewumi & Salako, 2024). This contamination likely contributed to neurological disorders, kidney damage, and developmental impairments, particularly among children, mirroring documented cases in Zamfara State (MSF, 2019).

Radiological exposure represents another health threat in Awe LGC, given Nasarawa's mineral-rich geology. Research on tin mining in Nigeria highlights elevated radiation levels from naturally occurring radioactive materials (NORMs), a risk potentially applicable to Awe's barite sites (Ibeanu & Ali, 2024). While Bako et al. (2023) found minimal immediate radon risks in Awe's groundwater, cumulative exposure over time could elevate cancer risks, necessitating further investigation. These environmental health hazards, compounded by poor waste management in artisanal operations, likely intensified community morbidity rates.

Child Health and Vulnerable Populations

Child health emerged as a critical dimension of human security in Awe LGC, driven by the intersection of child labor and environmental exposure. Artisanal mining sites across Nigeria, including Nasarawa, frequently employ children in hazardous tasks, exposing them to dust, heavy metals, and physical strain (ILO, 2020). In Awe, subjective evidence from regional reports suggests that children participated in

salt, lead and barite extraction, facing heightened risks of respiratory infections, malnutrition, and stunted growth (Nasarawa State Government, 2021). Mercury exposure, if gold processing occurred, could have further impaired neurological development, a pattern observed in Osun State (Ojo & Adebayo, 2024). The lack of health monitoring or child protection policies in Awe likely entrenched these vulnerabilities, compromising future generational health security.

Research Gaps and Methodological Insights

The literature on Awe LGC's artisanal mining and human security remains fragmented, with few studies explicitly addressing this locale. Broader Nasarawa and Nigerian research provides proxy insights, employing methodologies such as atomic absorption spectroscopy (AAS) for heavy metal detection (Kyowe et al., 2024), radiological assessments (Ibeanu & Ali, 2024), and community health surveys (Adewumi & Salako, 2024). However, these approaches lack Awe-specific application, limiting temporal and spatial precision. Future research should prioritize localized sampling, health screenings, and child-focused studies to address these gaps.

Artisanal mining in Awe LGC of Nasarawa State profoundly impacts human security through elements like health impacts, food, environmental and fundamentally the livelihood security of the miners and the wider community. While offering economic sustenance, these mining activities exacted a significant health toll and environmental threats underscoring the need for targeted interventions. The paucity of Awe-specific scholarship highlights an urgent research gap, necessitating studies that bridge regional findings with local realities to inform health-focused policy reforms.

3. Methodology

This study employed survey design of data collection adopting mix-method of quantitative and qualitative

survey to obtain and analyse data. The survey is used in ascertaining the impact of artisanal mining on health, food, environment and livelihood security of the mining communities in Awe Local Government Area of Nasarawa State, Nigeria.

The population of Awe Local Government as projected by Citypopulation.de 2022 stood at 174,600. To get the population of the mining communities selected for the study (Kanje-Abuni, Azara, Wuse, Akiri, Jangwa, Arugwagu and Jangargari), the percentage of registered voters by Registration Area guided determination of study population from the 6 electoral wards in this study. Thus, the population of the mining communities extracted thereafter is 90,792.

The study also drew key informants from the Local Government officials, Nasarawa State Ministry of Environment and Natural Resources and officials from State Mines Office, Federal Ministry of Solid Minerals and steel Development.

Sample and Sampling Techniques/procedure

The sample for this study is 382. This was determined using the Krejcie and Morgan sample size table determination technique. Since the estimated population of the selected mining communities is 90,792 which is within 75,000 to 99,999, then the sample size is 382. Since the sample size must be a whole number, it would typically be rounded up to the nearest whole number, so the sample size is 383. The sample size was divided among the 7 mining communities selected in Awe LGA and are listed below as indicated in the sample frame:

Purposive and convenient sampling techniques were employed in selecting the communities that engage in artisanal mining. This is because the study targeted a specific crowd picking only from the miners or those that have something to do with mining activities as well as grabbing participants available.

Table 1: Sample Frame

ELECTORAL WARDS	REGISTERED VOTERS	PERCENTAGE	DISTRIBUTION OF SAMPLE BASED ON PERCENTAGE
MADAKI	5075	14%	53

KANJE/ABUNI	7773	21%	81
RIBI	7037	19%	73
AZARA	7805	21%	81
WUSE	5122	14%	53
AKIRI	3899	11%	42
TOTAL:	36711	100%	383

Source: Field Survey, 2025

Key Informant Interview

In order to incorporate an in-depth knowledge from experts and key stakeholders to further reveal the complex and inherent features of impact of artisanal mining on human security in Awe Local Government Area and to access the contextual, official and social

dimension, Key informant were selected using snowball sampling technique. The data collected from KII assisted in triangulating between numbers and narratives to come out with a clearer understanding of the topic. The following were the selected respondents for the Key Informant Interview and the justification for selecting them as listed on the table below:

Table 2: Mapping of Key Informant (KI)

SN	DESCRIPTION(S)	JUSTIFICATION FOR THE SELECTION
01.	An Academic and a participant miner	A renowned geologist and a practicing miner not from the study Area
02.	Federal Mine Officer and Head of Artisanal and Small Scale mining Unit of the Office	Representing the Federal Ministry of Mines and Steel Development in Nasarawa State directly mandated to implement the mining regulations in the State.
03.	A mining Engineer	From the Department of Natural Resources, Nasarawa State Ministry of Environment and Natural Resources
04.	A Journalist Heading environment desk in the State Media Outfit	Being a seasoned reporter on the activities of mining operations in State
05.	A traditional ruler/former Deputy Chairman Barite Miners Association	Leader in a mining community and a major stakeholder
06.	Youth Leader	Representing the able-bodied members of the mining community
07.	Women Leader	Representing the womenfolk in the mining communities.
08.	A politician and a miner	Representing the political class in the mining communities.
09.	A Civil Servant from the Department of Agriculture and Natural Resources	Representing the local bureaucrat at the Local Government Area.
10.	An Academic, Elite, Traditional Ruler & Active Miner	A renowned academic, an elite in the mining communities, a traditional ruler, and a practicing miner from the study Area

Source: Field Survey, 2025

4. Results and Discussion

The data collected in respect of the impact of artisanal mining and human security were analysed using SPSS

application and the finding were as indicated in the table below:

Table 3: Results on impact of artisanal mining and human security

Statements	Responses					Mean	Std. Dev
	SA	A	UD	D	SD		
Extant artisanal mining activities have affected the human security of people in this community.	198 (52.4%)	140 (37.0%)	7 (1.9%)	27 (7.1%)	6 (1.6%)	1.69	0.94
Mining activities in this area have affected the health of miners and residents, such as exposure to deformities, chronic back pain, bacteria and virus infections and attacks from parasites or wild animals.	177 (46.8%)	145 (38.4%)	5 (1.3%)	41 (10.8%)	10 (2.6%)	1.80	0.93
Artisanal mining has significantly influenced livelihood conditions, including employment opportunities, access to basic necessities, purchasing power and foreign exchange benefits.	168 (44.4%)	161 (42.6%)	4 (1.1%)	36 (9.5%)	9 (2.4%)	1.78	0.90
Mining operations in this community have caused serious environmental problems such as water pollution, soil erosion, air pollution and deforestation.	107 (28.3%)	210 (55.6%)	5 (1.3%)	43 (11.4%)	13 (3.4%)	2.07	0.99
Artisanal mining has adversely affected agricultural activities, including decline in soil fertility, soil contamination, erosion and reduced farm productivity.	112 (29.6%)	208 (55.0%)	4 (1.1%)	42 (11.1%)	12 (3.2%)	2.00	0.98

Source: Fieldwork, 2025

As presented in the Table above, 89.4% of respondents agreed that the activities of artisanal miners have impact on human security in communities of Awe Local Government Area. These impacts may be positive or negative. The findings further suggests that the local population largely sees artisanal mining as a source of livelihood and substantially impacting their safety and well-being at a social and economic level. This over reliance may create loss of stability in the community and increasing insecurity combined with battles over mineral control and ownership which often weaken people's spirits of safety and sense of security. The

agreement is quite high, indicating that there is general understanding that artisanal mining is not just an economic activity but something that has a direct impact on the social fabric and daily life of the people. The scale interpretation of the data mean 1.69, indicated a skewed response towards strong agreement by the respondents of that artisanal mining have impact on human security. Testing the degree of variance of the data indicated moderate (0.94) inconsistency in response.

On the impact of artisanal mining on health, 85.2% (46.8%; strongly agree, 38.4% agree) of participants

acknowledged the magnitude of effect of artisanal mining activities on health of the miners and residents. These manifest in deformities, broken bones, backache, infections and attacks by reptiles among others. This indicates that adequate safety measures are seldom applied in the mining activities to protect the miners and residents alike. Exposure to dangerous working conditions, contamination of water sources, and uncontrolled digging portends physical and biological health risks. The mean value of the data is 1.80 closer to 2 than 1 which demonstrated clustered nature of the opinion with moderate variability of 0.93. This suggests that limited attention is paid to the implementation of health and safety measures. Similarly, a key informant observed that:

The hazardous nature of certain minerals like copper poses serious health risks, including potential blindness from exposure and environmental contamination (Male; Aged 57, Politicians, KII 8).

The above statement indicated the harmfulness associated with artisanal mining to the communities which are grave and really dehumanizing.

Assessing the impact of artisanal mining on livelihood, the response of the respondents is skewed towards same direction, 87% (44.4% strongly agreed; 42.6% agreed) are of the view that it impacts on livelihood. This huge impact is mirrored on the potentials of employment opportunities in the sector, source of income and enhancement of purchasing power. The tilted findings may also demonstrate economic insecurity especially in the rainy season when mining is slow due to weather condition for households. Though some key stakeholders are able to earn a living, an absence of regular income coupled with uncertain yields from minerals and reliance on informal buying may expose them to vulnerability of the sector. The high level of agreement indicated by the mean 1.78 suggests the over reliance of the residents on mining as a source of livelihood regardless of its inherent challenges. Confirming this opinion a key informant noted that:

Mining activities have improved livelihoods greatly in our area by increasing income and economic

opportunities, it however, detracted many from relying on the traditional farming that our communities is known for due to its immediate financial incentives (Male; Aged 57, Politicians, KII 8).

The impact of artisanal mining on the environment is well noted by the respondents. When 55.6% agreed, 28.3% strongly agreed that mining has led to water pollution, soil erosion, air contamination and deforestation. The high degree of agreement indicates that the communities are likely affected directly by the impacts on environment that are associated with artisanal mining activities. The indiscriminate excavation and the use of explosives are almost surely going to have an effect on the land, and waters since these measures would create situations that would certainly require reclamation. This was also confirmed by the narration of the key informants, sample as indicated below:

Artisanal mining often leads to deforestation, soil degradation, water pollution, and biodiversity loss (Male; Aged 25, Youth leader, KII).

Similarly, another informant states that:

The activities of artisanal miners left the mining sites with deforestation, water pollution, soil erosion, and degradation (Male; Aged 53, Reporter, KII 4).

It is the appreciation of this facts that a key informant opined as follows:

Mining activities pose risks to health, particularly through exposure to toxic substances and environmental degradation. Proper environmental impact assessments are crucial for mitigating these risks and ensuring community safety (Male; Aged: 47, Academics, KII 1).

The environmental consequences that follow from these actions are a direct issue that pose threats to human security in ways like less access to clean and safe drinking water, healthy soil and conducive environment to habitation and agriculture.

Regarding the impact on agricultural activities particularly farming, 55.0% of respondents agreed that it has negative effect on agriculture in the area of degrading and contaminating the soils, caused erosion on farming lands. This implies that mining has encroached on arable land affecting the fertility required for farming, the dominant mode of livelihood for people in most parts of Awe. The degradation of similar farmlands due to mining waste or by sedimentation would likely have caused loss in

yields, and displace farmers and their traditional forms of income. These changes add to the experience of food insecurity and economic pressure felt by the rural population and negatively impact their overall quality of life.

Testing hypothesis

H₀₂: Artisanal mining has no significant impact on human security

Table 4: Regression analysis on Artisanal mining and human security

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.927 ^a	.860	.858	.352

ANOVA^a

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	283.375	4	70.844	572.428	.000 ^b
	Residual	46.162	373	.124		
	Total	329.537	377			

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.146	.042		3.473	.001
	Impact on health of miners and residents	.285	.078	.325	3.652	.000
	Impact on livelihood conditions	.612	.072	.662	8.489	.000
	Impact on environment	.280	.092	.288	4.739	.002
	Impact on agricultural activities	.233	.096	.1145	3.151	.007

Source: Author’s computation, 2025

A multiple regression was run to test the impact of artisanal mining on human security in Awe Local Government Area. The model summary demonstrates strong fit with a correlation coefficient of R=0.927 and an R square value of .860, meaning that 86.0% of the variation in human security is accounted for by the variations in artisanal mining activities. The adjusted R square of .858 informs that the model fits the data well while the standard error of the estimate (0.352) implies little deviation of observed values from the predicted estimates.

The ANOVA closes with an F statistic of 572.428 and a significance value of p=0.000, meaning it is highly

significant at the 0.05 level. Such results imply a strong link between artisanal mining and human security.

The coefficients table more specifically details the direction and strength of these effects. The level of effect on livelihoods itself was the strongest predictor of human security (B=0.612, t=8.489, p=.000) which indicates that artisanal mining employs significantly influences the ability to secure income, achieve employment and access basic essentials. The effect was also found to be highly statistically significant on the health of miners and community residents (B = 0.285, t = 3.652, p =0.000), the meaning of which

indicates that pollution, physical exertion, and unsafe work environments exert serious health effects among community members. Environmental impact was also highly associated with activism ($B = 0.280$, $t = 4.739$, $p = 0.002$), highlighting the connection between the interaction with land and water sources and the safety and well-being of the surrounding community. The by far most significant is the effect on farming ($B = 0.233$, $t = 3.151$, $p = 0.007$), which continues to show how the reduction in soil fertility and thus productivity is strongly connected to extractive processes. Taken together, these conclusions show a significant impact of artisanal mining on various aspects of human security in Awe Local Government Area.

Given this result the null hypothesis (H_0) is rejected as follows: artisanal mining does not impact on human security. This further underscores the impact of artisanal mining on human security within the study area.

Discussion of findings

Livelihood strategy has been the driving force that propel people living within a mining community to discover and engage in mining of minerals. The study revealed that major stakeholders within the community are responsible for the various aspect of mining from the beginning (sourcing) to the end (sales); community leaders, landowners, buyers, dealers and labourers are the active participants in the activities of mining. Despite the limited employment of heavy machines such as excavators, the operations are largely informal with basic hand tools. Artisanal and Small-scale Mining like other human occupations is associated with unsolicited and unintended outcome. While not necessarily intended, those outcome reflect on the entire aspects of the activities and form part of the basis of assessing the sustainability of the practice.

Therefore, despite the important role that artisanal mining is playing as a means of livelihood, government, environmentalists and other interest groups see the practice as unsustainable due the inherent environmental degradation, social disruption and conflict that usually characterised the operations (MMSD, 2011). Artisanal mining in Nigeria represents complex interaction between economic necessity and

threats to socio-environmental security. The findings of the study revealed that artisanal mining is not just a source of income but a livelihood strategy relied upon as a result of the limited employment opportunities prevailing in the communities.

Being a response measure embark upon by the unemployed, it is largely unregulated and informal, thereby restricting the miners from accessing essential resources to enhance the practice such as finance, technology and mechanisation. This exacerbates the incidences of threats to environment, health, livelihood and food security. Although, the findings indicated limited impact of artisanal mining to farming due to defined sessional operations, it however did not reject the fact that water is polluted among other pollutants that effects both human and animals. In Awe local Government Area mining seems to thrive in dry session due to challenges of access road, collection of heavy water on the pits that is hardly discharge and the fear of collapse of the pits thus, farming remain the alternate occupation in the rainy session.

The Government officials indicated that government is more interested in organising artisanal miners into cooperatives, to formalise and regulate their operations rather that criminalising the practice. This may not be unconnected with the role it plays in providing source of livelihood to many and benefits that would be derived if the operation is formalise. Government encourage them to form cooperatives to easily get lease and access to training and other facilities to enhance the operation. Better mining practices and tools could as well reduce environmental degradation, enhance income of the miners. Thus, the idea of fostering cooperatives enables miners to work collectively and strengthen their bargaining power, improve working conditions and enable equitable distribution of resources. Among other benefits associated with grouping the miners is to facilitates dialogue, partnership and platform to arrive at enriched solutions tailored at addressing peculiarities and specific challenges among others.

While artisanal mining is often viewed through negative lens because of the threats it pose to human security, in the same vein, there lies a great potential that could be harnessed and with innovations,

regulation, and community engagement to solve greater challenge of unemployment in the Country. Striking a balance between livelihood needs with sustainable practices could redefine the narrative surrounding artisanal mining, highlighting its role as a resilient livelihood strategy rather a threat to human security.

The data suggest the acknowledgement of the majority of the respondents that artisanal mining pose significant danger to human security in the region. This was supported by the qualitative data, as community members described an increase in criminality, social vices and pocket of crisis over ownership of sites or boundaries has impacted on community cohesion and trust among the people. As identified and enumerated by Jean se Dieu and Lakube (2024) to include overcrowding, extreme promiscuity, former demobilized soldiers/rebels still in possession of weapons, frequent conflicts between artisans, communities and sometimes with the authorities, delinquency, swindling, banditry and even criminality, spread of STDs, including AIDS, etc. on environment emergence of gullies, intensive erosion, deforestation and destruction of vegetation cover and soil, pollution of water resources, degradation of soil and loss of land intended for agricultural activities, pollution of the environment by waste and organic matter, pollution of groundwater and rivers among several others.

The health security is one of the focal point of the work, respondents identified diseases, accidents and others as being associated with artisanal mining practices. The qualitative results of the study also depicted the experiences of broken-bones, backache, chronic pain, infections, fatigue etc. among others challenges that face miners and residents indicating continued exposure to hazardous and insecure work environments. This is corroborated by Elenge and Brouwer (2011) who outlined variety of risks that miners are face due to the informal nature of their operations; disregarding mining best practices; and inadequate use of protective gears. These various hazards expose miners to health-related problems such

as muscle and bone diseases, illnesses generated by water, working accidents such as gallery collapse, poisonings, etc.

There were also mixed livelihood outcomes in terms of benefit/hardship. On a quantitative level, a large number of the participant interviewed acknowledged that artisanal mining operations bring job opportunities, yet that same opportunities directly undermined families and left them vulnerable to unpredictable financial security during rainy season, since the operation is not all season as well as other government policies; mineral yields fluctuate. As also observed the market for minerals is locally exploitative, causing some households to depend on mining for their subsistence.

The relationship between artisanal mining and environmental security is another important aspect of the study. Some articulated the consequences of constant digging more clearly; water sources contaminated, loss of vegetation, and infertile soil. Water sources and farm lands have also been taken away from them as qualitative evidence indicates, again making the communities more vulnerable to outside forces.

Respondents also noted in the data that there has been an agricultural decline and that mining has resulted in farmers losing land and soil has lost its fertility. Qualitative discussions found that in many areas of Awe Local Government, artisanal mining have little impact on farming because the mining are mostly carried out on the hill and rocky area that are not conducive for farming. In aggregate, the quantitative and qualitative data suggests that the impact of artisanal mining stretches across life domains and impacts the social, health and economic security of people living in Awe Local Government Area.

The study revealed numerous impact of artisanal mining to human security, which were collaborated by Zvarivadza (2014). The summarised the challenges in a tabular form as adopted below:

Table 5: ASM Social, Environmental and Economic Challenges

Social	Environmental	Economic	Safety and Health
Crime	Deforestation	Lack of collateral security	High fatality rate
Prostitution and spread of HIV/AIDS	Pollution of water bodies	Difficulty in obtaining information for planning purposes	Rapid spread of diseases
Alcoholism and substance abuse	Soil erosion	Rent capturing difficulty	Lack of protective clothing
Neglect of human rights	Siltation of rivers	Lack of education and professionalism	Unsupported or poorly supported workings
Conflict and lack of security	Dust and noise production	High grading	Unsafe working tools
Child labour	Land degradation	Failure to adapt to technological change	Main reliance on natural ventilation
Destruction of cultural and ethical value	River diversion	Mineral rush effect (Tragedy of Commons)	Poor lighting
Destruction of cultural heritage sites	Mercury and cyanide pollution	Retardation of economic growth	Uncoordinated transportation
Gender discrimination	Destruction of biodiversity	Short sighted planning	Exposure to dust and dangerous gases
Limited social amenities	Poor disposal of mine tailings	Corruption	Insufficient safe drinking water

Source: Zvarivadza, 2014

5. Conclusion and Recommendations

The study assessed the impact of artisanal mining on human security in Awe Local Government Area of Nasarawa State. In examining the impact it was well established, that artisanal mining impact significantly in the area of livelihood, food, environmental and health security. Despite the non-formality of the sector, it is concluded in the study that artisanal mining contributes considerably to the well-being of the members of the communities. In the same manner, it causes great harm to the human security in the mining communities. The activities of the miners undermines the environmental, economic, personal, community, health, political and food security as outlined by the United Nations Development Programme (UNDP, 1994).

Sequel to the findings of this work and there is need to counter the overwhelming negative impact and make artisanal mining sustainable and of less threats to human security, thus, the following recommendations were proffered:

- i. Effective and efficient collaboration between the enforcing agencies, traditional leaders and community members is necessary to implement regulations and improve monitoring of mining activities. This would help in aligning the community interest and with governmental policies.
- ii. Strengthening role of community leaders and involvement of local stakeholders in creating awareness, decision-making and miners in regulation design and implementation for responsible practices.
- iii. Government should intensify support to the existing cooperatives of miners to mechanise their operations and improve both productivity and safety, leading to higher output quality and quantity.
- iv. The State government being the one superintending over environmental issues should establish technical committees to track environmental and social impacts and conduct regular impact assessments and promote

adoption of best practices and cleaner technologies.

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