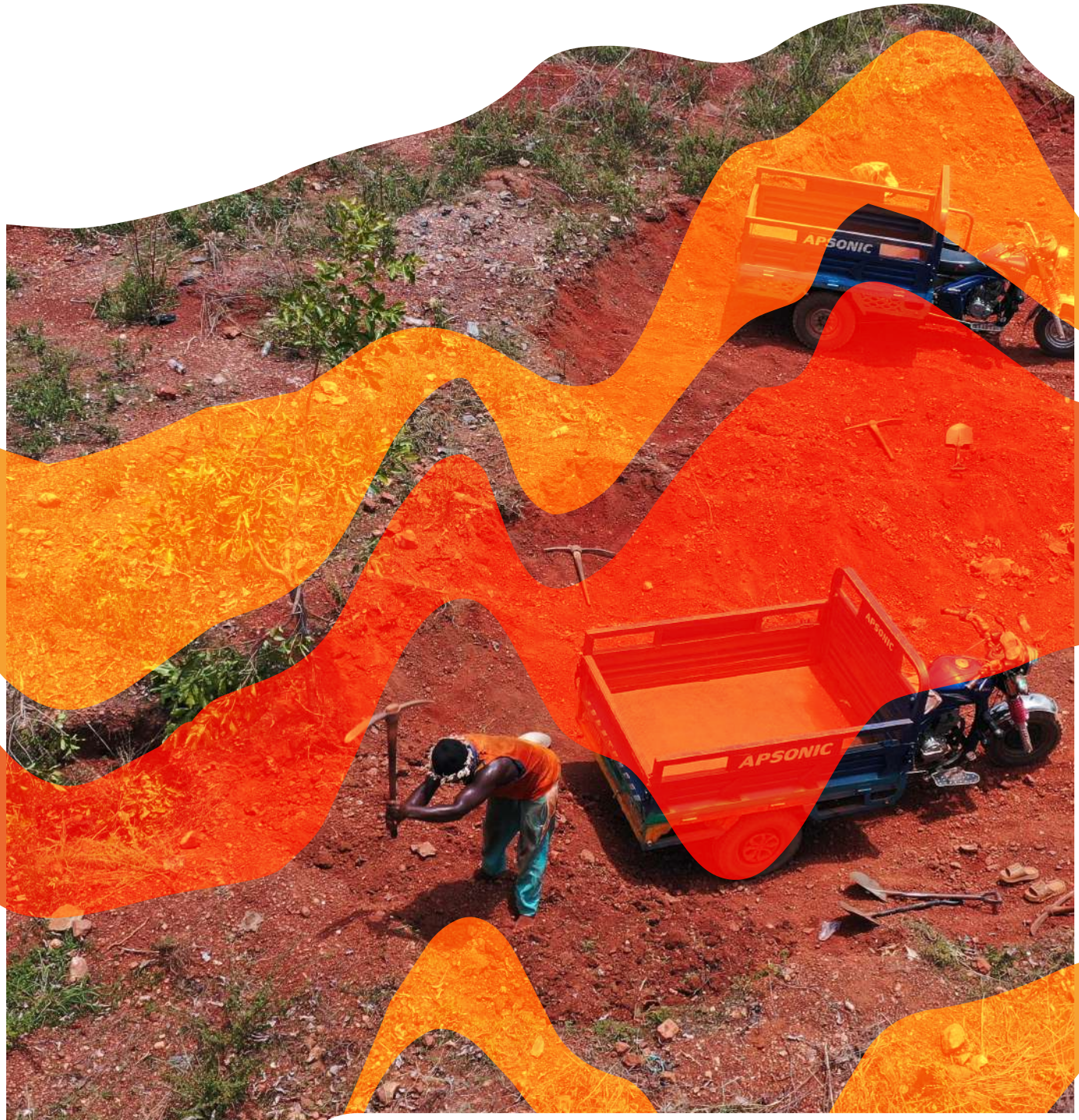
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SOCIO-ECONOMIC PROFILING AND MAPPING OF ARTISANAL AND SMALL-SCALE GOLD MINING SITES

IN WEST GONJA, BOLE, AND SAWLA-TUNA-KALBA DISTRICTS (SAVANNAH REGION)

GOLD FOR GOOD BASELINE STUDY SERIES

TECHNICAL REPORT 2 OF 3

Funded by
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FOREWORD

Gold has come late to the Savannah Region, and it has come quickly. What was, a decade ago, a landscape defined by farming, shea and livestock is now one in which pits and crushers sit alongside fields, forest reserves and the Black Volta. That speed is the essential fact behind these three studies. It has outrun the region's regulatory institutions, its land administration systems and its security architecture; and it has outrun the evidence base on which any of them might act.

For too long, research and policy attention on Ghanaian artisanal and small-scale mining (ASM) has concentrated on the long-established mining landscapes of the south. This has left a critical gap in evidence for the north, and in particular for the West Gonja, Bole and Sawla-Tuna-Kalba districts, precisely where the intersection of resource extraction, fragile institutions and regional insecurity carries the highest stakes. The three baseline studies introduced by this foreword were commissioned by the Gold for Good (G4G) project to close that gap.

Gold for Good, funded by the European Union under NDICI Crisis Response (FPI/2025/488-718 – PC69961) and implemented by Association Coginta, pursues an integrated and inclusive model of ASM governance that brings together institutional strengthening, environmental protection and rehabilitation, market formalisation and value-chain improvement, conflict-sensitive security governance, and inclusive local development. The project's working premise is that ASM in these districts cannot be governed sector by sector. A patrol post sited without reference to migration corridors will police the wrong road. A rehabilitation programme designed without reference to household income will restore land that people will come back to and remine. They will not leave the land alone. A licensing reform that ignores customary tenure will be complied with only where the state is watching, because the authority that actually allocates land will not have consented to it.

Three studies, one evidence base

The first study, a *Diagnostic Assessment of Governance, Security and Conflict Risks in ASM Zones*, led by Prof. Ebenezer Owusu-Sekyere, maps ASM communities and site typologies, examines the statutory and customary systems that regulate them, and identifies the drivers of conflict and the security threats emerging in the zone. It documents a landscape of largely unlicensed operations, overlapping and contested institutional mandates, and conflict pressures sharpened by the region's proximity to active cross-border insecurity.

The second study, a *Socio-economic Profiling and Mapping of ASM Sites*, led by Prof. Paul Kwame Nkegbe, builds a demographic and livelihood portrait of mining communities and their non-mining neighbours. It traces economic organisation and specialisation along the value chain, analyses land ownership and tenure arrangements at mining sites, and follows the labour mobility and gold-trading networks that connect the corridor to markets and to countries beyond Ghana's borders.

The third study, an *Ecological and Health Risk Assessment of ASM Sites and Identification of "No-Go" Areas*, led by Dr Dzigbodi Adzo Doke, quantifies the environmental and public-health consequences of mining and delineates areas where mining should not occur. Drawing on water, soil and biological sampling, probabilistic health-risk modelling and ecological survey, it finds measurable heavy-metal contamination and serious occupational hazards, while offering an important note of hope: because much mining remains localised surface activity, substantial opportunities for ecological restoration still exist.

The three assessments were conducted independently by separate expert teams, using distinct methods and answerable to distinct disciplinary standards. They were not, however, conceived independently. They share a geography, a set of study communities and a common set of questions, and they were designed as three lenses on one corridor rather than three separate enquiries that happen to fall within the same district boundaries. That shared design is what this foreword records, and it is why the same foreword appears in each of the three volumes.

An integrated reading

Although each study stands on its own, their fuller value lies in being read together, and the most reliable findings in this series are those that emerge in more than one volume, arrived at by different means. Three such convergences deserve particular emphasis.

The first concerns land and protected areas. The socio-economic profiling establishes that mining in this corridor is taking place at sites that are too close and some even inside the Yerada Forest Reserve, and along the fringes of the Bui National Park. Approaching the same landscape through an entirely different method, the ecological and health risk assessment reaches a compatible conclusion — that encroachment on forest reserves, rather than proximity to water, is the dominant driver of composite environmental risk across the mapped sites. Read alongside the governance assessment's account of contested and overlapping institutional mandates, the implication is uncomfortable but clear: the areas under greatest ecological pressure are also those where regulatory authority is least settled.

The second concerns contamination and who bears it. The ecological and health risk assessment finds cadmium above international guideline values in every soil sample analysed and mercury in the great majority, with probabilistic modelling indicating that a substantial share of child exposure scenarios exceeds acceptable non-carcinogenic thresholds — a markedly higher share than for adults. That finding acquires its full weight only when placed beside the socio-economic profiling, which documents the settlement patterns, household composition and

dependence on mining income that determine which children live on that soil and why their families are unlikely to move. Environmental risk in this corridor is not evenly distributed, and it is not freely avoidable.

The third concerns mobility and the border. The governance assessment records that migrant miners from Burkina Faso, Côte d'Ivoire, Mali and Nigeria outnumber local miners at several sites, while the socio-economic profiling maps the labour and gold-trading networks along which those movements run. Together they describe an economy that does not stop at the national boundary — a fact of direct consequence for how border security in this corridor is conceived, and one that a study confined to any single district, or to any single discipline, could not have established.

Governance weaknesses enable the informality that drives environmental harm; environmental degradation and health risk erode the very livelihoods the socio-economic profile documents; and competition over land, water and gold feeds the conflict dynamics that threaten community stability and regional security. A companion synthesis report draws these threads together in detail, but readers of any single volume are encouraged to hold the others in view, for the challenges described here are, in reality, one interconnected challenge.

From evidence to action

These are baseline studies, and their purpose is operational. Their findings feed directly into the project's activity chain:

- **Joint border patrol post siting** draws on the governance assessment's conflict hotspot mapping and the socio-economic profiling's migration and trading-network analysis, so that posts are placed where movement actually occurs rather than where the map suggests it should.
- **Land rehabilitation prioritisation** draws on the ecological and health risk assessment's no-go delineation and site risk classification, together with the socio-economic profiling's findings on land tenure, so that rehabilitation is directed to sites that are both ecologically critical and institutionally feasible to secure.
- **Inter-agency training for security and environmental enforcement agencies** draws on the governance assessment's analysis of institutional mandates, so that training addresses the specific overlaps and gaps identified rather than generic capacity deficits.

The findings presented here were reviewed by regional stakeholders at the Gold for Good Regional Validation Workshop held in Damongo from 14 to 17 July 2026, where district assemblies, traditional authorities, regulatory agencies, security services and mining community representatives examined the evidence and contributed to the selection of priority sites.

Limitations held in common

Three constraints apply across the series and are stated here once, so that each volume need not rephrase them separately. The studies were conducted within a single field season and therefore capture a seasonal snapshot of activity known to fluctuate with the agricultural calendar and with rainfall. Sampling in the mining communities was purposive rather than probabilistic, reflecting the absence of any reliable population register for a largely informal and highly mobile workforce; the findings characterise the sites studied and should be extrapolated with care. And access to some locations was shaped by prevailing security conditions and by the willingness of operators to be observed, which introduces a known direction of bias in the documentation of unlicensed operations and of child labour. None of these constraints is unusual in ASM research, and none unsettles the convergent findings described above — but readers should hold them in view.

Acknowledgements

We record our thanks to the lead and national experts and their teams, whose rigour produced these assessments; to the Savannah Regional Coordinating Council and the Savannah Regional Minister; to the District and Municipal Assemblies of West Gonja, Bole and Sawla-Tuna-Kalba; to the Yagbonwura and the traditional authorities of the Gonja Kingdom; to the Minerals Commission, GoldBod, the Environmental Protection Authority, the National Security Coordinating Secretariat and the security services; and to colleagues at Coginta headquarters in Geneva, in particular Anne Moltes, Victoria Walker and Hervé Gonsolin, for their review throughout.

Our principal debt is to the miners, farmers, traders, chiefs, women's groups and young people across the three districts who gave generously of their time and spoke candidly about work that is often conducted at the edge of legality. This series exists because they were willing to be counted.

Together, these studies provide the first integrated, district-level evidence base on ASM in the Savannah Region. They are intended to serve regulators, traditional authorities, security agencies, mining actors, development partners and the communities themselves as a shared foundation for more inclusive, peaceful and sustainable mining governance. The ambition that gives the project its name, that gold might be turned to good rather than becoming a curse, depends on exactly this: honest evidence, applied with care. It is our hope that the evidence assembled here will be matched by the collective will to act upon it.

Bole, Savannah Region, Ghana — July 31, 2026

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EXECUTIVE SUMMARY

This publication is the second of three complementary diagnostic assessments produced under the Gold for Good (G4G) project, funded by the European Union and implemented by Coginta. Together, the three studies provide an integrated evidence base on artisanal and small-scale mining (ASM) in Ghana's Savannah Region by examining (i) governance, security and conflict dynamics, (ii) the socio-economic profile of ASM communities, and (iii) environmental and public health risks. This second study establishes who ASM actors are, how they organise and earn, how they access land, and where mining sites are physically located – supplying the demographic, economic and spatial baseline that the governance assessment identified as missing. A companion synthesis report brings the findings of all three together to inform more inclusive, peaceful and sustainable ASM governance.

Background

ASM sustains livelihoods worldwide and anchors employment, income and livelihood diversification in developing economies. In Ghana it has expanded rapidly, but remains characterised by informality, rudimentary technology and the absence of licences and permits – driving operations into ecologically sensitive areas and generating land degradation, river pollution and mercury exposure. ASM therefore supports economic livelihoods on one hand and fuels environmental degradation, land disputes and insecurity on the other. In the West Gonja, Bole and Sawla-Tuna-Kalba Districts this duality is acute: mining is an economic lifeline and simultaneously a flashpoint, while local institutions lack the capacity and resources to regulate it and overlapping regulatory mandates erode trust and accountability. Critically, no systematic socio-economic or spatial data existed for ASM actors in these districts. This study was commissioned to close that gap. Its overarching aim is to provide comprehensive socio-economic profiling and mapping of ASM actors and sites across the three districts, through nine objectives spanning demographic profiling; economic organisation and value chain specialisation; land access, ownership and governance; gender, youth and social inclusion; the status of miners after quitting ASM; GIS mapping and geo-referencing of sites; environmental and spatial site characteristics; labour mobility, migration and cross-border gold trading linkages; and the establishment of baseline values for project monitoring.

Methods

The study employed a mixed-methods design combining individual, participatory and spatial approaches. A two-stage sampling procedure purposively selected 30 communities – 20 in Bole, five each in Sawla-Tuna-Kalba and West Gonja – proportional to the disproportionate concentration of ASM activity across the

districts, and partitioned them into mining and non-mining communities to permit comparison. Respondents were then stratified by gender (62:38 men to women) and by mining status (80:20 current to former miners), yielding 953 completed interviews. These were complemented by 17 key informant interviews with traditional authorities, regulators and district officials, and nine focus group discussions with mineworkers, farmers, women, youth and migrant workers. Spatial analysis used multispectral satellite imagery to derive land use and land cover (LULC) change between 2017 and 2025, with on-screen digitisation of mining site boundaries in a GIS environment, validated through ground-truthing with mineworkers and community leaders. Data were collected on the Kobo toolbox. Informed consent, anonymisation of identifying data, confidentiality and cultural sensitivity were maintained throughout.

Demographic and socio-economic profile

ASM is dominated by men and young people. Households average five active members with a dependency ratio of 1.56, and formal educational attainment is low. School dropout incidence is modest – averaging three children per community, driven principally by inability to pay fees – and is more pronounced in non-mining than mining communities. Mining communities are markedly more ethnically diverse, confirming ASM as a magnet for in-migration. Mining and agriculture are the two primary occupations, with mining communities showing greater occupational diversification through secondary occupations. Maize, groundnut and yam are the top three crops in both community types. Non-mining households cultivate larger areas (4.00 ha against 2.86 ha), produce more (1,641.84 kg against 447.2 kg) and market more (663.37 kg against 161.25 kg), yet mining communities achieve higher yields (588.24 kg/ha against 503.92 kg/ha), suggesting mining proceeds are reinvested in productivity-enhancing inputs. The same pattern holds for livestock: non-mining communities rear more diverse animals, but mining communities record a far higher average tropical livestock unit value (12.05 against 4.61). Mining communities hold significantly more assets and enjoy better access to pipe-borne water, toilets and electricity. Average total annual household income in mining communities (GHS 83,256.46) is nearly six times that of non-mining communities (GHS 14,356.88). Mobile money is the predominant financial service; mining communities are more financially included overall, though non-mining respondents hold more accounts in formal banking institutions.

Economic organisation and the ASM value chain

Average mining experience is 6.93 years, with men (7.91) more experienced than women (5.47). Income potential is the principal pull factor, followed by the absence of alternative jobs; most enter through self-initiative. Value chain roles comprise processing, service provision, underground mining, trading, pit ownership, ore transportation, gold detecting and sponsorship. Specialisation is sharply gendered: women concentrate in one or two activities while men operate across multiple

roles. Most respondents work for themselves, followed by casual labourers, and financing is drawn in order from self-financing, family and friends, and employers. Pit digging is overwhelmingly manual. Operators work approximately six days per week; men average 10.04 hours daily against 9.42 for women. The earnings gap is substantial: average weekly earnings are GHS 2,318.65 for men against GHS 967.81 for women and mean annual mining income is GHS 92,472.36 overall (GHS 120,569.90 for men; GHS 50,326.07 for women). Weekly earnings descend from pit owners (GHS 4,417.07) and traders (GHS 3,837.50) through gold detectors, sponsors, underground miners, service providers and processors, to ore transporters (GHS 607.14) – placing women disproportionately in the lowest-earning nodes. Earnings are nonetheless highly variable. Most output is sold to local buyers, with price volatility identified as the main pricing challenge. Injuries were reported across the chain, concentrated among underground miners, processors, ore transporters and pit owners. Mercury use is widespread (38.88 per cent) and cyanide use is present at lower levels (5.84 per cent). Most respondents consider mining to have improved their livelihoods and are unlikely to exit voluntarily. Mining-induced disputes are common, with land the dominant trigger – through concession confrontations among workers and inter-community disagreements over ownership.

Land ownership and governance arrangements

Land tenure is hierarchical, with allodial interest vested in the Yagbonwura and paramount and divisional chiefs administering land within their jurisdictions. Registration systems are poorly developed, transactions remain largely informal, and only 15.96 per cent of respondents hold registered land. Under the Minerals and Mining Act, 2006 (Act 703), chiefs exercising customary ownership are not entitled to the minerals beneath that land – a statutory position that sits uneasily with practice on the ground. In the resulting regulatory vacuum, communities have co-produced a flexible governance system that grants comparatively equitable access to mining land: most respondents describe acquisition as easy, obtained through mutually agreed proceeds-sharing arrangements, free allocation, short-term cash leases, or outright purchase. Resourced individuals sponsor mining ghettos, and proceeds – locally termed loads — are shared between sponsor, workers and mining committees, with landowner interests served through the latter. Formal licensing is close to absent: only 2.92 per cent of respondents hold a mining licence, with Dakuripe Kamara (cooperative licence) and Tinga Wenchiwenchi (community mining licence) the notable exceptions. Communities facing the greatest licensing difficulty are those operating within reserves or the concessions of licensed firms, and the barriers they cite are cost, lack of information, bureaucratic hurdles and, to a lesser degree, corruption. Regulatory awareness is very low: 74 per cent of participants were unaware of any regulation governing mining in their area – indicating that non-compliance is substantially a knowledge problem rather than solely a willingness problem. Some 45 per cent have considered leaving mining, favouring general trading, farming, artisanal work, public sector employment and hairdressing, which underscores the fluidity and temporality of the workforce.

Two distinct settlement types emerge: communities formally integrated into district governance (Tinga, Dakuripe, Wakawaka) and organically grown informal settlements (Dollar Power, Tutumba, Cloth) still negotiating recognition and voicing grave concerns over the non-delivery of public services.

Gender and social inclusion

The value chain is sharply segmented by sex. Physically demanding upstream extraction, together with pit ownership, gold detecting and sponsorship, is dominated by or exclusive to men; women dominate processing, auxiliary service provision and ore transportation – the lowest-paid nodes. Participation is overwhelmingly youthful, concentrated in the 18-40 age band. Barriers to women's engagement are financial, safety-related, physiological and cultural. Across all sites, women are absent from the decision-making structures of mining committees, reflecting the patriarchal organisation of mining communities and mirroring the exclusion documented in the governance assessment. A notable gender gap in the perception of sexual harassment indicates that men are considerably less likely than women to recognise it as a problem.

Mapping and spatial characteristics of ASM sites

The study area comprises a mosaic of grassland, forest, water bodies, settlements, cropland, flooded vegetation and bare ground; grassland and forest together accounted for 98.24 per cent of the landscape in 2017. Between 2017 and 2025, forest cover declined by 441.20 km^2 (-2.92 per cent) while grassland expanded by 370.60 km^2 and settlement more than doubled from 56.80 km^2 to 114.90 km^2. No active mining site was identified in Sawla-Tuna-Kalba across the analysis period, a site reported at Saru near the Black Volta had been closed through community resistance, and none was found in West Gonja, with the Mole National Park remaining an undisturbed strict reserve. Active mining is therefore concentrated in Bole, where 38 mining polygons were delineated across 19 communities, four of which (Dollar Power, Dollar Power Accra, Dollar Power Dablakoro and Tutumba) lie marginally beyond the district's corporate boundary. Growth occurs through the multiplication of new sites rather than the expansion of existing ones, magnifying its environmental footprint. Six communities (Tutumba, Kui, Dollar Power, Dollar Power Accra, Dollar Power Dablakoro and Gbenfu) are under extreme mining pressure, with mining footprints between three and eight times their built area. Surface mining at Tutumba and Wakawaka has left extensive degraded land characterised by open trenches and spoil heaps, abandoned as operations move to new ground; underground sites such as Tinga show markedly less surface disturbance. Mining has also reshaped the built environment through the proliferation of makeshift squatter settlements serving as accommodation and ancillary commerce. Several sites lie within or immediately adjacent to reserves, water bodies and protected areas, raising the prospect of encroachment and future succession into protected land.

Migration, labour mobility and gold trading networks

Cross-border migration for mining is limited – under 2 per cent of respondents migrated to another country in the past year – while internal mobility is more significant, with 7.87 per cent migrating within Ghana in the past year and around 38 per cent having done so at some point. Respondents observe far more movement by others than they undertake themselves, indicating that circulation in and out of mining communities is routine. Higher gold yields are the primary driver, followed by better working conditions and wage differentials; travel cost, language barriers and discrimination are the main constraints, and few intend to migrate permanently. Payment is predominantly daily, followed by a share of ore output, with family pit workers receiving no direct payment. Gold is sold mainly to local buyers, with smaller volumes moving to licensed traders, middlemen and, negligibly, cross-border buyers, before being consolidated by licensed aggregators and reaching the GoldBod. This chain means the GoldBod's aggregation drive may unintentionally reward unlicensed production, placing state institutions in pursuit of contradictory objectives within the same sector and warranting urgent policy attention. Payment for gold is almost universally in cash (98.33 per cent), reflecting the sector's informality and its exposure to money laundering, a security concern requiring vigilance.

Life after ASM

Former mineworkers occupied the same gendered roles as active ones – processing, extraction, service provision, trading and ore transportation – and worked in mining for at least four years on average before leaving. They cited danger to life, declining earnings, health concerns and family reasons as grounds for exit, and now work principally in trading, agriculture, artisanal trades and dressmaking. They face inadequate capital, insufficient skills, poor market access, limited job opportunities and lack of land. Post-exit income outcomes are gendered: most women report lower current income than while mining, while most men report parity or improvement. State support is effectively absent – only 4.76 per cent received any training after quitting and financial support was rarer still – exposing the missing alternative livelihood infrastructure that drives entry into ASM in the first place. Most found the transition difficult, and 54.76 per cent identified credit as the single most useful form of reintegration support. Nonetheless, former mineworkers report good health, satisfaction with their current work, and quality of life equal to or better than during their mining years; only 6.35 per cent intend to return.

Conclusion

ASM is a substantial and durable source of livelihood and employment across the Savannah Region, distributed highly unevenly – overwhelmingly concentrated in Bole, with no active sites geo-referenced in West Gonja or Sawla-Tuna-Kalba. In the absence of effective statutory reach, communities have built vibrant mining committees drawing on traditional authorities and tribal and clan leadership to

provide security, mediate disputes and manage operations, while a more formal structure is emerging through the District Mining Committee, which has begun regularising operations outside restricted zones. Yet the sector's defining features remain informality and exclusion: licensing is negligible, regulatory awareness minimal, land registration weak, transactions almost entirely cash-based, women wholly absent from decision-making while bearing the greatest chemical exposure and exiting workers unsupported. The proximity of mining to reserves and protected areas raises real risks of encroachment and succession, and the cash economy carries clear money laundering and security exposure. Stopping ASM is not a feasible strategy; regularising and regulating it is. This assessment supplies the socio-economic, spatial and institutional baseline from which that transition can be planned, monitored and measured across the three districts.

Baseline values for performance tracking

The report concludes with a consolidated table of baseline indicator values for project monitoring, spanning socio-economic status, economic organisation and specialisation, land ownership and governance, labour mobility and migration, and the post-ASM status of former mineworkers. These values establish the measurable reference point against which Gold for Good interventions in the three districts will be tracked.



Coginta "Gold for Good" Project

Baseline values of indicators for performance tracking

Indicator	Baseline	Remarks/Comments
Socioeconomic:		
Proportion of people in mining (%)	64.1	366 out of 571 individuals
Proportion engaged in crop production (%)	29.7	166 out of 571 individuals
Average crop yield (kg/ha)	588.24	Involves 19 crops
TLU	12.05	Involves 9 livestock
Average annual income (GHS)	83,256.46	From crop sales, animal sales, remittances, mining income and other sources
Proportion with bank account (%)	24.52	140 out of 571 individuals
Economic organisation and specialisation:		
Average annual mining income (GHS)	92,472.36	
Proportion using mercury (%)	38.88	173 out of 445 individuals
Proportion using cyanide (%)	5.84	26 out of 445 individuals
Land ownership and governance arrangements:		
Proportion with registered lands (%)	15.96	71 out of 445 individuals
Proportion with mining licence (%)	2.92	13 out of 445 individuals
Proportion aware of mining regulation (%)	25.84	115 out of 445 individuals
Proportion considering leaving mining (%)	45.17	201 out of 445 individuals
Labour mobility and migration patterns:		
Proportion migrating to another country (%)	2.02	9 out of 445 individuals
Proportion engaging in migration within Ghana (%)	7.87	35 out of 445 individuals
Proportion of cash payments (%)	98.33	353 out of 445 individuals
Social and economic status of mineworkers after quitting ASM:		
Proportion suggesting credit as transition support (%)	54.76	69 out of 126 individuals
Proportion receiving training after quitting (%)	4.76	6 out of 126 individuals
Proportion intending to return to ASM (%)	6.35	8 out of 126 individuals

Recommendations

Recommendations are organised across five domains.

On **governance** and institutions, the study calls for a district spatial development framework to map active sites, contain proliferation and profile sites outside Minerals Commission block-out areas for regularisation; women-only ASM advisory committees at each site as a parallel governance entry point, with a 30 per cent minimum women's presence applied by the District Mining Committee (DMC); investment in women's governance and financial literacy as the precondition for meaningful participation; gender-responsive community security with structured training in gender-based violence recognition and referral; and use of the DMC as the platform on which the Minerals Commission and GoldBod harmonise their contradictory incentives.

On **formalisation**, it recommends cooperative licences to prevent the subletting of permits to large-scale firms, provision of equipment and personal protective equipment where licensing succeeds (current techniques recover under 40 per cent of available gold), extension of banking services and flexible financial products to licensed sites to reduce cash dependence, and community-level awareness building, since enforcement alone cannot address a 74 per cent regulatory awareness deficit.

On **conflict and security**, it proposes negotiated licensing of part of the declassified Dollar Power lands to local mineworkers, the active involvement of traditional authorities in licence issuance and renewal, DMC-brokered engagement with divisional and paramount chiefs on boundary contestations for ratification by the Gonja Traditional Council and Savannah Regional House of Chiefs, and a joint military, police and immigration taskforce to conduct surveillance against extremist infiltration and criminality.

On **inclusive local development**, it recommends linking mineworkers to local sponsors to prevent disproportionate capture of returns by foreign sponsors, regularising rather than attempting to halt an activity too deeply embedded to suppress, and delivering credit, skills training and job placement for exiting mineworkers.

On **environmental rehabilitation and safety**, it prioritises Tutumba, the Dollar Power cluster and Kui for urgent remediation, requires minimal clearance of indigenous vegetation and its use in rehabilitation as a condition of licence issuance and renewal, mandates silent generators, restricts and fences processing sites near settlements, and, most urgently, combines immediate provision of protective equipment to women processors with community-owned, women-led mercury-free processing demonstration units, recognising that women continue to use mercury not through ignorance but through the absence of affordable alternatives.

ABBREVIATIONS

ASM	Artisanal and Small-scale Mining
CSO	Civil Society Organisation
CAPI	Computer-Assisted Personal Interviews
DA	District Assembly
DISEC	District Security Council
DMC	District Mining Committee
EPA	Environmental Protection Authority
FGD	Focus Group Discussions
GDP	Gross Domestic Product
GHS	Ghana Cedis
GIS	Geographic Information System
GLSS7	Ghana Living Standards Survey round 7
GSS	Ghana Statistical Ghana
IRB	Institutional Review Board
KII	Key Informant Interviews
LULC	Land use land cover
NAIMOS	National Anti-Illegal Mining Operations Secretariat
NGO	Non-Governmental Organisation
PMMC	Precious Mineral Marketing Company
TLU	Tropical Livestock Units
UAE	United Arab Emirates
UDS	University for Development Studies
USA	United States of America



1. INTRODUCTION

1.1 Country Background

Ghana is a country in sub-Saharan Africa that belongs to the West African regional bloc (see Figure 1.1), and it is specifically located at Latitude 4° 44'N and 11° 11'N, and Longitude 3° 11'W and 1° 11'E. It occupies a total area of 238,533 square kilometres, with 227,533 square kilometres and 11,000 square kilometres of land and water, respectively. It has 16 administrative regions and 261 districts (i.e. 6 Metropolitan, 109 municipal, and 146 districts), with Accra as the capital. It is bordered by Burkina Faso to the north, Côte d' Ivoire to the west, Togo to the east, and the Gulf of Guinea to the south. According to the 2021 Population and Housing Census, Ghana has a total population of 30,832,019, with 15,200,440 males (49.3%) and 15,631,579 females (50.7%). The majority of the population (56.7%) resides in urban areas. The estimated current population is 35,646,301, with an average population growth rate of 2.1 percent and a population density of 157 per square kilometres. The mean household size is 3.6. The age structure has transitioned from one dominated by children (0-14 years) (35.3%) to one dominated by young people (15-35 years) (38.2%). The age dependency ratio is 66.

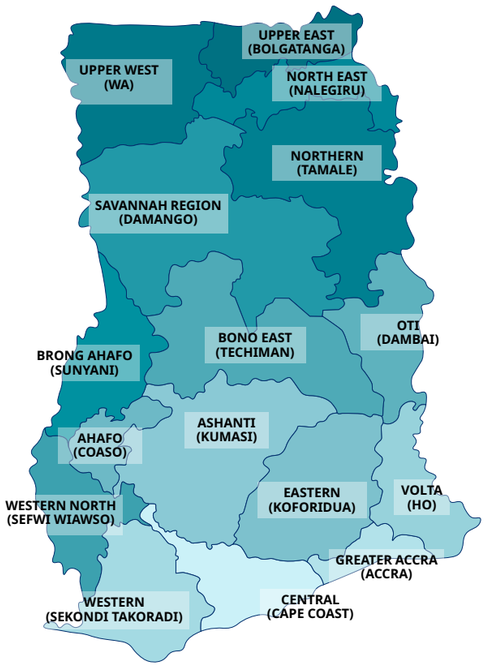


Figure 1.1: Map of Ghana

Based on the macroeconomic context, Ghana is classified as a lower middle-income country (LMIC). It achieved a nominal Gross Domestic Product (GDP) of Ghana Cedi (GHS) 1.17 trillion (US$ 82.31 billion), with a per-capita GDP of GHS 33,951.88 , (US$ 2,390.77) in 2024. In real terms, the GDP was GHS 197.38 billion (US$ 74.63 billion). The structure of Ghana's economy shows that the services sector is the highest contributor to GDP, reaching 46 percent in 2024. The manufacturing sector is the second-largest contributor, at 30 percent, followed by the agriculture sector, at 24 percent. Between 2020 and 2024, Ghana's economy grew at an average of 3.63 percent in nominal terms. The major agricultural products are maize, rice, cassava, yam, plantain, cocoyam, oil palm, rubber, cocoa, citrus, and pineapple. The main industrial activities are mining, lumbering, aluminium smelting, food processing, cement, small commercial shipbuilding, and petroleum (oil and gas). Ghana's major exports are gold, crude petroleum, cocoa products, manganese, and cashew nuts, with an estimated value of US$ 20.6 billion in 2024. These exports reach major destinations, including the UAE, Switzerland, the USA, Canada, India, and China. The major imports are refined petroleum, cars, rice, delivery trucks, and iron, reaching an estimated value of US$ 17.5 billion in 2024 from countries such as China, Netherlands, India, USA, and Côte d'Ivoire.

Ghana is endowed with abundant natural resources, including gold, timber, industrial diamonds, bauxite, manganese, silver, fish, water bodies, petroleum (oil and gas), salt, limestone, and rubber. Recently, one of Ghana's development challenges relating to the exploitation of its natural resources is illegal gold mining, referred to as "*galamsey*" in the local parlance. The challenge is not necessarily because it is illegal, but because of its negative environmental impacts. While the "*galamsey*" menace has always been an issue regarding its negative environmental impacts, matters came to a head around 2019.

1.2 Project Background and Problem

Artisanal and small-scale mining (ASM) is a source of livelihood for approximately 45 million people worldwide (World Bank, 2020). It supports socioeconomic development in developing economies through its contribution to employment, income, foreign exchange, and livelihood diversification (Adranyi et al., 2023, 2024; Malone et al., 2021). ASM is an important economic anchor in Africa, especially for the youth (Tuokuu et al., 2020; Mabe et al., 2021). The World Bank (2020) indicates that there are approximately 10 million artisanal miners in Africa. It is estimated that approximately 1 million ASM workers are involved in gold mining, and their output represents 35 percent of the total gold production in Ghana (Adranyi et al., 2024).

Because of the enormous benefits of ASM, the sector has experienced rapid expansion over the years, especially in recent times. However, ASM operations are characterised by informality, poor mining techniques, rudimentary technology, and a lack of licences and permits (Adranyi et al., 2024). These issues often lead to illegalities and operations in ecologically sensitive areas, causing environmental impacts such as land degradation, river pollution, and mercury exposure, which pose health risks (Forkuor et al., 2020; Owusu et al., 2019; Obeng et al., 2019; Bansah et al., 2018; Hilson, 2017). Thus, while ASM supports economic livelihoods on one hand, it fuels environmental degradation, land disputes, and insecurity on the other.

Gold mining was hitherto a "south" economic activity. However, in recent times, northern Ghana has become part of mining discussions, especially the illegal type locally called "galamsey" (Baddianaah et al., 2021; Laari et al., 2016). In the Savannah Region, particularly in West Gonja, Bole, and Sawla-Tuna-Kalba, ASM is both an economic lifeline and a flashpoint for governance and security challenges. Local institutions lack the capacity and resources to regulate ASM effectively, while the overlapping mandates of regulatory agencies undermine trust and accountability. The implication of the foregoing is that there is a need for workable measures to ensure that gold is not a curse. In this regard, the proposed "Gold for Good" project implemented by Coginta is a step in the right direction. This project seeks to pilot an integrated and inclusive approach to ASM governance that combines (i) governance and institutional strengthening, (ii) environmental protection and rehabilitation, (iii) market formalisation and value chain improvement, (iv) conflict-sensitive security governance, and (v) inclusive local development and livelihood diversification.

To ensure that this project delivers a lasting solution, it is imperative to conduct socio-economic and security profiling and mapping of ASM sites in selected geographic areas, including West Gonja, Bole, and Sawla-Tuna-Kalba districts, as this will help generate socioeconomic, demographic, and spatial data to inform inclusive governance reforms, conflict-sensitive security strategies, and sustainable development interventions under the project.

1.3 Objectives of Study

The main objective of this study is to provide comprehensive socio-economic profiling and mapping of artisanal and small-scale mining (ASM) actors and sites in West Gonja, Bole, and Sawla-Tuna-Kalba districts of the Savannah region of Ghana to inform inclusive and sustainable ASM governance strategies and generate socioeconomic, demographic, and spatial data to inform inclusive governance reforms, conflict-sensitive security strategies, and sustainable development interventions under the Gold for Good project.

The specific objectives are as follows:

- Generate socioeconomic and demographic data on ASM actors, including miners, pit owners, processors, traders, service providers, and affected community members.
- Assess economic organisation and specialisation across the ASM value chain, including roles, specialisation, financing arrangements, and relationships between extraction, processing, trading, and gold marketing (miners, washers, traders, equipment owners, financiers, service providers, and auxiliary roles (e.g. women vendors and transporters)).
- Analyse land access, ownership, and governance arrangements influencing ASM activities, including interactions between customary land systems, traditional authorities, and statutory institutions.
- Analyse gender, youth, and social inclusion dimensions in ASM livelihoods, including roles in mining operations, barriers to participation, and differentiated economic impacts.
- Analyse the social and economic status of miners after quitting ASM, with attention to livelihood diversification, reintegration into alternative sectors, and long-term well-being.
- Map ASM sites using GIS tools and establish geo-referenced databases documenting mining locations, operational characteristics and surrounding land uses.
- Document environmental and spatial characteristics of ASM sites, including proximity to settlements, farmland, water bodies, and protected areas.
- Identify labour mobility, migration patterns, and cross-border linkages that shape ASM labour markets and gold trading networks.
- Provide baseline socio-economic, spatial, and institutional data to support planning, monitoring, and impact assessment for the Gold for Good project.



2. STUDY METHODOLOGY

2.1 Data Sources

This study was conducted in the West Gonja, Bole, and Sawla-Tuna-Kalba districts of the Savannah region (see Figure 2.1). These districts occupy a land area of 13,673 square kilometres (4,700 sq. km for West Gonja, 4,800 sq. km for Bole, and 4,173 sq. km for Sawla-Tuna-Kalba), representing 38.1% of the total land area of the region.

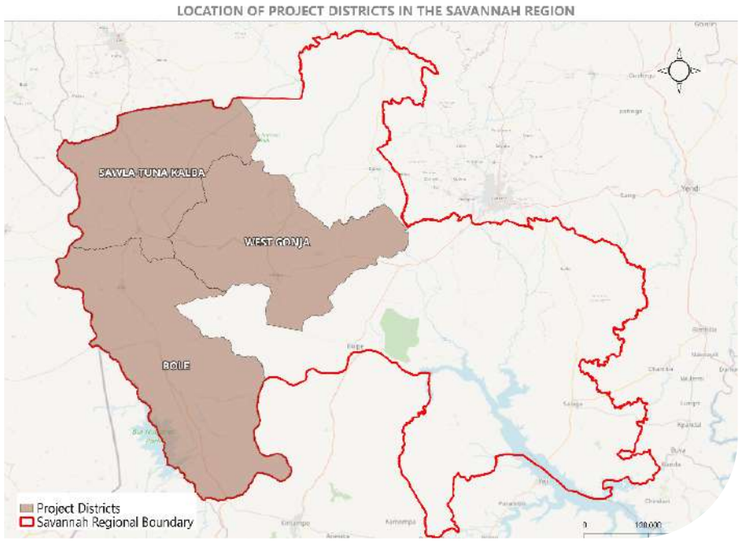


Figure 2.1: Map of project sites

According to the 2021 Population and Housing Census, the districts have a total population of 291,913 people (63,449 in West Gonja, 115,800 in Bole, and 112,664 in Sawla-Tuna-Kalba), distributed into 145,177 males (49.7%) and 146,736 females (50.3%). The population constitutes approximately 44.7 percent of the region's total population.

The main target population for this study was people engaged in ASM. These people provided relevant data on their socioeconomic and household livelihood activities (e.g., agriculture, mining and extraction, trading, and processing), demographics (e.g., age distribution, sex distribution, household size and distribution, and dependency ratio), wealth, and assets (e.g., land tenure and basic services). However, several respondent types were included to complement the data from the main target population. These are:

- **Modern political, administrative, and regulatory institutions:** Each district is governed by political and administrative institutions with mandates related to mining and its value chain. Thus, they have important information that can help achieve the objectives of this study. Therefore, engaging them during data collection is important. These include district assemblies (DAs), district mining committees (DMCs), district security councils (DISECs), the Minerals Commission, Environmental Protection Agency (EPA), Forestry Commission, and the National Anti-Illegal Mining Operations Mining Operations Secretariat (NAIMOS).

- **Traditional authorities:** Mining basically pertains to land use. Therefore, traditional authorities are relevant for providing useful data for analysis.

- **Miners' associations and cooperatives:** These associations oversee the operations of their members and are therefore well-versed in pertinent information relating to the activities of their members, the entire value chain, and challenges.

- **Value chain actors:** Apart from miners, there are numerous actors along the mining value chain, including traders, financiers, and equipment suppliers. These actors will be profiled and engaged to elicit useful responses to achieve the objectives of this study.

- **Community leaders:** Important leaders in communities will be useful in this assignment. For example, men, women and youth group leaders play important roles in managing livelihood activities in these communities. Therefore, they can offer critical firsthand information.

- **Civil Society Organizations (CSOs) and Non-governmental Organisations (NGOs):** CSOs and NGOs play advocacy and policy roles in their catchment areas. Particularly focused on improving the livelihoods of their focus areas, they possess the information necessary to achieve this assignment's objectives.

- **Stakeholders:** This category of respondents involves primary change agents, government agencies, donors, civil service organisations, and international non-governmental organisations.

Therefore, primary data were collected from all respondent types.

2.2 Data Collection Approach

For the survey of the primary target population (i.e., ASM actors), a two-stage sampling procedure was adopted to achieve the goal of drawing an acceptable sample from all the target districts. The first stage involved purposive sampling of communities in each district. This sampling approach focused on communities that were more involved in mining. Therefore, 30 communities across the study area were purposively sampled. The number of communities in each district was proportionally apportioned. In the Bole district, 20 communities were selected, and five communities each were selected from the Sawla-Tuna-Kalba and West Gonja districts. The basis for the proportional allocation is premised on the fact that the scale of ASM activities is disproportionate across these districts. The Bole district has a higher concentration of ASM activities than the West Gonja and Sawla-Tuna-Kalba districts.

To provide a basis for comparing some characteristics across mining and non-mining communities, the communities were partitioned into these two classifications. Because Bole has the highest concentration of mining communities, all 20 selected communities were mining communities. One mining community was selected in the Sawla-Tuna-Kalba district, while 2 mining communities were selected in the West Gonja district. Figure 3 presents the community distribution across the districts.



Figure 2.2: Map of study communities across the districts

It was determined that in each mining community, a sample of 25 respondents would be selected, while 50 respondents would be selected in non-mining communities. The rationale for this disparity was to compensate for the (low) number of non-mining communities in the sample. This implies that given the 23 mining communities and seven non-mining communities, a sample of 925 was to be drawn (23 mining communities * 25 respondents + 7 non-mining communities * 50 respondents). At the district level, 500 respondents in Bole District (20 mining communities × 25 respondents), 225 respondents in Sawla-Tuna-Kalba (1 mining community × 25 respondents + 4 non-mining communities × 50 respondents), and 200 respondents in West Gonja District (2 mining communities × 25 respondents + 3 non-mining communities × 50 respondents) were selected.

The second stage was the selection of respondents from purposively selected communities. We used stratified sampling in this stage, where gender and mining status were the bases of stratification. Gender stratification is important because mining is a male-dominated activity. Randomly drawing a sample may overly represent men compared to women. Therefore, a gender stratum was necessary to ensure a reasonable representation of women. Mining status stratification was based on the objective of analysing the social and economic status of miners after quitting ASM. A stratum was created for current and former miners (i.e., those who were miners but had quitted). We relied on the literature to propose representations of men and women. Baddianaah et al. (2022) found that the proportions of men and women involved in artisanal mining in the Upper West region were 64 and 36 percent, respectively. We modified this proportion to 62 and 38 percent, respectively, to account for the time difference between the time of the study and now. For the mining status stratum, we used proportions of 80 and 20 percent, respectively for current and former miners (i.e., those who have quitted), respectively. Table 1 presents a summary of the actual sample and its distribution.

Table 1: Actual sample size and distribution

District	Male			Female			Total
	Miner	*Former miner*	*Non-miner*	*Miner*	*Former miner*	*Non-miner*	
Bole	242	80	0	162	20	0	**504**
Sawla-Tuna-Kalba	0	10	137	0	5	92	**244**
West Gonja	25	9	91	16	2	62	**205**
Total	**267**	**99**	**228**	**178**	**27**	**154**	**953**

In each stratum, respondents were systematically selected, having determined a random start. For former miners, associations and cooperatives provided useful information on people who used to be miners but have since stopped. This approach was used to create a list of former miners for systematic selection. These lists provided data for the application of the stratified sampling approach. However, in Saru, the team struggled to follow the plan of 25 respondents as mining operations stopped due to a crackdown on operations. It was resolved to interview former mineworkers and non-mineworkers. Therefore, Saru was the only community designated as both mining and non-mining. Furthermore, in the field, enumerators interviewed slightly more than the required samples across some communities. In total, 953 respondents were interviewed, as shown in Table 1[1]. See Table A.1 in the appendices for the distribution of samples across communities. For the selection of the other respondent types (i.e., key stakeholders), relevant stakeholders were mapped and contacted. Thus, the basis was strictly purposive sampling and institutional protocol (i.e., the person identified by the institution to have the relevant information).

Since the proposal on the selection of the various respondents is basically (quasi-) random, participation was non-discriminatory. To guarantee confidentiality and anonymity, some personal information of respondents that aid in the identification of people are not shared with any other party. For example, names of respondents, house names and numbers, and addresses (postal or digital) were dropped from the data files to be submitted. Consent forms were designed for respondents to sign if they agreed to participate in the survey. While the importance of the survey was shared, respondents were duly informed by enumerators that they had the right to decline to participate in the survey, and those who declined were replaced by other respondents. All respondents were assured that they had nothing to lose if they declined to participate.

The study used face-to-face interviews, key informant interviews (KII), focus group discussions (FGD), spatial (GIS) mapping, and observation and photographic documentation. Computer-assisted personal interviews (CAPI) were used to collect data from ASM actors through face-to-face interviews. KIIs were conducted with other respondent types (i.e., stakeholders) itemised earlier to gather data pertaining to institutional mandates, governance challenges, enforcement bottlenecks, socioeconomic dynamics, and informal network structuring of ASM. In all, nine (9) FGDs were conducted, comprising mineworkers, farmers, women, youth, and migrant workers drawn from the selected communities to collect group data pertaining to livelihoods and income diversification, security and conflict risks, gender roles and vulnerabilities, relations between mineworkers and host communities, and access to social services and natural resources. Seventeen (17) KIIs involving traditional authorities, mining committee members, statutory regulatory bodies and institutional stakeholders, the DMC, security agencies among others were conducted (refer to A.3.1 in the appendix for the full list).

1 Because of community-level conversions of the sample sizes, there are some slight differences between the targeted distribution proportions and the actual sample.

Spatial mapping and GIS were conducted in the study districts covering aggregate land use land cover analysis of the entire project area, and a district specific analysis of environmental features. The maps identify the source as Esri Sentinel-2 Land Use Land Cover (LULC). The temporal scope covers two observation years: 2017 and 2025. This creates an eight-year comparison window for detecting net changes in land use land cover class area and percentage share within a total land area of 15,090.50 sq. km.

Sentinel-2 data are suitable for land use land cover mapping because they provide repeated multispectral satellite observations that can distinguish broad vegetation, water, exposed soil, and built-up patterns. The classification has been aggregated into seven LULC classes: water body, forest, flooded vegetation, crops, settlement, bare ground, and grassland. The exercise was participatory in nature, and it ensured that all relevant stakeholders (e.g., mineworkers and community leaders) were involved in the process. The exercise generated GIS map outputs (e.g., geo-referenced maps) that were integrated with socio-economic data for each district. It specifically covered satellite image classification to delineate larger ASM sites, drone flight missions to acquire high-resolution imagery, and transect walks to geolocate all identified sites. We also undertook observation and photographic documentation using structured observation checklists and cameras to capture physical site layouts, safety conditions, waste management, and environmental impacts.

The following instruments were used:

- Interview Guide,
- Questionnaire,
- Computer tablets for CAPI and geolocation data,
- Digital recorders for FGD,
- Field diaries,
- FGD Guide,
- Cameras,
- Drones.

The questionnaire was designed to collect a range of data that were sufficient to analyse and deliver the objectives of this study, including demographic and household data, economic roles and income sources, working conditions and occupational risks, access to land, credit, and equipment, gender participation, decision-making, social mobility, and perceptions of governance, security, and the environment. The individual questionnaire, focus group discussion and key informant interview guides are attached as appendix A.3.2, A.3.3 and A.3.4. Quantitative and qualitative data were collected using these instruments.

It is important to note that data collection involving human subjects raises ethical issues; thus, ethical considerations must be catered for. We applied for ethical clearance to undertake this assignment from the Institutional Review Board (IRB) of the University for Development Studies (UDS). The process of applying for ethical clearance required, among other things, a consent form. Thus, an appropriate consent form was developed and submitted for clearance. In the process of data collection, this consent form was read out and approved by the sampled respondents through signing or thumbprinting before data were sought from them. Therefore, data were collected only from those who voluntarily consented to participate.

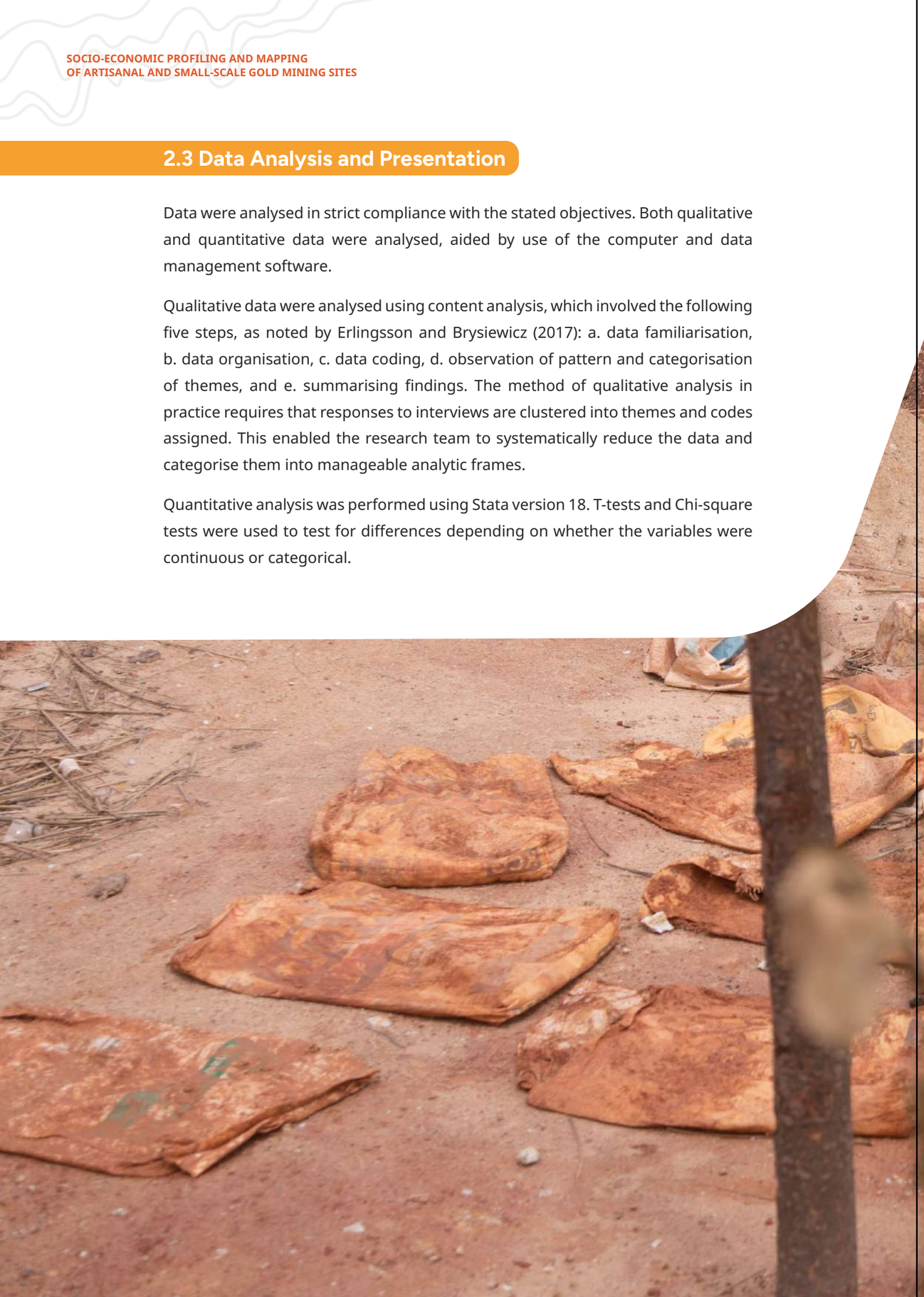
Enumerators were recruited with a minimum qualification of a bachelor's degree and demonstrable experience in data collection, especially related to livelihoods. Enumerators who understood and could operationally translate questions into the local dialect of a particular community where they were assigned were recruited. We prevented heavy workloads per enumerator by presenting reasonable, achievable, and time-bound targets. Enumerators worked in teams to ensure that quality data were collected. In the Bole district, seven people were recruited, comprising six enumerators and one supervisor. Four people each were recruited from the Sawla-Tuna-Kalba and West Gonja districts, with one supervisor and three enumerators each. In total, 15 people were recruited (12 enumerators and 3 supervisors). Supervisors provided all-round monitoring of enumerators to ensure that the quality control measures planned were strictly adhered to and led the process of sampling respondents. They also ensured data transmission. The role of each team's supervisor and the regular monitoring of the investigation team were well-placed to deliver quality assurance and meet other needs. For example, because each supervisor was freelancing, no enumerator had the opportunity to do anything untoward in their engagements with respondents. We used the Kobo toolbox to economise time and boost the quality of the data. The Kobo toolbox enhanced the quality of the data because the data could be reviewed instantly or shortly after the end of the day's collection. The project team could view the data collected for completeness and appropriateness, even when the collection was ongoing.

2.3 Data Analysis and Presentation

Data were analysed in strict compliance with the stated objectives. Both qualitative and quantitative data were analysed, aided by use of the computer and data management software.

Qualitative data were analysed using content analysis, which involved the following five steps, as noted by Erlingsson and Brysiewicz (2017): a. data familiarisation, b. data organisation, c. data coding, d. observation of pattern and categorisation of themes, and e. summarising findings. The method of qualitative analysis in practice requires that responses to interviews are clustered into themes and codes assigned. This enabled the research team to systematically reduce the data and categorise them into manageable analytic frames.

Quantitative analysis was performed using Stata version 18. T-tests and Chi-square tests were used to test for differences depending on whether the variables were continuous or categorical.





3. FINDINGS AND DISCUSSIONS

3.1 Demographic and Socioeconomic Analysis of ASM Actors

3.1.1 Demographic characteristics

Figure 4 presents the sex distribution, showing that most respondents are men (62%). This is expected because the literature shows that ASM is predominantly a preserve of men (Baddianaah et al., 2022), and the sampling strategy was designed to follow this established pattern.

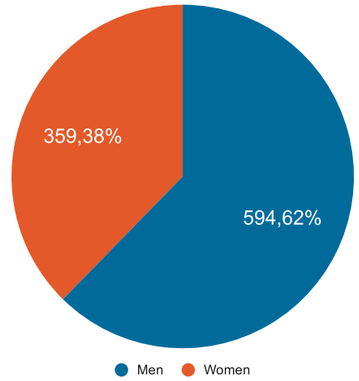


Figure 3.1: Sex of respondents

In Table 2, the mean age of respondents is 37 years, implying that ASM is dominated by young mineworkers. The mean ages of the respondents in mining and non-mining communities are 35 and 41 years, respectively, and this difference is statistically significant. These average ages are lower than the mean age at the national level (45.2 years) reported by the Ghana Statistical Service (GSS) (2019) in the Ghana Living Standards Survey round 7 (GLSS7). Because mining is relatively more laborious than other economic activities, it requires more young people who have the energy. Alternatively, more young people could be transitioning from other economic activities to mining. There is also a statistically significant difference in the mean ages of men and women, with men participants in ASM relatively older than women. Figure 5 shows the age distribution over five age cohorts (i.e., 18-30, 31-40, 41-50, 51-60 and 60+).

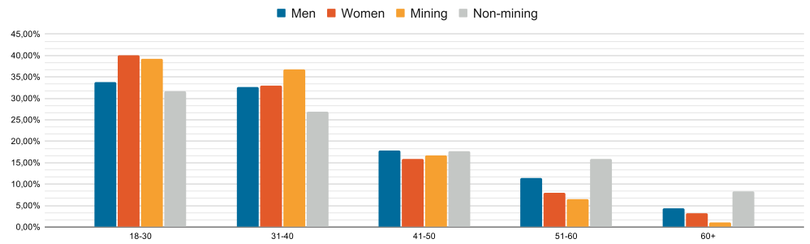


Figure 3.2: Age cohort distribution

Table 2: Means of demographic characteristics

Characteristic	Mining		Non-mining		All	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Age*	34.70	10.13	40.30	14.07	36.94	12.17
Men*	35.25	10.16	41.80	14.20	37.77	12.28
Women*	33.72	10.02	38.07	13.61	35.58	11.88
Household size*	6.65	4.60	8.16	5.65	7.25	5.10
Males*	3.45	2.76	3.94	2.91	3.64	2.83
Females*	3.20	2.36	4.22	3.33	3.61	2.83
Adults (18+)*	4.10	3.63	4.85	3.50	4.40	3.60
Men (18-64)	2.10	1.98	2.21	1.83	2.15	1.92
Women (18-64)*	1.87	1.53	2.32	1.91	2.05	1.70
Men (64+)	0.06	0.66	0.11	0.32	0.08	0.55
Women (64+)*	0.07	0.47	0.20	0.44	0.12	0.46
Children (<18)*	2.54	2.32	3.31	3.11	2.85	2.69
Males*	1.28	1.33	1.61	1.71	1.41	1.50
Females*	1.26	1.36	1.70	1.86	1.44	1.59
Active labour (18-64)*	3.79	2.87	4.62	3.25	4.15	3.07
Dependents (<18 & 64+)*	3.54	2.66	4.09	3.33	3.78	2.98
Dependency ratio	1.50	1.50	1.63	1.65	1.56	1.57
Literacy in other languages	0.15	0.36	0.14	0.35	0.14	0.35

Characteristic	Mining		Non-mining		All	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Child school dropout	2.44	2.04	2.92	2.49	2.82	2.39
Male	1.33	1.28	2.00	2.39	1.85	2.21
Female	1.11	1.13	0.92	0.90	0.96	0.95
No. of years in community*	16.12	14.13	32.98	16.59	22.88	17.27

Note: * *means statistically significant differences between mining and non-mining communities*

This confirms the evidence that ASM is dominated by young people, as most respondents are within the 18-30 and 31-40 age cohorts. In terms of marital status, majority of respondents (634, 66.53%) are married (Figure 3.3a). This is followed by respondents who are never married (189, 19.83%). This follows a similar pattern to the GLSS7, where the married and never married are predominant in Ghana (albeit in a reverse order), while the other statuses represent small proportions. Male respondents are more married (420, 70.71%) than female respondents (214, 59.64%). Most respondents (Figure 3.3b) are the heads of their households (564, 59.18%) but there are also a significant proportion of respondents who are spouses (201, 21.09%) and children[1] (134, 14.06%).

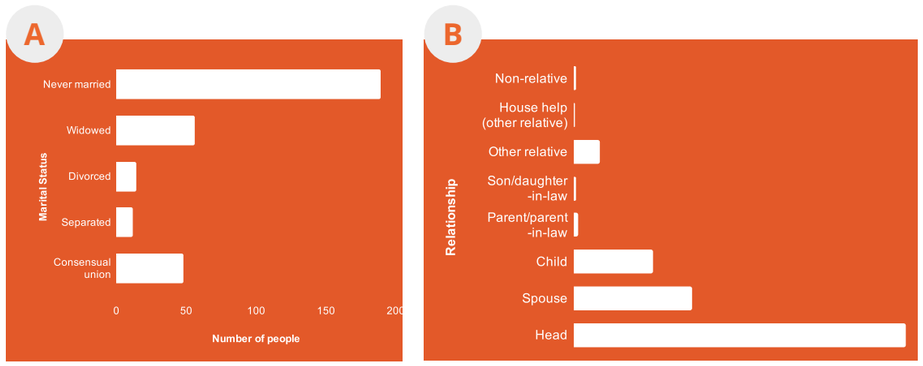


Figure 3.3: Marital status (a) and relationship of respondents to head of household (b)

1 Not implying minors, but wards.

Male respondents are proportionately more heads (466, 78.45%) than female respondents (98, 27.30%). In Table 2, the mean household size is 7.25, with non-mining communities having statistically significantly larger sizes (8.16) than mining communities (6.65). This pattern is observed in the household size distribution based on gender and age cohorts. For example, there are more males (3.94) and females (4.22) in households in non-mining communities than in mining communities (3.45) and (3.20). The mean household size is greater than the national and Savannah region averages of 3.6 and 4.9, respectively.

There are, on average, five active household members overall, with non-mining communities having more active members (4.62) than mining communities (3.79). There are also more dependents in non-mining communities (4.09) than in mining communities (3.54). The overall mean dependency ratio is 1.56, with no statistically significant difference between the dependency ratios of mining (1.50) and non-mining communities (1.63).

Figure 3.4 presents the educational background of respondents, showing that there is generally a low level of formal educational attainment, as more respondents attain either no formal education or have low attainment of higher qualifications. Most respondents do not have formal education, with more non-mining communities having higher proportions (62.30%) relative to mining communities (44.48%). Overall, 492 respondents (51.63%) have no formal education. Female respondents have a higher proportion (53.43%) relative to male respondents (49.33%) with no formal educational attainment.

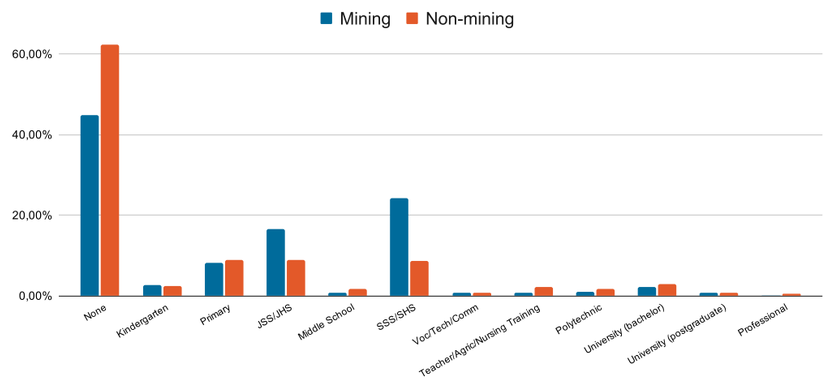


Figure 3.4: Religion: Educational backgrounds





Both mining and non-mining communities report children's engagement in mining, albeit at a lower level.

Again, in Table 2, it is found that 14.48 percent of households are literate in languages other than English. This implies that respondents have not only a low formal educational background but also a low level of literacy in Ghanaian languages. Evidence on school dropout of children (Table A.2 in the appendices) indicates that there is a low school dropout rate, as only 82 respondents (8.60%) reported their children dropping out of school. Respondents in non-mining communities have a higher proportion (16.75%) of dropouts than those in mining communities (3.15%). The mean number of children who drop out is 3, with no statistically significant difference between mining and non-mining communities. Male children drop out more (two children) than female children (one child). Figure 3.5 shows the reasons for children dropping out of school, showing that the primary reason for school dropout is the lack of school fees. This is followed by engagement in other jobs. While mining does not cause school dropouts relative to these primary reasons, it is nonetheless a key factor, especially in mining communities. The relatively low mining-induced school dropouts are corroborated by evidence from FGDs and KIIs. For example, in Tinga, the traditional leader introduced a disciplinary measure of authorising the committee to cane underage mineworkers found at mining sites. He stated: *"I gave the committee the power to arrest and cane any child who is underage and is found at the mining site. As a result, parents have stopped their children from going there. There were times when you would find children driving tricycles there, but now we have stopped all those things."* (Tinga, Traditional Leader).

While the same reasons affect male and female children, their effects are disproportionate. For example, in mining communities, mining causes school dropouts for male children but not for female children.

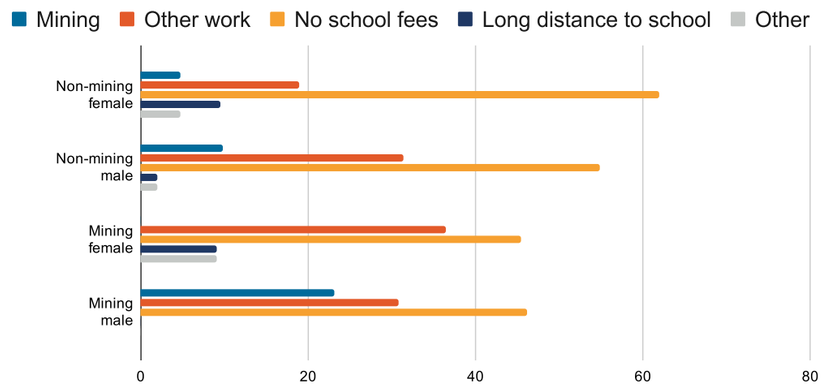


Figure 3.5: Reason for school dropout

Table A.2 in the appendix presents the ethnic distributions of respondents, revealing a diversity of respondents' ethnicity despite the dominance of some groups, such as Gonja (333, 34.94%), Dagaaba (163, 17.1%), and Brifor (145, 15.22%). The predominance of Gonja confirms their traditional and political dominance in the Savannah region. Mining communities are more ethnically diverse than non-mining communities. This implies that mining attracts people from various ethnic backgrounds. The religious distribution of the respondents is shown in Figure 3.6. Most respondents (59.18%) practised the Islamic faith, with a higher proportion of Muslims in mining communities (65.5%) than in non-mining communities (49.74%). Respondents who practise the Christian faith are the second largest group, and some respondents practise traditional faith and others have no faith.

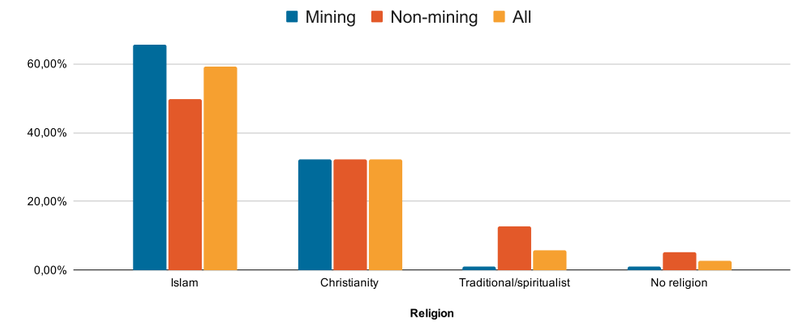


Figure 3.6: Religion

As shown in Figure 3.7, most respondents are natives (53.52%). However, a disaggregation based on mining status indicates that there are more natives in non-mining communities (70.94%) than in mining communities (41.86%).

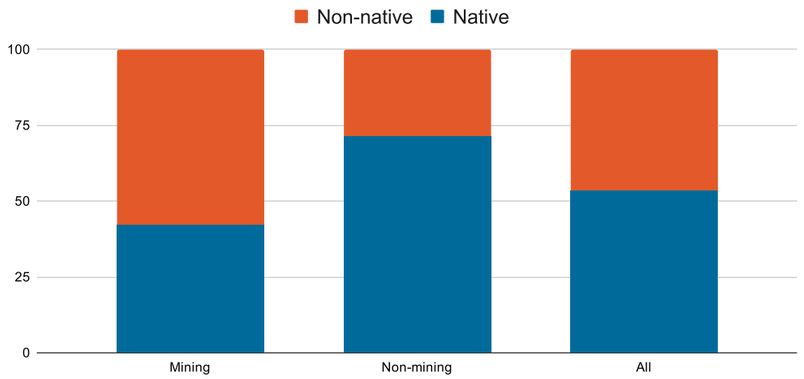


Figure 3.7: Settlement status

The higher proportion of non-natives in mining communities (58.14) relative to non-mining communities (29.06%) confirms that mining attracts people of diverse ethnic backgrounds. The average number of years respondents have lived in their respective communities is 22.88 years, with respondents in non-mining communities living many years (32.98 years) compared to those living in mining communities (16.12 years).

3.1.2 Socioeconomic characteristics

Table 3 presents evidence on the respondents' occupational backgrounds. The two main primary occupations are mining (368, 38.61%) and agriculture (335, 35.15%). The predominant primary occupation in mining communities is mining (366, 64.1%), and that of non-mining communities is agriculture (274, 71.73%). However, there are other important non-mining primary occupations in mining communities, such as trading (100, 17.51%), agriculture (61, 10.68%), and technicians/artisans (16, 2.8%).

There are also respondents who reside in non-mining communities but have mining as their primary occupation. Most respondents (542, 56.87%) do not have any secondary occupation, implying a high degree of specialisation in the primary occupation.

Table 3: Frequencies and percentages of occupation

Occupation	Mining		Non-mining		All	
	Freq.	%	Freq.	%	Freq.	%
Primary occupation						
Mining	366	64.1	2	0.52	368	38.61
Agriculture	61	10.68	274	71.73	335	35.15
Trading (not mining)	100	17.51	50	13.09	150	15.74
Civil/public servant	7	1.23	10	2.62	17	1.78
Technician/artisan	16	2.8	10	2.62	26	2.73
Construction work	5	0.88	3	0.79	8	0.84
Wage labour	5	0.88	12	3.14	17	1.78
Dress making	6	1.05	12	3.14	18	1.89
Hairdressing	2	0.35	2	0.52	4	0.42
Weaving			1	0.26	1	0.1
Charcoal production			2	0.52	2	0.21

Occupation	Mining		Non-mining		All	
	Freq.	%	Freq.	%	Freq.	%
Driver	2	0.35	1	0.26	3	0.31
Others	1	0.18	3	0.79	4	0.42
Secondary occupation						
None	268	46.94	274	71.73	542	56.87
Mining	97	16.99	1	0.26	98	10.28
Agriculture	100	17.51	45	11.78	145	15.22
Trading/selling (not mining)	74	12.96	24	6.28	98	10.28
Civil/public servant	1	0.18	2	0.52	3	0.31
Technician/artisan	13	2.28	9	2.36	22	2.31
Construction work	2	0.35	4	1.05	6	0.63
Wage labour	5	0.88	12	3.14	17	1.78
Dress making	4	0.7	1	0.26	5	0.52
Hairdressing	2	0.35	3	0.79	5	0.52
Weaving	0	0.00	1	0.26	1	0.10
Housewife	1	0.18	0	0.00	1	0.10
Charcoal production	0	0.00	2	0.52	2	0.21
Driver	2	0.35	1	0.26	3	0.31
Other	2	0.35	3	0.79	5	0.52

A higher proportion of people in non-mining communities (71.73%) relative to mining communities (46.94%) do not have secondary occupations. This may indicate that people in mining communities use mining proceeds to engage in alternative economic activities such as farming. This assertion is supported by the evidence in Figure 3.8, which shows that the proportion of respondents in mining communities (17.51%) engaging in the two main sources of income is higher than that in non-mining communities (9.16%).

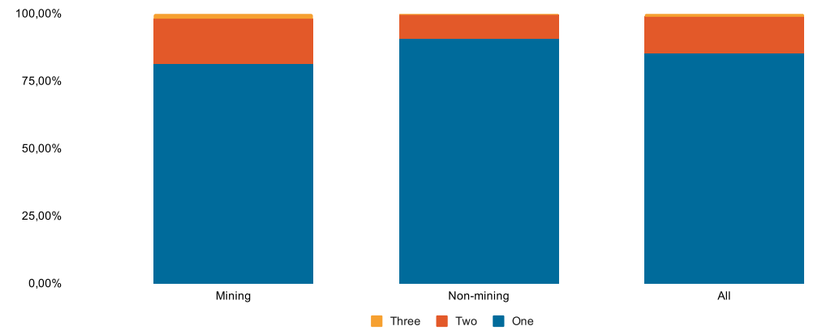


Figure 3.8: Count of main sources of income

Moreover, while 1.93 percent of respondents in mining communities engage in three main livelihood activities, none in non-mining communities engages in more than two main livelihood activities. The distribution of all the main livelihood activities of respondents is presented in Table 4, where the main livelihood activities undertaken by respondents are mining, agriculture, and trading.

Table 4: Main sources of income

Sources	Mining		Non-mining		All	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Mining*	0.66	0.47	0.01	0.09	0.40	0.49
Agriculture*	0.20	0.40	0.72	0.45	0.41	0.49
Trading*	0.25	0.43	0.17	0.38	0.22	0.41
Civil servant*	0.01	0.09	0.03	0.16	0.02	0.12
Technician/artisan	0.04	0.20	0.04	0.20	0.04	0.20
Construction	0.01	0.09	0.01	0.09	0.01	0.09
Wage labour*	0.02	0.12	0.03	0.18	0.02	0.15
Dressmaking*	0.01	0.11	0.04	0.19	0.02	0.15
Hairdressing	0.01	0.07	0.01	0.07	0.01	0.07
Others*	0.01	0.10	0.04	0.19	0.02	0.15

Note: * *means statistically significant differences between mining and non-mining communities*

Figure 3.9 presents the results of past (i.e., any time before 2025) and current (2025) crop production status of respondents. Unsurprisingly, most respondents in non-mining communities (82.98%) have engaged in crop production, while the majority in mining communities (58.67%) have not engaged in crop production in the past. In the 2025 production season, while the proportion of respondents who engaged in crop production reduced for both mining and non-mining communities, the magnitude of reduction was greater in mining communities (29.66%) than in non-mining communities (10.40%). But in both past and now, the proportion of respondents who engage in crop production is low.

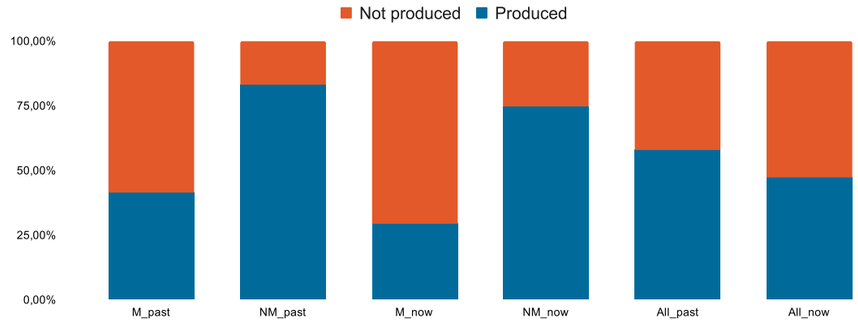


Figure 3.9: Crop production

The types of crops produced in 2025 are presented in Table 5. The results show that the respondents produced 19 different crops. However, the dominant crops produced in descending order are maize (36%), groundnut (23%), yam (11%), cashew (8%), and millet (5%). Maize, groundnut, and yam are simultaneously the top 3 produced in non-mining and mining communities.

Only tomatoes are produced more in mining communities than in non-mining communities. Respondents who produced crops in 2025 cultivated an average of 3.58 ha of all cultivated crops, with a statistically significant difference between non-mining (4.00 ha) and mining communities (2.86 ha). The total crop output produced is 926 kg, with a statistically significant difference between non-mining (1,641.84 kg) and mining communities (447.18 kg). Higher proportions of output are marketed in non-mining (663.37 kg) than in mining communities (161.25 kg), and this difference also dictates a higher proportion of sale value between non-mining and mining communities. An interesting finding is that while non-mining communities produce more crops, cultivate larger farm sizes, achieve more output, sell more quantities, and obtain more sale revenues, mining communities achieve higher yields (588.24 kg/ha) than non-mining communities (503.92 kg/ha). This may suggest that respondents in mining communities use proceeds from mining to procure productivity-enhancing inputs to improve yields. This might also roughly be confirming the inverse farm size-productivity nexus (Debrah & Adanu, 2022; Abay et al., 2019).

Table 5: Means of crops, animals and income

Variable	Mining		Non-mining		All	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Crop production						
Maize	0.17	0.38	0.65	0.48	0.36	0.48
Groundnut	0.15	0.35	0.35	0.48	0.23	0.42
Millet	0.01	0.08	0.13	0.33	0.05	0.23
Soybean	0.00	0.00	0.01	0.10	0.00	0.06
Beans	0.01	0.12	0.06	0.24	0.03	0.18
Guinea corn	0.01	0.08	0.05	0.22	0.02	0.15
Sorghum	0.00	0.00	0.01	0.07	0.00	0.05
Yam	0.10	0.30	0.14	0.34	0.11	0.32
Cassava	0.04	0.18	0.05	0.23	0.04	0.20
Tomatoes	0.01	0.08	0.00	0.00	0.00	0.06
Okro	0.00	0.04	0.02	0.15	0.01	0.10
Pepper	0.01	0.08	0.01	0.11	0.01	0.10
Garden eggs	0.00	0.04	0.00	0.00	0.00	0.03
Cashew	0.05	0.21	0.12	0.33	0.08	0.27
Cocoa	0.00	0.00	0.00	0.05	0.00	0.03
Mango	0.00	0.00	0.00	0.05	0.00	0.03
Rice	0.00	0.06	0.01	0.09	0.01	0.07
Tiger nut	0.00	0.00	0.00	0.05	0.00	0.03
Watermelon	0.00	0.04	0.01	0.11	0.01	0.08
Farm size (producers)*	2.86	2.76	4.00	5.13	3.58	4.44
Output (kg)*	447.18	1205.67	1641.84	4107.97	926.04	2822.62
Sale quantity (kg)*	161.25	612.90	663.37	2108.89	362.52	1437.16
Sale value (GHS)*	1374.47	4669.44	4490.54	19363.32	2623.51	12862.47
Yield (kg/ha)*	588.24	497.16	503.92	526.88	535.03	517.17

Variable	Mining		Non-mining		All	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Crop production						
Cattle	0.30	0.46	0.21	0.41	0.25	0.43
Sheep	0.42	0.49	0.30	0.46	0.35	0.48
Goat	0.59	0.49	0.71	0.46	0.66	0.47
Pig	0.06	0.23	0.15	0.36	0.12	0.32
Chicken	0.66	0.47	0.73	0.45	0.70	0.46
Guinea fowl	0.07	0.26	0.13	0.33	0.11	0.31
Turkey	0.01	0.09	0.01	0.07	0.01	0.08
Duck	0.01	0.09	0.03	0.16	0.02	0.14
Dove	0.01	0.09	0.02	0.12	0.01	0.11
TLU*	12.05	35.64	4.61	9.63	7.51	23.71
Animal sale value (producers)	4098.04	19232.63	1698.24	6607.09	2632.74	13088.51
Asset ownership*	6.16	3.99	5.40	2.71	5.86	3.55
Electricity sources						
None	0.01	0.11	0.05	0.22	0.03	0.17
National grid	0.85	0.35	0.56	0.50	0.74	0.44
Private generator	0.03	0.18	0.01	0.07	0.02	0.15
Solar home system	0.03	0.18	0.02	0.15	0.03	0.17
Solar lantern	0.18	0.38	0.17	0.37	0.17	0.38
Rechargeable battery	0.11	0.32	0.21	0.41	0.15	0.36
Amchar/changfan	0.02	0.12	0.00	0.05	0.01	0.10
Torch light	0.00	0.04	0.01	0.09	0.00	0.06
Total annual income (GHS)*	83256.46	180093.7	14356.88	26017.59	55638.79	144331.5

Note: * *means statistically significant differences between mining and non-mining communities*

Figure 3.10 presents information on the number of crops simultaneously produced by the respondents. This shows the dominance of respondents in non-mining communities in producing different crops. No respondent in the mining communities produced more than five crops.

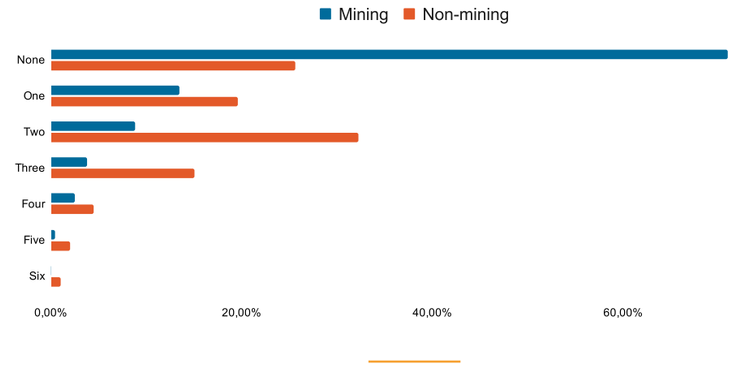


Figure 3.10: Number of crops produced

Figure 3.11 presents evidence of animal rearing. Most respondents (66.32%) do not rear any animals. Thus, proportionally, crop production is more popular among respondents than animal production. The majority of respondents in non-mining communities' rear animals (51.31%), while only 21.89 percent of respondents in mining communities rear animals.

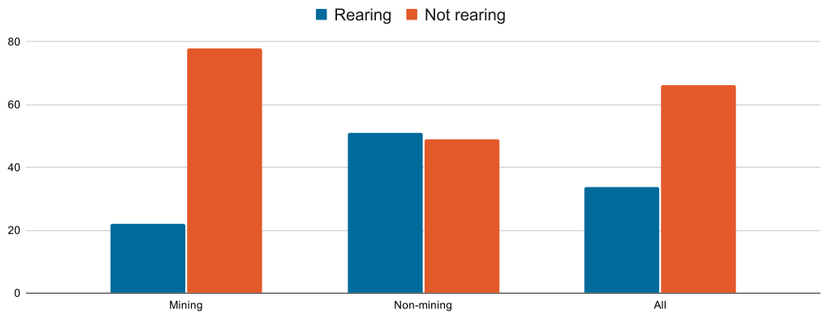


Figure 3.11: Animal rearing

The number of animals reared, as shown in Figure 3.12, further confirms that non-mining communities rear more animals than mining communities. For example, no respondent in mining communities reared more than four animals. In terms of the specific animals reared, Table 5 indicates that nine animals are reared by respondents, but the predominant ones are chicken (70%), goat (66%), sheep (35%), cattle (25%), and pig (12%). Although non-mining communities produce more diverse animals, in terms of the number of animals produced based on tropical livestock units (TLU), mining communities have a higher TLU (12.05)

which is statistically different from the TLU of non-mining communities (4.61). This implies that mining communities have a greater endowment of animals than non-mining communities. The results further revealed that the mean animal sale value is GHS 2,632.74, with no statistically significant difference between mining and non-mining communities.

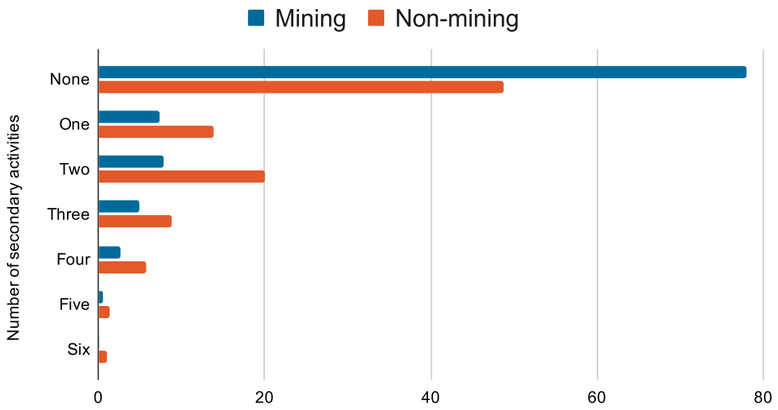


Figure 3.12: Number of animal reared

Table A.3 in the appendix reveals that respondents own a variety of assets, with mobile phones, cutlasses, hoes, motorcycles, televisions, radios, and shovels as the most common assets owned. In Table 6, mining communities own an average of 6.16 assets while non-mining communities own 5.40, and the difference is statistically significant. This supports the earlier evidence of the impact of mining. The total annual income of respondents is computed from several sources, including crop sales, animal sales, remittances, mining income, and other sources. The average total annual income is GHS 55,638.79 (Table 5). The high standard deviation (144,331.5) indicates significant income disparities in the sample. The average total annual income of respondents from mining and non-mining communities are GHS 83,256.46 and GHS 14,356.88, respectively, with a statistically significant difference. This evidence shows that respondents from mining communities are richer than those from non-mining communities.

Regarding housing characteristics, Table 6 shows that the outer walls of more than half (69%) of the dwelling units in mining communities are made of cement blocks/concrete, relative to 40.58 percent of respondents in non-mining communities. Moreover, 43.98 percent of respondents in non-mining communities, relative to 20.49 percent of respondents in mining communities, have outer walls made of mud bricks/earth. Using this as a measure of wealth, this indicates that respondents in mining communities are wealthier than those in non-mining communities. This is supported by the evidence that 16.11 percent of respondents in mining communities, relative to 2.88 percent of respondents in non-mining communities, have tiles as the floor material of their dwellings, while 15.45 percent of respondents in non-mining communities, relative to 2.63 percent of respondents

in mining communities, have earth/mud as the floor material of their dwellings. Further support relates to the roofing material of dwellings, where 97.2 percent of respondents in mining communities relative to 91.62 percent of respondents in non-mining communities have metal sheets as roofing material.

Table 6: Frequencies and percentages of dwelling and water sources

Variable	Mining		Non-mining		All	
	Freq.	%	Freq.	%	Freq.	%
Outer house material						
Mud bricks/earth	117	20.49	168	43.98	285	29.91
Wood	6	1.05			6	0.63
Metal sheets/slate/asbestos	37	6.48	6	1.57	43	4.51
Burnt bricks	2	0.35	5	1.31	7	0.73
Cement blocks/concrete	394	69	155	40.58	549	57.61
Landcrete	2	0.35	45	11.78	47	4.93
Rubber	13	2.28	2	0.52	15	1.57
Other			1	0.26	1	0.1
Floor material						
Earth/mud	15	2.63	59	15.45	74	7.76
Cement/concrete	463	81.09	310	81.15	773	81.11
Tiles	92	16.11	11	2.88	103	10.81
Rubber	1	0.18	2	0.52	3	0.31
Roofing material						
Mud brick/earth			13	3.4	13	1.36
Metal sheets	555	97.2	350	91.62	905	94.96
Slate/asbestos	1	0.18	1	0.26	2	0.21
Cement blocks/concrete	3	0.53	4	1.05	7	0.73
Bamboo			1	0.26	1	0.1
Palm leaves/thatch (grass raffia)	2	0.35	12	3.14	14	1.47
Rubber	10	1.75	1	0.26	11	1.15

Variable	Mining		Non-mining		All	
	Freq.	%	Freq.	%	Freq.	%
Main source of water						
Pipe-borne inside dwelling	55	9.63	8	2.09	63	6.61
Pipe-borne outside dwelling but on compound	61	10.68	9	2.36	70	7.35
Pipe-borne outside dwelling but from neighbour	56	9.81	21	5.5	77	8.08
Public tap/standpipe	84	14.71	38	9.95	122	12.8
Borehole/pump/tube well	267	46.76	197	51.57	464	48.69
Protected well	7	1.23	3	0.79	10	1.05
Rainwater			1	0.26	1	0.1
Protected spring			3	0.79	3	0.31
Sachet water	4	0.7			4	0.42
Tanker supply/vendor provided	8	1.4	16	4.19	24	2.52
Unprotected well	26	4.55	3	0.79	3	0.31
River/stream	3	0.53	25	6.54	51	5.35
Dugout/pond/lake/dam/ canal			58	15.18	61	6.4
Toilet facilities						
No facilities	367	64.27	269	70.42	636	66.74
Water closet	87	15.24	14	3.66	101	10.6
Pit latrine	27	4.73	58	15.18	85	8.92
KVIP	54	9.46	6	1.57	60	6.3
Public toilet	36	6.3	35	9.16	71	7.45

Regarding the main sources of water supply, respondents in mining communities use more clean water sources (91.59%), such as pipe-borne (private and public) and borehole/pump/tube wells, relative to respondents in non-mining communities (71.47%). Respondents in non-mining communities (22.51%) use more unclean

water sources, such as unprotected wells, rivers/streams, and dugouts/ponds/lakes/ dams/canals, relative to 5.08 percent of respondents from mining communities. There is a higher proportion of respondents in non-mining communities (70.42%) without toilet facilities relative to respondents in mining communities (64.27%), while a higher proportion of respondents in mining communities (15.24%) relative to respondents in non-mining communities (3.66%) use water closets. Regarding access to electricity, the proportion of respondents who do not have access is higher in non-mining communities (5%) than in mining communities (1%). However, a higher proportion of respondents in mining communities use the national grid (85%) relative to non-mining communities (56%). Interestingly, while 2 percent of respondents in mining communities use electricity produced from “amchar”/“changfan”, no respondent in non-mining communities uses such electricity from this source. Obviously, “amchar”/“changfan” is used to power mining operations.



Respondents in mining communities have significantly more assets and have better access to amenities (such as pipe-borne water, toilets and electricity) than their counterparts in non-mining communities reflecting the impact of mining.

Figure 3.13 presents the results on the financial inclusion of respondents, showing that apart from mobile money and insurance, the use of other financial products is low. Mobile money is the predominant financial service used by respondents. Respondents from mining communities use bank accounts and mobile money more and receive more remittances than those from non-mining communities.

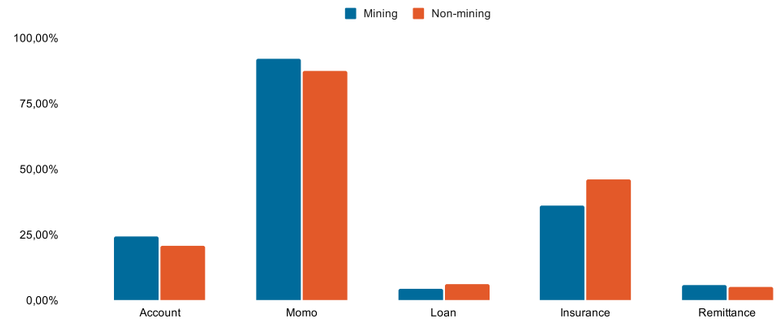


Figure 3.13: Use of financial products/services

In Table 7, evidence on the depth of financial inclusion (i.e., the number of products/services simultaneously used) indicates that a higher proportion of respondents from non-mining communities (10.47%) do not use any product/service relative to those from mining communities (4.73%). The distribution shows that respondents in mining communities are more financially included than those in non-mining communities. Furthermore, respondents from non-mining communities hold more accounts in formal institutions (76.25%), such as commercial banks, investment banks, and community/rural banks, than respondents in mining communities (70.71%).

While the majority of respondents in mining communities (44.08%) who do not have a bank account attribute their lack of account to 'not necessary', the majority of respondents in non-mining communities (42.38%) attribute their lack of account to not having enough money. For insurance policyholders, the predominant insurance cover is for medical purposes, with non-mining communities slightly higher than mining communities.

Table 7: Frequencies and percentages of financial inclusion

Variable	Mining		Non-mining		All	
	Freq.	%	Freq.	%	Freq.	%
Depth of inclusion						
None	27	4.73	40	10.47	67	7.03
One	244	42.73	136	35.6	380	39.87
Two	228	39.93	134	35.08	362	37.99
Three	61	10.68	59	15.45	120	12.59
Four	11	1.93	12	3.14	23	2.41
Five			1	0.26	1	0.1
Account institution						
Commercial bank	87	62.14	49	61.25	136	61.82
Investment/mortgage	3	2.14	1	1.25	4	1.82
Community/rural bank	9	6.43	11	13.75	20	9.09
Savings and loans scheme	22	15.71	5	6.25	27	12.27
Cooperative/credit union	17	12.14	5	6.25	22	10
Susu scheme	2	1.43	8	10	10	4.55
ROSCAs			1	1.25	1	0.45
Reasons for no bank a/c						
Not necessary	190	44.08	58	19.21	248	33.83
Not aware of one	2	0.46	27	8.94	29	3.96
Cumbersome process	20	4.64	13	4.3	33	4.5
Financial institutions far away	12	2.78	6	1.99	18	2.46
Don't have enough money or income	158	36.66	128	42.38	286	39.02
Don't have regular income	46	10.67	65	21.52	111	15.14
No trust in banks	2	0.46	2	0.66	4	0.55
Other	1	0.23	3	0.99	4	0.55
Insurance type						
Vehicle/motor	2	0.97			2	0.52
Medical	200	97.09	175	99.43	375	98.17
Funeral	2	0.97			2	0.52
Property	2	0.97			2	0.52
Education			1	0.57	1	0.26

3.2 Economic Organisation and Specialisation across ASM Value Chain



Every mine has its support network. Water vendors connect miners to the wider local economy, illustrating how livelihoods extend well beyond gold extraction.

Table 8 presents the results on mining characteristics. The average mining experience (i.e., number of years in mining) is 6.93 years, distributed into a statistically significant means of 7.91 and 5.47 years for men and women, respectively. Thus, men are more experienced than women in mining.

Table 8: Means of mining characteristics

Variable	Men		Women		All	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Mining experience*	7.91	6.00	5.47	4.27	6.93	5.50
Years in main activity*	6.59	4.87	5.25	4.32	6.06	4.70
Main activities						
Miner*	0.64	0.48	0.12	0.33	0.44	0.50
Pit owner*	0.25	0.43	0.01	0.11	0.15	0.36
Processor*	0.70	0.46	0.55	0.50	0.64	0.48
Trader*	0.27	0.44	0.35	0.48	0.30	0.46
Service provider*	0.40	0.49	0.66	0.48	0.50	0.50
Ore transport	0.12	0.33	0.15	0.36	0.13	0.34
Committee work	0.00	0.06	0.00	0.00	0.00	0.05
Gold detector	0.01	0.12	0.00	0.00	0.01	0.09
Sponsor	0.01	0.09	0.00	0.00	0.00	0.07

Note: * *means statistically significant differences between men and women*



ASM provides important livelihood and employment opportunities for a vast majority of the population in the Savannah region and beyond



The observation that men are more experienced in mining is confirmed by Figure 3.14, where women dominate only in the lower experience of 0-6 years.

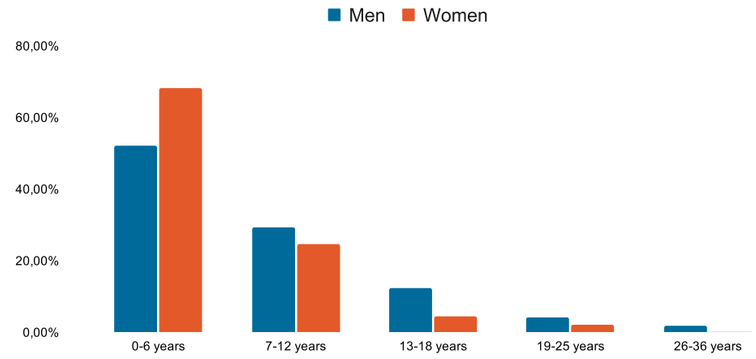


Figure 3.14: Mining experience

Table 9 shows that most respondents, regardless of sex, entered mining through self-initiative. Other significant means of entry are through invitations from family and friends. The main pull factor into mining is the income generation potential, with a higher proportion of women indicating this than men. The second most important factor is the lack of jobs. A low proportion of respondents indicated quick returns as a reason for engaging in mining. This implies that respondents view mining as an economic activity that provides income but not one that provides it quickly enough.

Table 9: Frequencies and percentages of entry and status of mining

Variable	Men		Women		All	
	Freq.	%	Freq.	%	Freq.	%
Means of entry						
Family	59	22.1	50	28.09	109	24.49
Friends	74	27.72	48	26.97	122	27.42
Self-initiative	131	49.06	77	43.26	208	46.74
Recruitment	3	1.12	3	1.69	6	1.35
Reason for mining						
Income	203	76.03	142	79.78	345	77.53
Lack of jobs	54	20.22	34	19.1	88	19.78
Quick returns	9	3.37	2	1.12	11	2.47
Change environment	1	0.37			1	0.22

Variable	Men		Women		All	
	Freq.	%	Freq.	%	Freq.	%
Status of work						
Work for self	167	62.55	98	55.06	265	59.55
Casual labour	79	29.59	69	38.76	148	33.26
Permanent worker	17	6.37	6	3.37	23	5.17
Family business	3	1.12	5	2.81	8	1.8
Shared labour	1	0.37	-	-	1	0.22

Figure 3.15 indicates that some respondents perform multiple activities along the value chain. Women are dominant in performing one and two activities along the value chain, but the tide changes from two activities, implying that men are more dominant in multi-activities in the mining value chain. In Table 8, the main activities performed along the value chain are processing (64%), service provision (50%), miner/underground worker (44%), trading (30%) and pit ownership (15%). For men, the main activities are processing (70%), miner/underground worker (64%), service provision (40%), trading (27%), and pit ownership (25%), while the main activities for women are service provision (66%), processing (55%), trading (35%), ore transportation (15%), and miner/underground worker (12%).

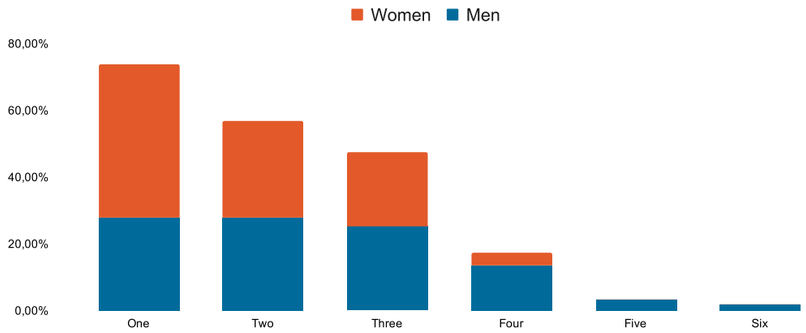


Figure 3.15: Number of activities engaged in within value chain

Despite some respondents engaging in more than one activity, each respondent specialises in a main activity along the value chain (Figure 3.15). Evidence shows that specialisation along the mining value chain is gendered. Men dominate miner/underground worker, pit ownership, gold detection, and sponsorship activities. Indeed, no woman participates in gold detection or sponsorship. This is confirmed by evidence from FGD: "*Here it is not allowed for women to sponsor pits. First if it is about money, we don't have and secondly, this is an Islamic community, and women are not allowed to own or sponsor pits."* (FGD Women, Dakuripe, May 2026).



Mining work is highly gendered with men dominating in the upstream mining work and women leading in downstream activities such as washing and the provision of ancillary services. Women are not involved in the decision-making structures of the mining committees, reflecting the patriarchal nature of the mining communities.

Women dominate gold processing, trading, service provision, and ore transportation. These gendered specialisations are to be expected. For example, miner/underground worker specialisation is the most physical aspect of value chain activities. It is not surprising that this is the preserve of men. Moreover, pit ownership is related to access to land, which, in the literature, women generally have low access to productive resources (Fletschner, 2008; Michler et al., 2019; Verkaart et al., 2017). Thus, men dominate downstream activities.



Figure 3.16: Main activity in the value chain

Processing, trading, service provision, and ore transportation are key upstream activities and are thus less physically demanding than downstream activities. This gendered perspective is shared by a woman as follows: *"We mainly buy 'load' and wash. We also collect the 'top phase', which is on the surface and wash it but it does not produce a lot of gold."* (FGD Women, Tutumba, May 2026).

The average years spent in the specialisation activities is 6.06 years (Table 8), with the average years spent by men (6.59 years) higher and significantly different from that of women (5.25 years). In terms of respondents' work status (see Table 9), the majority, regardless of sex, work for themselves (62.55% of men and 55.06% of women). The second highest proportion of the status of work is casual labour (29.59% of men and 38.76% of women).

Figure 3.17 presents data on children's participation in mining activities, showing that both mining and non-mining communities report children's engagement in mining, albeit at a lower level. While non-mining communities perceive a higher proportion of children's involvement in mining (32.46%), mining communities report a lower proportion (19.78%). The lower proportion of children's participation in mining is corroborated by the earlier data from the KIIs, where disciplinary measures were taken by authorising the mining committees to cane underage miners found at mining sites.

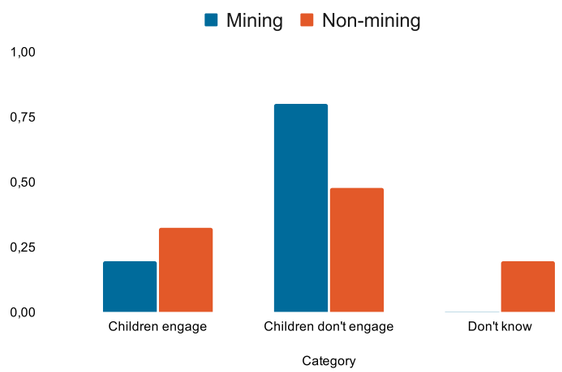


Figure 3.17: Children engagement in mining

As shown in Table 10, the main sources of financing for respondents' specialisation activities are self-financing (91%), family/friends (12%), and employer (7%). These sources are equally important for both men and women. Financing from formal banks, microfinance, village savings and loan association (VSLA), mining cooperatives, and other sources represent lower sources. Thus, the main source of financing for mining activities is self-financing.

Table 10: Means of financing sources, working hours and earnings

Variable	Men		Women		All	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Sources of financing						
Self-financing	0.90	0.30	0.92	0.28	0.91	0.29
Formal bank	0.00	0.00	0.01	0.07	0.00	0.05
Microfinance	0.00	0.00	0.01	0.07	0.00	0.05
VSLA*	0.01	0.09	0.03	0.17	0.02	0.12
ROSCA	0.01	0.09	0.00	0.00	0.00	0.07
Mining cooperative	0.00	0.06	0.01	0.11	0.01	0.08
Friend/family	0.11	0.32	0.12	0.33	0.12	0.32
Moneylender	0.03	0.17	0.03	0.17	0.03	0.17
Employer	0.08	0.27	0.06	0.23	0.07	0.25
Mining hours and earnings						
Weekly working days	5.91	0.72	6.02	0.82	5.95	0.76
Annual working days	307.13	37.27	313.17	42.44	309.55	39.49
Daily working hours*	10.04	2.50	9.42	2.48	9.79	2.51
Annual working hours*	3663.67	913.49	3438.79	904.69	3573.72	915.63
Weekly income (GHS)*	2318.65	4607.56	967.81	1605.68	1778.32	3766.35
Annual income (GHS)*	120569.90	239593.00	50326.07	83495.14	92472.36	195849.90

Note: * *implies statistically significant differences between men and women.*



Table 10 shows that the mean weekly working days on mining activities is approximately 6 days, without a statistically significant difference between men and women. This implies that men and women spend about the same number of days per week. This suggests that the respondents have one rest day per week. Annually, the respondents spend an average of 310 days working. This has implications for the health conditions of workers. The average daily working hours spent on activities is 9.79 hours, with a statistically significant difference between men (10.04) and women (9.42) working hours. This indicates that men spend slightly more hours working. Furthermore, the mean weekly income earned from mining activities is GHS 1,778.32, with a statistically significant difference between the weekly earnings of men (GHS 2,318.65) and women (GHS 967.81). On annual basis, the mean annual income from mining activities is GHS 92,472.36, distributed into a statistically significant difference between the earnings of men (GHS 120,569.90) and that of women (GHS 50,326.07). The large standard deviations imply that there are marked differences in earnings. For example, the minimum weekly income is GHS 60, and the maximum is GHS 50,000. It is also noted that there is a stark difference in earnings between men and women. A further disaggregation of the data shows a descending order of weekly earnings as follows: pit owners (GHS 4,417.07), traders (GHS 3,837.50), gold detectors (GHS 2,825), sponsors (GHS 1,700), miners/ underground workers (GHS 1,679.02), service providers (GHS 1,131.74), processors (GHS 1,126.55), and ore transporters (GHS 607.14). This shows that along the value chain, pit owners are the top earners, and ore transporters are the lowest earners. A key characteristic of mining income is its variability (Figure 3.18). Only 3 percent of respondents reported that their mining income is stable.

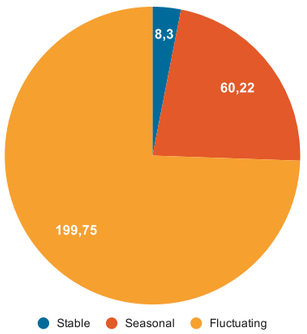


Figure 3.18: Income variability

Figure 3.19a shows that the majority of respondents (94, 65%) manually dig mine-pits. This has health implications for those engaged and supports the evidence of working almost every day of the week. The equipment used in mining activities is mainly owned and employer-owned (Figure 3.19b).

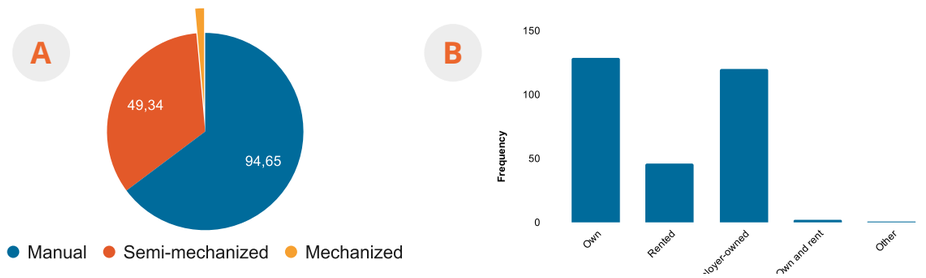


Figure 3.19: Main method of digging pits (a) and main status of equipment used (b)



The ASM sector is characterised by poor techniques and rudimentary technology with pit digging mostly done manually.

Gold is sold locally, as the majority of respondents (93%) sell to local buyers (Figure 3.20). Selling to international buyers represents the lowest channel of gold sales.

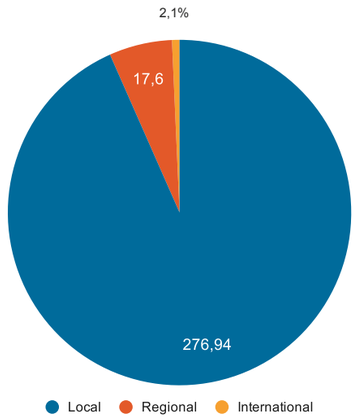


Figure 3.20: Supply chain linkage



As shown in Table 11, the major pricing challenge is market fluctuation (87%). Thus, most respondents view gold price volatility as the main challenge.

Table 11: Means of pricing challenges and disputes

Variable	Men		Women		All	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Pricing challenges						
No challenge	0.019	0.136	0.034	0.181	0.02	0.16
Market fluctuation	0.888	0.316	0.854	0.354	0.87	0.33
Middlemen	0.393	0.489	0.315	0.466	0.36	0.48
Regulation	0.146	0.354	0.191	0.394	0.16	0.37
Mining dispute						
Land	0.87	0.34	0.85	0.36	0.86	0.35
Employment	0.70	0.46	0.69	0.47	0.69	0.46
Environmental	0.42	0.50	0.56	0.50	0.48	0.50
Financial (sharing)	0.04	0.20	0.07	0.26	0.05	0.23
Other	0.03	0.16	0.00	0.00	0.02	0.12

In Figure 3.21, the majority of respondents (56%) report that they had mining injuries within the last year. Disaggregation of the data indicates that the workers who recorded the highest proportion of injuries are miners/underground workers (70.59%), processors (66.89%), ore transporters (64.29%), and pit owners (63.41%). Unsurprisingly, these activities are the riskiest along the value chain.

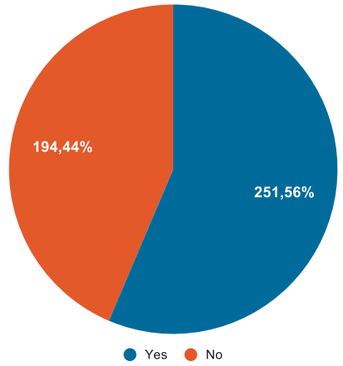


Figure 3.21: Mining injuries

Figure 3.22 shows that mercury is used by both mining and non-mining communities. Mercury is a principal chemical used in gold processing, which may explain its disproportionate use. Respondents who used mercury in non-mining communities are those who are engaged in mining activities. Cyanide is exclusively used by mining communities.

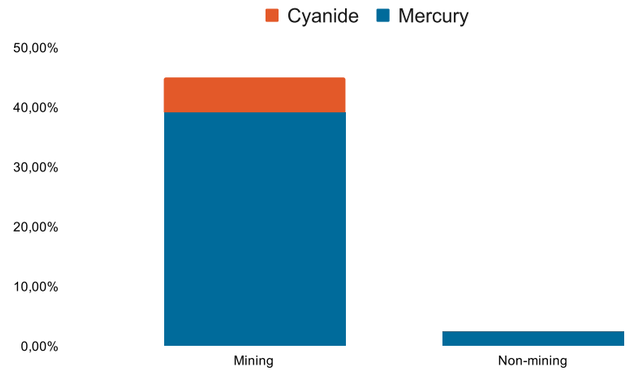


Figure 3.22: Use of chemicals

In Figure 3.23a, the majority of respondents (91%) reported that mining positively impacted their livelihood. This suggests that majority of respondents may be unwilling to leave mining because of its positive economic impact. However, the same majority of respondents report that mining has increased the local cost of living in their respective communities (Figure 3.23b). Thus, while mining boosts people's livelihoods, it increases the cost of living.

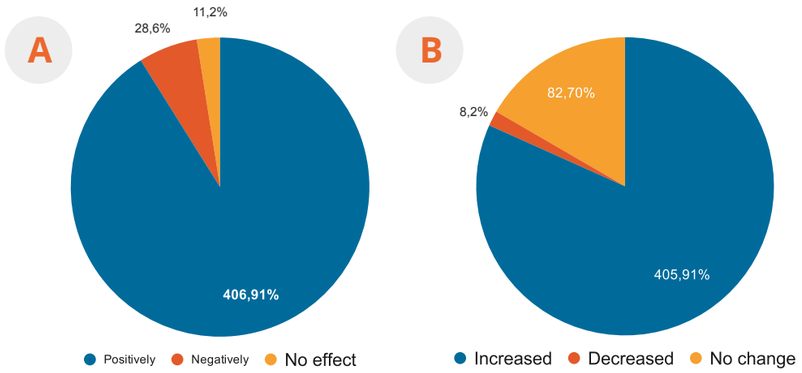


Figure 3.23: Effect of mining on livelihood (a) and changes in cost of living (b)

Figure 3.24 shows that the majority of respondents (71%) report mining-induced disputes. In Table 11, the main dispute-inducing factor is land (86%). This relates to concessional confrontations among workers and inter-community disagreements regarding land ownership. From FGDs, it is reported that boundary encroachment, where miners extend underground work beyond agreed boundaries, especially when they follow high-quality ore seams, is a common source of disputes. Employment-related disputes (69%) are the second most common mining conflicts. This relates to disagreements regarding contractual arrangements. For example, FGD revealed that sponsor-owner-worker disputes are the most common form of conflict, arising from disagreements over ore sharing, perceived cheating by workers, or failure to pay workers. The FGDs further revealed other sources of disputes, such as large-scale versus artisanal conflicts. For example, J H Resource (Tutumba) and OMNICA EXPLORE (Dollar Power) have created tensions as large-scale concessions encroach on traditionally/previously mined areas.

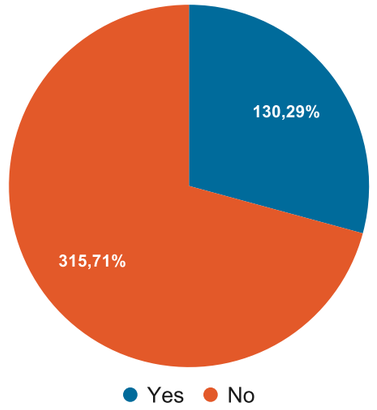


Figure 3.24: Mining disputes

Military force has been used in at least one case (Tutumba case). There are also trust-based financial disputes, where investors who provide capital to mineworkers incur losses if gold extraction is delayed, or yields are lower than expected.

3.3 Land Ownership and Governance Arrangements

Except for land duly acquired by the state for purposes of undertaking development projects or protecting the public interest (e.g., forest reserves, nature, and wildlife reserves), land is held under customary tenure with chiefs as the main custodians. Indeed, 99.0 percent of survey participants across the study sites maintained that the chiefs own the land (Figure 3.25). The land ownership structure of the study sites is hierarchical, with the *Yagbonwura*[2] holding allodial interest.

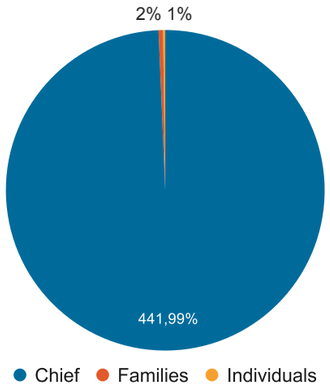


Figure 3.25: Principal landowners

Several paramount chiefs, including the Bolewura, Sonyowura, Sakpawura, and Sindiwura, were installed by the Yagbonwura to support the day-to-day administration of different areas in the Gonja Traditional Area. The paramount chiefs have appointed several divisional chiefs to govern specific communities and oversee the management and administration of land within their respective jurisdictions.

Like most districts in Ghana, land registration systems at the study sites are poorly developed, with only approximately 16 percent of surveyed households indicating that their land has been registered (Figure 3.26). At the community level, chiefs are responsible for allocating land for various uses and ensuring that customary norms and practices are respected in land use decisions. They initiate the preparation of local plans to guide physical development in their jurisdiction and allow households to initiate processes for the registration of residential lands. With funding support from the government and development partners, paramount skins, such as Bole, have a functional Customary Lands Secretariat where records of land transactions are kept minimising the risk of dispute, improve tenure security, and facilitate land registration. Despite these arrangements, land transactions remain largely informal, and land registration is considerably low.

2 Yegbonwura is the overlord of the Gonja Traditional Area or Kingdom, which has at least seven paramount chiefs, and the seat is located at Damongo.

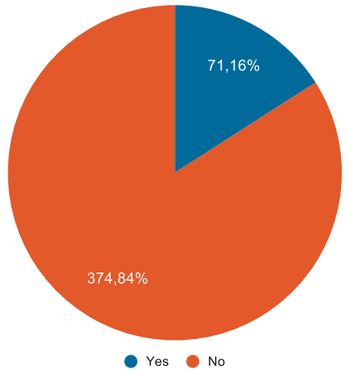


Figure 3.26: Land registration

Within the framework of national laws, the land ownership regime operates differently when minerals are discovered in, on, or over any parcel of land. The Minerals and Mining Act of 2006 (Act 703) empowers the government to take over or compulsorily acquire all lands with proven mineral deposits. Following this law, chiefs and traditional authorities who exercise ownership rights and control over land under customary law are not entitled to own minerals embedded in the land. The law also provides specific protocols to regulate mining activities in Ghana and has empowered the minister responsible for lands and natural resources to authorise, revoke, suspend, or renew mining rights in accordance with the law. Mining laws and their associated regulatory provisions appear to work well in the large-scale mining sector. Small-scale mining activities in the study districts are mainly community-driven gold mining initiatives that offer a wide range of employment and livelihood opportunities to the population. Communities have co-produced a flexible governance system that ensures equitable access to land for mining for all interested and willing workers. The survey results suggest that more than 80 percent of households in mining communities have ready access to new land for mining and over two-thirds access abandoned mining sites (Figure 3.27). For non-mining communities, over 31 percent are believed to have access to old mine sites, while only 19 percent claim to have access to new lands.

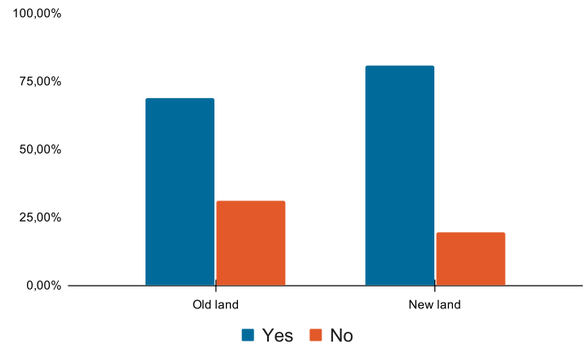


Figure 3.27: Access to mining lands

In terms of the nature of land acquisition for mining, over 314 (70%) respondents believed it was easy, while 10 (2%) people believed it was very easy (Figure 3.28). The 99 (22%) respondents maintained that it was difficult to acquire land for mining, while 22 (4%) claimed that it was very difficult.

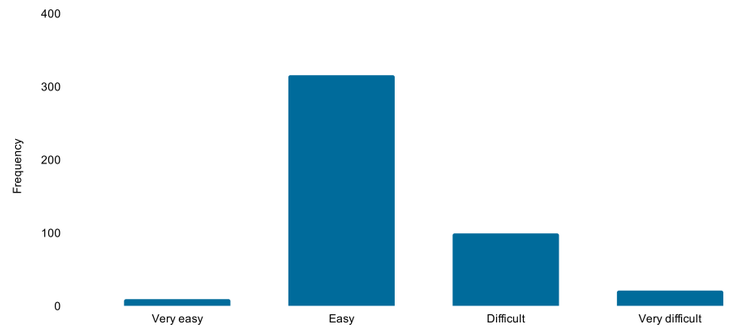


Figure 3.28: Nature of land acquisition for mining

The relative ease with which mining land is acquired was further confirmed during interviews with traditional authorities or their representatives in all the mining communities studied. When a question was posed on how would-be miners accessed land to mine, a participant said this:

> *"It depends on the type of mining that you want to do, because if you come as a corporate[3] person with your machines and workers, then the chief would tell you what to do, but one thing that is certain is that the chief does not sell the land to them. So, you would only give a token for the chief to show you where to start and the processes involved, but if you are an individual, you would just join the group to mine without even coming to the chief for any protocol" (Participant, Dollar Power, May 2026).*

Mineworkers explore various sources and modes of acquiring land to undertake their activities. For most participants (165, 37%), mining land is acquired via a mutually agreed proceeds-sharing arrangement, while another 161 (36%) consider mining land acquisition as happening under free allocation (Figure 3.29). Some 73 (16%) respondents believe that land is acquired through cash payments for short-term leases, while another 32 (7%) think mining land acquisition is through outright purchase. Interviews with members of mining committees across all mining communities revealed that mineworkers do not pay to start mining work at any site. People with resources usually sponsor *mining ghettos*, and when the rock is hit, the proceeds (referred to as *loads*) are shared between the sponsor, the workers, and the mining committees, where the interest of the landowners is served. This explains why an overwhelming majority of respondents (326, 73%) maintained that land for mining is acquired by means of free allocation or through a mutually agreed arrangement for sharing the proceeds. Participants see this arrangement as generating equitable benefits for all stakeholders/actors in the mining value chain, including foreigners and non-natives.

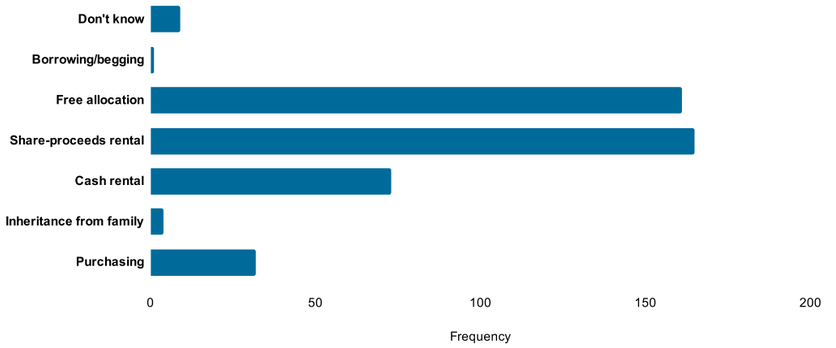


Figure 3.29: Main sources of land acquisition

3 The people explained a corporate person to loosely mean a group travelling to work as a unit and have gold detector. They explained that when one possesses a gold detector, they do not work alone, but as a group referred to as a corporate.

The convention of nonpayment for land in the mining field holds true for all categories of mineworkers, including non-natives and foreigners. Foreigners and non-natives normally attach themselves to native mineworkers either as workers or sponsors, and they benefit from the same proceeds-sharing arrangement.

Mining activities at most of the sites occur under community-based arrangements; therefore, they do not obtain licences or certifications from regulatory bodies such as the Minerals Commission and the Environmental Protection Authority (EPA). The vast majority of survey participants (97%) undertake mining activities without any form of licensing (Figure 3.30). The only exceptions are the Tinga and Dakuripe communities, where the mining committees secured a cooperative licence for Dakuripe Kamara and a community mining licence for Tinga Wenchiwenchi. At the time of fieldwork, two applications for additional cooperative mining licences for Dakuripe had been submitted and were under consideration at the Minerals Commission. The licence for Dakuripe Kamara had also expired at the time, and the renewal application was taking too long to get approved by the Minerals Commission. The rest of the mining communities did not have licences and looked forward to obtaining licences from the Minerals Commission to qualify for government support. One participant made the following remark during an interview:

"We need a licence, because if the license is there, I think with the committee in place, every other thing required to do responsible and sustainable mining is in place. If anyone refuses to comply with the prescribed rules and regulations, the committee can easily prevent the person from reaching the mining site. We need a licence to benefit from government support in terms of equipment, financing, and training on responsible mining practices. We are aware that other licensed mining sites have benefited from government support." *(FGD Participant, Banda Nkwanta, May 2026).*

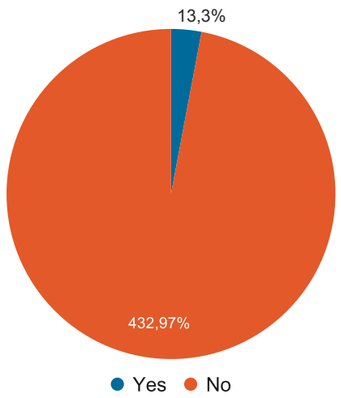


Figure 3.30: Possession of mining licence

Alongside unlicensed mining activities, several large-scale mining firms have been licensed by the Minerals Commission to mine or undertake prospecting at the Tinga and Tutumba sites. A Chinese mining firm which secured a concession at Tutumba and operated until early this year had its licence revoked by the Minerals Commission due to non-compliance to the terms of the licence. Another Chinese firm operated at Tinga without a licence; they bought waste material from local mineworkers for further processing using advanced technology. The Ghana Gold Board conducted an operation in 2025 and closed its operations. The company has since regularised its operations and returned to the site following the intervention of community-level stakeholders and opinion leaders.

Most mining communities that faced considerable difficulties obtaining licences from the Minerals Commission operated in restricted zones. Some were situated near water bodies or road infrastructure, while others worked in concessions belonging to licensed firms. Approximately 88.0 percent of survey participants in mining communities indicated that mining operations took place on lands that were never sanctioned for mining (Figure 3.31). Some illegal mining sites at Banda Nkwanta and Dollar Power were said to be within the Bui National Park (Nature Reserve) and near the Black Volta River. The Bui Power Authority issued a statement in January this year (i.e., 2026) warning that illegal mining activities taking place upstream the Black Volta River poses a threat to the sustainability of the Bui power plant.[4]

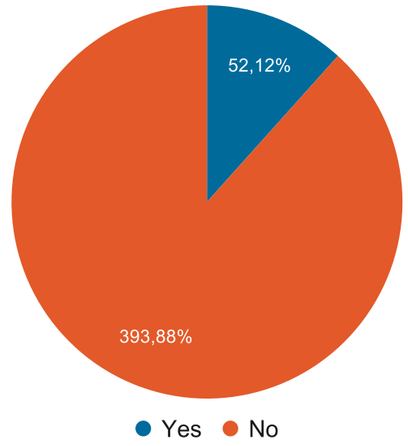


Figure 3.31: Operation on legal lands

4 The statement can be accessed here: https://www.myjoyonline.com/bui-power-authority-calls-for-urgent-action-against-galamsey-upstream-of-power-plant/.

One of the participants at Dollar Power explained why the government finds it difficult to approve their request for a licence in the following words:

> *"According to them, this place is not a block-out area, and when it is like that, there is nothing anyone can do to change it. They said this place is just a reserve, and so on paper, it is still a red zone, and they find it difficult to give us the licence. Fortunately, this place has been declassified, and it is no longer a reserve. The land was released to the Ministry of Defence. Currently, the Defence Industries Holding Company (DIHOC) of the Ministry of Defence owns the land and has also given it to a large-scale concessionaire. This means we cannot get a licence into their concessions."*
>
> *(FGD Participant, Dollar Power, May 2026).*

In light of this development, the Mining Committee at Dollar Power is particularly sceptical about the prospects of obtaining community mining licences to secure their right to continue operating in this area. However, they do not intend to quit mining in the area despite their foreknowledge of the changing land tenure dynamics of the area. As one of the committee members stated:

> *"We do not have the power to sack any company that has a concession to mine in this area. According to the law, all minerals beneath the ground belong to the government, so when the government allows mining, we do not have anything to say or do. If they work and allow us to work, there will be no problem." (Key Informant, Dollar Power, May 2026).*

Participants' views regarding the challenges of obtaining mining licences at the various mining sites were assessed, and the results are presented in Table 12. With an overall mean score of 59 percent, the results show that the cost of licensing is the most significant challenge obstructing mining communities efforts to secure licences for their operations. The views of men and women regarding cost constraints in mining licence acquisition vary considerably, with men recording a slightly higher mean score of 63.0 percent compared to 53.0 percent for women. Bureaucracy is another major challenge that communities experience when obtaining licenses. The overall mean score for bureaucracy is 48.0 percent, but perceptions of bureaucratic difficulties tend to be higher for men (55.0%) than for women (50.0%). Lack of information also came across as an important limiting factor in the acquisition of mining licences. The overall mean score for lack of information is 50.0 percent, and the difference in the mean scores between men (51.0%) and women (49.0%) is considerably low. This implies that limited access to information constitutes a major constraint in the licensing process. The views

of men and women on the lack of access to information do not vary significantly. According to the participants, corruption is the least important variable among the challenges of obtaining licences. Corruption recorded an overall mean score of 6.0 percent, and the mean scores for men (7.0%) and women (5.0%) were also considerably low. This implies that corruption does not constitute a binding constraint in the process of obtaining licences for mining communities. The views of men and women regarding the importance of corruption as a limiting factor in the licensing process are not different.

Table 12: Licensing challenges

Variable	Men		Women		All	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Cost	0.63	0.48	0.53	0.50	0.59	0.49
Bureaucracy	0.55	0.50	0.37	0.48	0.48	0.50
Lack of information	0.51	0.50	0.49	0.50	0.50	0.50
Corruption	0.07	0.25	0.05	0.22	0.06	0.24

Consequently, it is not surprising that the majority of survey participants across mining communities (365, 85.3%) only relied on informal agreements to access the land on which they mine (Figure 3.32). Approximately 27 (6.3%) participants claim ownership rights to the land they worked on while another 19 (4.4%) claim to work on land accessed via a leasehold. Seventeen (17, 4.0%) participants also claimed to work on family land. The growing influx of large-scale mining firms into the area poses a significant threat to the medium- to long-term sustainability of local small-scale mining operations. This explains why mining committees across all study sites are seeking government recognition and licensing, despite some not meeting the minimum threshold for regularisation and licensing.

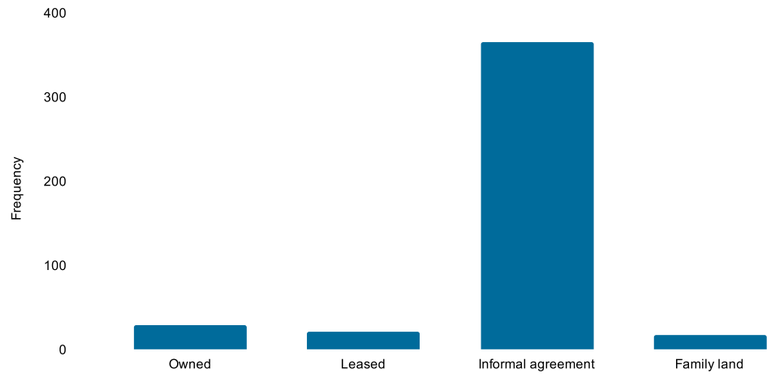


Figure 3.32: Land access on current land

Regarding knowledge and awareness of regulations guiding mining operations in general, 74 percent of the survey participants were unaware of any regulations on mining activities in the area (Figure 3.33). The limited awareness of mining regulations among participants reflects the scope of informality characterising mining operations in this area. The activities of regulatory bodies, such as the Minerals Commission and the Environmental Protection Authority (EPA), are concentrated in licensed mining areas. They monitor licensed mining areas to ensure compliance with the terms and conditions of the licences. Because license renewal is contingent on compliance ratings, regulatory bodies conduct site visits and provide guidance and sensitisation on regulatory standards. For this reason, even mineworkers at licensed sites are more likely to be aware of mining regulations than their counterparts at unlicensed sites, who are more likely to be aware of only the ground rules for mineworkers set forth by the local mining committee.

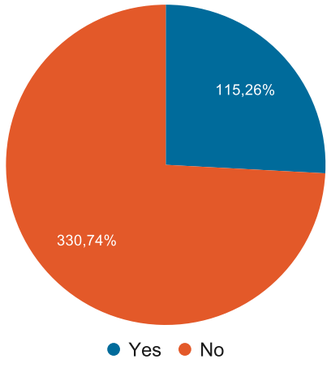


Figure 3.33: Awareness of mining regulation

Of those with some knowledge and awareness of mining regulations, 25.0 percent had a high level of awareness, while 58.0 percent had a moderate level of awareness, and only 17.0 percent had a low level of awareness (Figure 3.34). Differences in awareness levels are explained by the number and frequency of capacity-building workshops that mineworkers may have attended in the past. Participants at Banda Nkwanta intimated in a focus group discussion that some members of the Mining Committees across all sites were selected for a capacity building workshop on policies, mining regulations, and sustainable mining practices at the University of Mines and Technology, Takwa. Those who attended the workshop received certificates of participation from the university. The UK-Ghana Gold programme also organised a series of workshops for small-scale miners to regularise their operations and build their capacities for responsible mining practices. These workshops have raised awareness levels among the leadership of mining communities regarding best practices and regulatory standards in mining. Mining communities such as Wakawaka, Sanye, and Sakpa have benefitted less from these capacity-building workshops because they had not begun active mining operations at the time they were held.

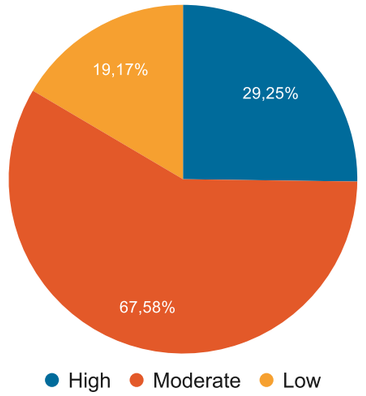


Figure 3.34: Regulation awareness level

When the participants were asked whether they had ever considered leaving the mining work, 45 percent answered in the affirmative, 21 percent said they had never considered leaving the work, with another 29 percent contemplating leaving, and 5 percent said they did not know (Figure 3.35). Participants who are considering leaving mining work appear to be more affected by the fluid nature of worker populations across the sites. These sites attract foreign nationals and workers from various parts of the country. For example, mining spaces offer non-farm employment opportunities for young people across northern Ghana. These people move in and out of the mining sites depending on the season, and they apply their mining income to invest in their farms during the farming season. The sites also offer vacation employment to students from tertiary and second-cycle schools who want to raise money to meet educational expenses. They also move in and out of sites during vacations.

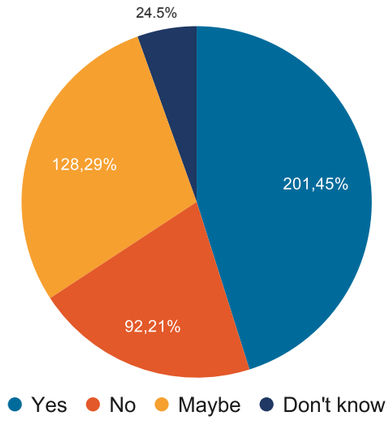


Figure 3.35: Consideration of leaving mining

Many others come into these areas to raise capital for their businesses, and there have been reports of people losing formal sector employment and temporarily stepping into mining areas to cope with the trauma of losing their jobs. One of the participants at Dollar Power explained how highly educated people sometimes come into the mining communities to cope with employment-related frustrations as follows:

> *"The man was with us for about a year. He never revealed his identity until he was about to leave. He worked for a financial institution and accumulated substantial debt. He sought refuge here but also wanted to work and raise funds to repay his debt. Within a year, he successfully paid off his debt and departed."* *(Participant, Dollar Power, May 2026).*

Mineworkers have various motivations for their work. While the native population forms the core workforce at each site, other worker categories join and leave depending on changing circumstances. When the participants were asked to indicate their preferred livelihood choices if they consider leaving mining work, the majority (159, 48.3%) preferred to switch to buying and selling general merchandise (Figure 3.36). Another 75 participants (23%) preferred to move into agriculture, while 25 (7.6%) preferred to move into technical or artisanal work. Seventeen (17, 5.2%) participants indicated their preference for public sector employment, and another 17 (5.2%) preferred to be in hairdressing work if they must leave the mining job. The diverse job preferences expressed by participants who have considered quitting mining further substantiate the fluidity of the workforce in mining communities and the temporality of employment in these areas. As the evidence suggests, most mineworkers use mining sector employment as a springboard to other employment avenues, such as trading and farming, with some aspiring to join public services.

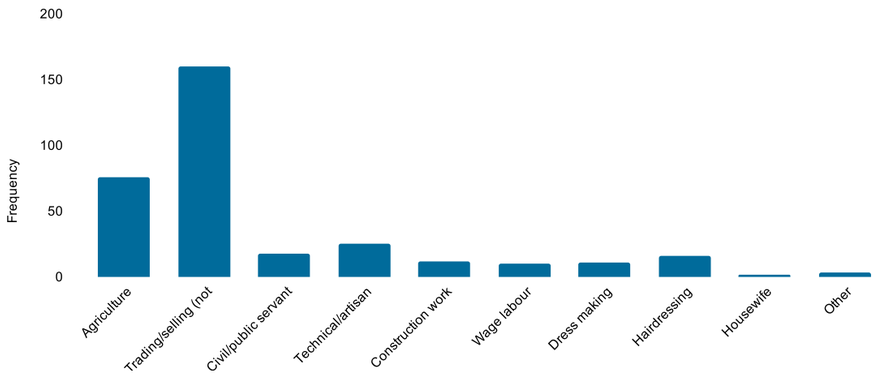


Figure 3.36: Alternative livelihood after leaving mining

The perceptions of government support for mining communities were mixed. A significant proportion of participants (37%) suggested that government support was poor, while others (16%) felt it was non-existent (Figure 3.37). Only 8 percent of participants indicated that government support for these communities was good, while a slight majority (39%) suggested it was fair. Government support, in terms of the regulatory and control functions of the Minerals Commission and EPA, was more accessible at licensed mining sites such as Tinga and Dakuripe. These agencies monitor the sites and provide extension services, including training on sustainable mining practices. This level of government support is considered satisfactory. However, even in these areas, concessionaires who breach the terms of their licences often conceal their operations or resist oversight. This behaviour suggests that the oversight functions of regulatory agencies are inadequate and may be viewed as insufficient by some mineworkers.

The District Mining Committee (DMC), comprising district authorities, regulatory agencies, traditional authorities, and relevant security agencies, has commenced a process of listing and profiling active mining sites in the districts to ensure effective monitoring, supervision, and regulation. The DMC seeks to streamline mining activities using a cooperative and community mining licensing framework. However, the DMC appears to lack a district-wide presence and awareness in mining communities. When one of the community leaders was asked whether they have worked with the DMC, he remarked as follows:

> *"There is no DMC present. If there is any such thing, it is because the Assembly has realised that there is money in mining and is grouping to take control. We do not know of their existence, nor their composition."*
> *(Key Informant, Banda Nkwanta, May 2026).*

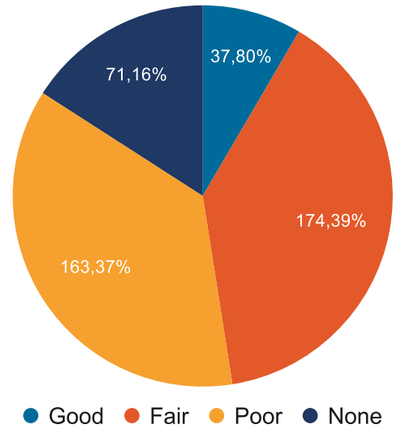


Figure 3.37: Perception of government support

Many participants interpreted government support in terms of service delivery to mining communities. For most, inadequate access to basic services such as schools, healthcare facilities, electricity, water, and sanitation services is commonplace. The inadequate access to these services made the participants feel that government support for mining communities is poor or non-existent. The gaps in service delivery prompted various mining committees to meet the basic needs of these communities. In Dakuripe, the mining committee put up a nurse's bungalow for the only CHPS compound in the community. They also built a teacher's bungalow and a three-unit classroom block to complement the existing school infrastructure. The Tinga community also built an Accident and Emergency Centre for the community and negotiated with the National Ambulance Service to provide two ambulances. The mining committee at Dollar Power built a health post with a bungalow for the community and negotiated with the Bole District Health Directorate to post nurses to the facility. The committee constructed a basic school for the community and employed teachers to maintain its operations. The mining committee arranged for the Bole District Assembly to collect revenue from Dollar Power. This will enable the Assembly to take steps to regularise the community and extend public services to them. The gap in public service provision forms sufficient grounds for communities to feel that government support for mining communities is poor or non-existent.

Two sets of mining communities can be distinguished: first, settlements formally integrated into the local governance system of the district (Tinga, Dakuripe, Wakawaka, etc.); and second, informal settlements that have organically developed to accommodate a growing population of mineworkers (Dollar Power, Tutumba, Cloth, etc.). The latter is negotiating acceptance and regularisation from the district authorities, who have grave concerns over government neglect when it comes to the delivery of public service.

3.4 Gender and Social Inclusion Dimensions in ASM Livelihoods

The activities along the ASM value chain were sharply divided between men and women. Participants' perceptions regarding gender specialisation along the small-scale mining value chain were analysed, and the results show a sharp gender divide along the various activity streams. When it comes to actual mining work where mineworkers go underground to chisel and extract gold, the majority of participants (96.08%) believe it is the work of men, while 2.84 percent feel there is equal representation of men and women in this line of mining employment. Only about 1 percent indicated that women were engaged in this line of work (Table 13). Similarly, an overwhelming majority of participants (95.12%) suggested that pit owners were mainly men, while 4.88 percent thought pit ownership was equitably split between men and women. Over half of the participants (52.03%) thought that processing was the work of men while 31.08 percent suggests that processing was equitably shared between men and women. Gold trading was also disproportionately shared in favour of men, with approximately 83.3 percent of participants suggesting that gold trading mainly involved men, while 16.7 percent

thought women were involved in the gold trade. The only activities along the value chain where women showed significant dominance were the provision of ancillary services (56.12%) and ore transportation (78.6%). The rest of the activities, such as gold detection and sponsorship, were 100 percent male dominated. Participants had these to say during FGDs at Tutumba and Dollar Power:

> *We mainly buy 'load' and wash. We also collect the 'top phase', which is on the surface and wash it but it does not produce a lot of gold (FGD Women, Tutumba, May 2026).*

> *Some of us cook and sell food to the miners. We also operate the shops you see around. We sell water, drinks, bread, and other household provisions. So, it is not all of us (women) who do mining work (FGD Women, Dollar Powe r, May 2026).*

Table 13: Perceptions of gender specialisation along mining value chain

Specialization	Men more		Women more		Equally	
	Freq.	%	Freq.	%	Freq.	%
Miner	98	96.08	1	0.98	3	2.94
Pit owner	39	95.12	0	0.00	2	4.88
Processor	77	52.03	25	16.89	46	31.08
Trader	30	83.33	6	16.67	0	0.00
Service provider	34	34.69	55	56.12	9	9.18
Ore transportation	2	14.29	11	78.57	1	7.14
Gold detector	4	100.00	0	0.00	0	0.00
Sponsor	2	100.00	0	0.00	0	0.00

Participants' perceptions of specialisation along the mining value chain by age revealed that mineworkers are predominantly youthful (Table 14). Over 99 percent of miners/underground workers were aged between 18 and 40, whilst 75.61 percent of pit owners and 95.27 percent of processors were within the same age bracket. This pattern of youth dominance is consistent across all activity points along the mining value chain. Gold detection and sponsorship retained 100 percent dominance for persons aged between 18 and 40 years. The results are not surprising, given the labour-intensive nature of mining work across the study sites.

Table 14: Age perceptions of specialisation along mining value chain

Specialisation	Young (18-40 years)		Middle (41-60 years)	
	Freq.	%	Freq.	%
Miner	101	99.02	1	0.98
Pit owner	31	75.61	10	24.39
Processor	141	95.27	7	4.73
Trader	30	83.33	6	16.67
Service provider	92	93.88	6	6.12
Ore transportation	13	92.86	1	7.14
Gold detector	4	100.00	0	0.00
Sponsor	2	100.00	0	0.00

In terms of the specific roles of men, women, and young people along the mining value chain (Table 15), the results show a clear dominance of men among miners/ underground workers. The mean score for men was 93.0 percent, compared to 80 percent for young people and only 12.0 percent for women. Participants' views on the specific role of men, women, and young people along the value chain revealed that pit ownership was the exclusive preserve of men, as they recorded a mean score of 89 percent compared to 43 percent for young people and 8 percent for women. In terms of the processor role, there was no significant difference between the mean scores of men (93.0%) and young people (94.0%). However, women recorded a slightly lower mean score of 89 percent. Similarly, gold trade was said to be dominated by men, with a mean score of 74 percent, followed by women (53.0%) and young people (50.0%). The provision of ancillary services for mineworkers was predominantly women-focused, with a mean score of 92 percent, followed by 89 percent for young people and a slightly lower mean score for men (74.0%). Ore transportation is also dominated by men, with a mean score of 51 percent, followed by young people with a slightly lower score of 47.0 percent and 20.0 percent for women.

Table 15: Specific roles of men, women and youth along mining value chain

Role	Men		Women		Young	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Miner	0.93	0.25	0.12	0.32	0.80	0.40
Pit owner	0.89	0.32	0.08	0.27	0.43	0.50
Processor	0.93	0.25	0.89	0.31	0.94	0.24
Trader	0.74	0.44	0.53	0.50	0.50	0.50
Service provider	0.74	0.44	0.92	0.27	0.89	0.32
Ore transportation	0.51	0.50	0.20	0.40	0.47	0.50
Gold detector	0.00	0.00	0.00	0.00	0.00	0.07
Sponsor	0.00	0.00	0.00	0.00	0.00	0.00

Table 16 presents the main barriers to women's engagement in mining. The leading main barrier is financial constraints, identified by 66 percent of respondents. This is followed by safety (59.0%), physiological (45.0%), and cultural (33.0%). Only the cultural material shows a significant difference between men and women.

Table 16: Main women barriers to mining

Barrier	Men		Women		All	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Cultural*	0.37	0.48	0.27	0.45	0.33	0.47
Financial	0.63	0.48	0.70	0.46	0.66	0.47
Legal	0.00	0.06	0.01	0.07	0.00	0.07
Safety	0.58	0.49	0.60	0.49	0.59	0.49
Physiology	0.44	0.50	0.47	0.50	0.45	0.50
Sexual harassment	0.00	0.00	0.01	0.07	0.00	0.05

Note: * *implies statistically significant differences between men and women.*

Legal and sexual harassment are reported as negligible barriers. The order of importance of these barriers is uniform across gender. Interestingly, only women (0.6%) report sexual harassment as a barrier. Thus, men do not identify sexual harassment as a barrier. The negligible nature of sexual harassment is confirmed by evidence from participants of the FGD:

> *"We are not aware of any sexual assault or harassment. Most times it's just the men who chase us away from the pits. If not, we have not heard anything like that before."* *(FGD Women, Wakawaka, May 2026).*

> *"The committee here is very strict. They do not allow such things [sexual harassment]. We don't remember anything like that here. So, we can say it does not happen."* *(FGD Women, Tutumba, May 2026).*

3.5 Mapping and Geo-referencing of ASM and Other Sites

The three study districts (i.e., Sawla-Tuna-Kalba, West Gonja and Bole), put together, covers a total area of 15,090.50 km^2 and represented by a red outline on the maps in Figure 3.38. The area spans a mosaic of grassland, forest, water bodies, settlements, cropland, flooded vegetation, and bare ground.

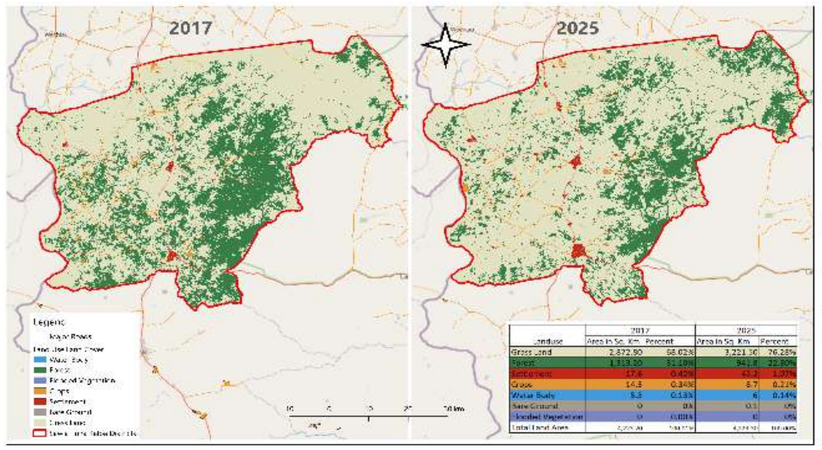


Figure 3.38: Land use land cover map of study area in 2017 and 2025

Table 17 gives a breakdown of land use land cover classes for 2017 and 2025. In 2017, grassland covered 8,792.10 km^2, equivalent to 58.26% of the aggregate land cover for the study districts. Forest covered 6,033.00 km^2 (39.98%). Together, grassland and forest covered 98.24 percent of the districts in 2017. This implies the aggregate landscape for the study districts was mainly natural or semi-natural vegetation cover. Water body covered 181.00 km^2 (1.20%) while settlement covered 56.80 km^2 (0.38%). Crops took 24.40 km^2 (0.16%) while flooded vegetation covered 3.00 km^2 (0.02%). Bare ground occupied only 0.20 km^2 (0.00%).

Table 17: Land use and land cover statistics of the study districts, 2017 and 2025

Land Use Class	2017 Area (sq. km)	2017 (%)	2025 Area (sq. km)	2025 (%)	Change (sq. km)	Change (%)
Grassland	8,792.10	58.26%	9,162.70	60.71%	+370.60	+2.45%
Forest	6,033.00	39.98%	5,591.80	37.06%	-441.20	-2.92%
Water body	181.00	1.20%	186.40	1.24%	+5.40	+0.04%
Settlement	56.80	0.38%	114.90	0.76%	+58.10	+0.38%
Crops	24.40	0.16%	30.90	0.20%	+6.50	+0.04%
Flooded vegetation	3.00	0.02%	2.70	0.02%	-0.30	0.00%
Bare ground	0.20	0.00%	1.10	0.01%	+0.90	+0.01%
Total	15,090.50	100%	15,090.50	100%	0.00	0.00%

Source: *Esri Sentinel-2 LULC*

By 2025, within the space of 8 years, grassland increased to 9,162.70 km^2 (60.71% of the land cover) whilst forest recorded a decline to some 5,591.80 km^2 (37.06%). Water bodies in the districts increased slightly to 186.40 km^2 (1.24%) and settlement increased to 114.90 km^2 (0.76%). Crops increased to 30.90 km^2 (0.20%). Flooded vegetation was 2.70 km^2 (0.02%), and bare ground increased to 1.10 km^2 (0.01%).

The important changes in the landscape for the period under consideration (2017 and 2025) is the sharp decline of forest cover by some 441.20 km^2 (-2.92%) in the study districts. There was corresponding increase in grassland by some 370.60 km^2 (+2.45) over the same period. The second important change recorded in the landscape was in respect of settlement expansion, which recorded a sharp increase from 56.80 km^2 to 114.90 km^2. However, settlements remain a small proportion of the total land cover of the three districts, accounting for less than 1% of the land cover in 2025. District-specific analysis and mapping of land use, land cover changes in the three districts between 2017 and 2025 follow this discussion.

3.5.1 Land use land cover analysis of Sawla-Tuna-Kalba

Sawla-Tuna-Kalba district covers a total land area of about 4,223.20 km^2 (Figure 3.39). The district lies adjacent to the West Gonja Municipality with Sawla town serving as its administrative capital. The district's landscape was largely grassland as of 2017, with a forest cover of about 31.10 percent of the landmass. By 2025, a significant reduction of forest cover was recorded with grassland seeing further expansion across multiple directions – eastern, western and northern sections of the district. Settlement expansion is happening mainly around the district capital and along major road corridors.

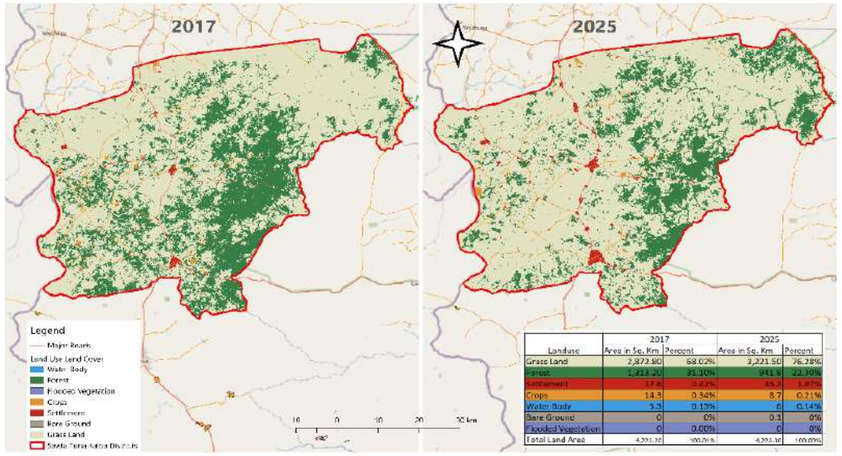


Figure 3.39: Land use land cover map of Sawla-Tuna-Kalba 2017 and 2025

The decline of forest cover recorded over the period of analysis amounted to 28.28 percent equivalent to a yearly average decline of about 46.4 km^2 (Table 18). This implies a more severe pressure of deforestation is experienced in the district. A drastic reduction in size from about 31.10 percent of the total land area to 22.30 percent in 8 years gives clear indication of the extent of pressure on forest cover in the area. The decline of forest cover resulted in a corresponding increase in grassland cover. Settlement growth in the district was sharp, moving from 17.6 km^2 to 45.20 km^2 – a net gain of some 27.6 km^2 and a percentage change of 156.82 percent.

Table 18: Sawla-Tuna-Kalba District LULC statistics (2017 and 2025)

LULC Class	2017		2025		Net change (Km^2)	Percentage change (%)
	Area (km^2)	Per cent (%)	Area (km^2)	Per cent (%)		
Grassland	2,872.80	68.02	3,221.50	76.28	+348.70	+12.14
Forest	1,313.20	31.10	941.80	22.30	-371.40	-28.28
Settlement	17.60	0.42	45.20	1.07	+27.60	+156.82
Crops	14.30	0.34	8.70	0.21	-5.60	-39.16
Water body	5.30	0.13	6.00	0.14	+0.70	+13.21
Bare ground	0.00	0.00	0.10	0.00	+0.10	New
Flooded vegetation	0.00	0.00	0.00	0.00	0.00	0.00
Total	4,223.20	100	4,223.30	100		

No active mining site was found in the district for the period of analysis. At the time of fieldwork, the team picked reports of a mining site which had emerged at Saru community near the Black Volta River. This site was shut down due to community resistance. The mineworkers set up their camp at the site without recourse to community members. This prompted a reaction from the community against their operations, causing them to abandon the site.

3.5.2 Land use land cover analysis of the West Gonja Municipality

Figure 3.40 shows the LULC map of the West Gonja Municipality for 2017 and 2025. The map shows a dense forest cover with some grassland in the western and central sections of the municipality in 2017. In contrast, there is a gradual decline of the forest cover in the eastern and southern sections accompanied by a notable expansion of grassland in the same sections. There is also a considerable expansion of settlements and agricultural land uses between 2017 and 2025.

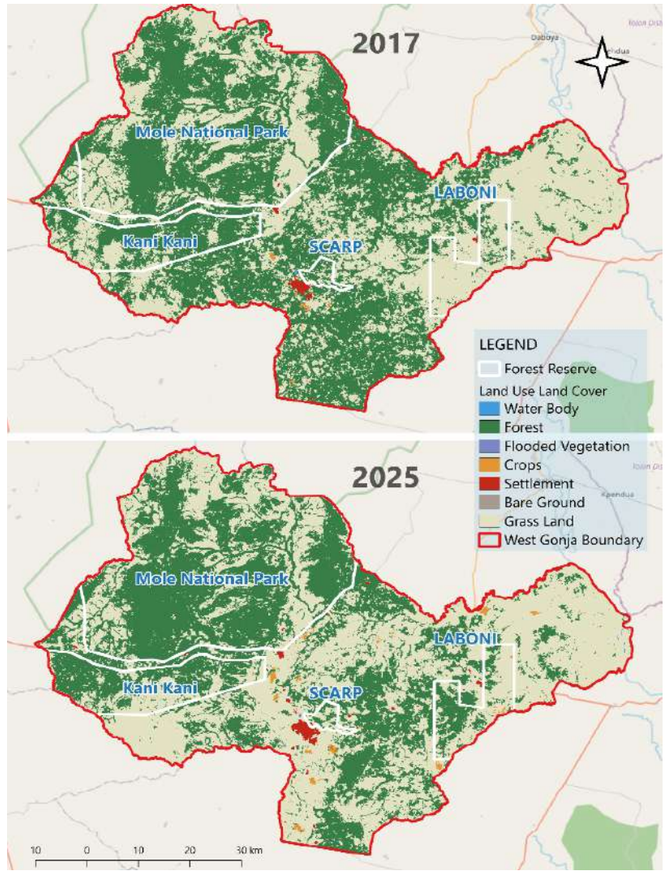


Figure 3.40: LULC map of West Gonja Municipality in 2017 and 2025

Table 19 shows summary statistics of land use and cover changes in the west Gonja Municipality for 2017 and 2025. In 2017, the forest cover as a proportion of the total land area was 52.65 percent, and by 2025, it was overtaken by grassland in terms of dominance in the land cover composition. In 2025 grassland grew to 53.75 percent of the total land cover, up from 46.93 percent in 2017. Forest recorded the most significant reduction over 8 years with 13.95 percent decline while grassland gained by some 14.54 percent. Settlements expanded almost twofold; from about 12.30 km^2 in 2017 to 22.10 km^2 in 2025. The rate of expansion was 79.67 percent, a net gain of 9.80 km^2. Cropland recorded the most phenomenal growth, increasing from 5.10 km^2 in 2017 to 19.30 km^2 in 2025. The rate of growth was 278.43 percent albeit constituting less than 0.5 percent of the land cover.

Table 19: West Gonja Municipality LULC statistics (2017 and 2025)

LULC Class	2017		2025		Net Change	Percentage (%)
	Area (km^2)	Per cent (%)	Area (km^2)	Per cent (%)	Area (km^2)	
Forest	2,482.60	52.65	2,136.30	45.30	-346.30	-13.95
Grassland	2,212.90	46.93	2,534.60	53.75	+321.70	+14.54
Settlement	12.30	0.26	22.10	0.47	+9.80	+79.67
Crops	5.10	0.11	19.30	0.41	+14.20	+278.43
Water body	2.50	0.05	2.90	0.06	+0.40	+16.00
Bare ground	0.10	0.00	0.10	0.00	0.00	0.00
Flooded vegetation	0.00	0.00	0.20	0.01	+0.20	New
Total	4,715.50	100	4,715.50	100		

Just like the Sawla-Tuna-Kalba District, the West Gonja Municipality does not have any active mining site now. The Mole National Park remains a strict reserve under the Wildlife Division of the Forestry Commission and no mining activities were found within the reserve. Other forest reserves such as the Kani Kani, Damongo Scarp, and Laboni are also without mining activities.

3.5.3 Land use land cover analysis of the Bole District

Figure 3.41 shows that the Bole district recorded a major shift in landscape composition between 2017 and 2025 due to pressure from natural events and man-made forces such as agriculture, settlement expansion and mining activities. For example, grassland which covered over 60.0 percent of the land area of the district declined to slightly above 55.0 percent in 2025 (Table 20).

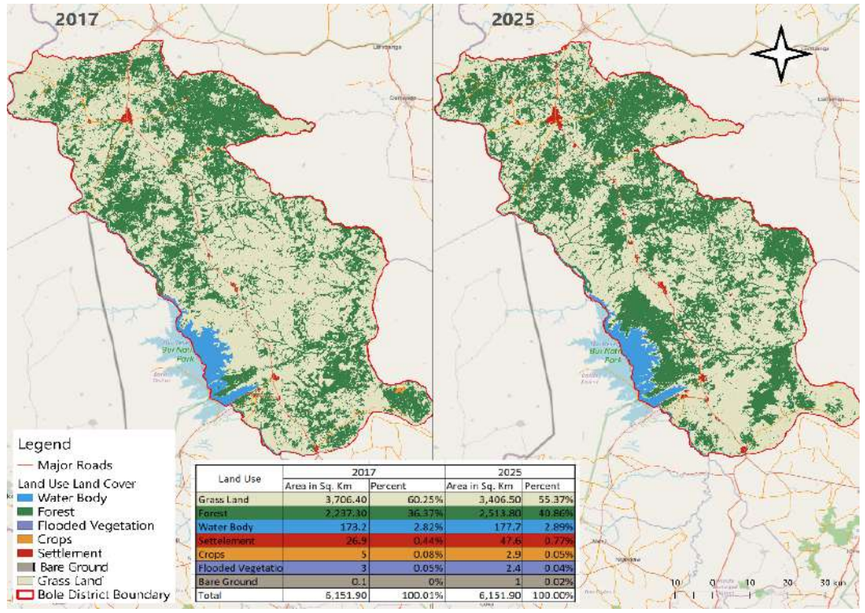


Figure 3.41: LULC map of Bole district in 2017 and 2025

The forest cover also gained some expansion by moving from 36.37 percent of the total land cover in 2017 to 40.86 percent in 2025. The rate of settlement expansion over the period is phenomenal, rising from 0.44 percent of total land cover to 0.77 percent - a net gain of some 76.95 percent. Water bodies made marginal gains by some 2.60 percent.

Table 20: Bole district land use land cover statistics - 2017 and 2025

LULC Class	2017		2025		Change Area km²	Percentage Change (%)
	2017 (Area km²)	2017 (%)	2025 (Area km²)	2025 (%)		
Grassland	3,706.40	60.25%	3,406.50	55.37%	-299.90	-8.09%
Forest	2,237.30	36.37%	2,513.80	40.86%	+276.50	+12.36%
Water body	173.20	2.82%	177.70	2.89%	+4.50	+2.60%
Settlement	26.90	0.44%	47.60	0.77%	+20.70	+76.95%
Crops	5.00	0.08%	2.90	0.05%	-2.10	-42.00%
Flooded vegetation	3.00	0.05%	2.40	0.04%	-0.60	-20.00%
Bare ground	0.10	0.00%	1.00	0.02%	+0.90	+900.00%
Total	6,151.90	100%	6,151.90	100%		

The Bole district is by far the only district with growing presence of mining activities across the study sites. A further examination of map output using coordinates generated from the field data collection exercise as reference points, shows a growing presence of mining activities. We traced the boundaries of mining sites using on-screen digitisation of satellite imagery within a GIS environment. Some of the sites were ground-truthed during the fieldwork in May 2026. In all, 26 polygons of mining site were delineated in the Bole district (Figure 3.42) with four of them (Dollar Power, Dollar Power Accra, Dollar Power Dablakoro and Tutumba) lying slightly beyond the corporate limit of the district. Three other sites located near Bamboi are along the Savannah regional boundary line. The sites are distributed among 19 communities and cover a total land area of 16.67 km² with a mean footprint per site is 0.439 km² (43.87 ha). The insert table of the map presents an inventory of digitised polygons of mining sites, their associated proximate settlements and land areas. The map clearly shows the lateral spatial extent of mining activities in the district.

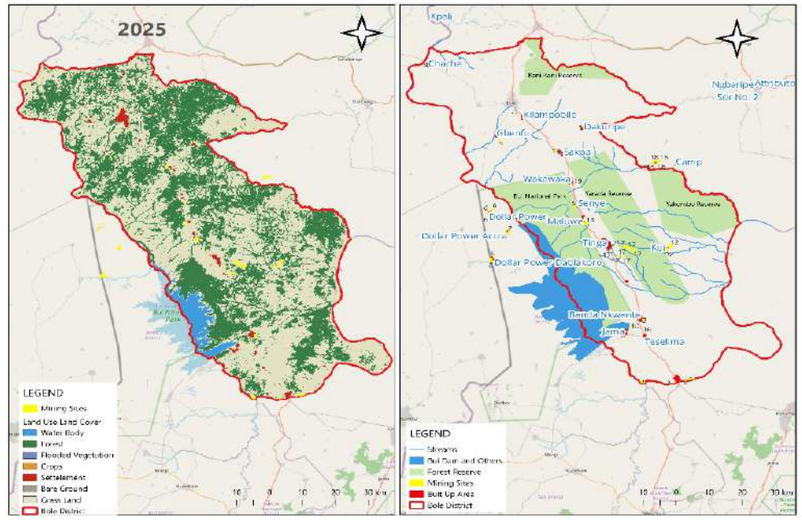


Figure 3.42: Map of Bole district showing mining sites

3.6 Environmental and Spatial Characteristics of ASM Sites

Mining communities across the study districts have set up multiple sites to host their operations. The emergence and spatial distribution of these sites are driven by the perception or reality of gold discovery and the potential for such discoveries. Although mining sites attract considerable numbers of migrant workers, the search and discovery of new areas has meant that growth of mineworkers contributes to the multiplication of mining sites rather than their growth and expansion. The multiplication and lateral expansion of mining sites pose significant threat to the natural environment (see Plate A.3.4 in the appendix). Table 21 presents mining sites and their proximate communities to show the scope of mining activities associated with each community.

The multiplication and lateral expansion of mining sites pose significant threat to the natural environment. Some notable biophysical impact of mining activities at the various sites includes land degradation and loss of vegetation, and noise from gold processing machines could drive away fauna from the area. Some of the participants at Tinga and Tutumba explained the impact of mining activities on the environment in the following excerpts:

"When it comes to the land, yes, it has affected our land and forest greatly. Because if you look at deforestation [degradation] going on here, it is too great and there is no reclamation. We have spoilt this place, we are just felling the trees and going." *(Women FGD Participant, Tinga, May 2026).*

"The process is bad, because we were supposed to close the holes after mining, but we don't do that, so everything has advantages and disadvantages, that is why I feel that it is not helping."
(Youth FGD Participant, Tutumba, May 2026).

Table 21: Scope of mining footprints in communities

Community	Built Up Area (km²)	Total Mining Area (km²)	No. of Mining sites
Tinga	7.00	3.41	9
Kui	0.56	2.04	2
Bamboi	3.00	1.83	4
Dollar Power Dablakoro	0.58	1.77	2
Tutumba	0.18	1.41	4
Maluwe	1.32	1.23	1
Dollar Power	0.28	1.09	3
Dollar Power Accra	0.32	1.00	1
Banda Nkwanta	2.78	0.74	1
Senye	1.15	0.59	1
Sakpa	2.46	0.48	1
Gbenfu	0.06	0.27	1
Dakuripe	1.25	0.26	1
Teselima	1.31	0.17	1
Wakawaka	1.91	0.12	1
Kilampobile	1.48	0.09	1
Jama	3.00	0.08	2
Chache	0.51	0.05	1
Camp	0.04	0.04	1

3.6.1 Mining intensity and settlement sizes

One of the proxy indicators of mining pressures on host/proximate communities is to take a ratio of the spatial extent of the mining area relative to the size of a proximate/host community. If the ratio exceeds 1.0 (100%) it implies that mining footprint is larger than the built area of the host/proximate community. Such a situation raises concerns over issues of land degradation, loss of farmlands, displacements and general livelihood disruptions.

In Table 22, the extent of mining pressure on host/proximate communities in the district is presented. The results show five communities under extreme pressure from mining activities (i.e., Tutumba, Kui, Dollar Power, Dollar Power Accra, Dollar Power Dablakoro, and Gbenfu). This is not surprising because, except for Kui community, Tutumba and Dollar Power cluster of settlements are informal communities which have evolved primarily due to mining activities. Their mining footprints range from 3 to 8 times the size of their respective built areas. Maluwe is almost getting engulfed by mining activities since its mining area is 93.0 percent equivalent of the built area of the community. The communities require urgent action from regulatory agencies such as the EPA and district planning authorities. Tinga is rated high when it comes to mining pressure but has the highest density of mining activities in the district. As much as 7 km² of land is already under active mining compared with all other mining communities. This is not surprising given that traditional authorities in the area have reported a recent influx of licensed mining firms into the Tinga area.



Table 22: Mining area and built-up area of host communities in the Bole District

Community	Built-Up Area (km²)	Area of Mining Site (km²)	Ratio of Mining/ Built-Up Area (%)	Extent of pressure
Tinga	7.00	3.41	49	High
Kui	0.56	2.04	364	Extreme
Bamboi	3.00	1.83	61	High
Dollar Power Dablakoro	0.58	1.77	305	Extreme
Tutumba	0.18	1.41	783	Extreme
Maluwe	1.32	1.23	93	Very High
Dollar Power	0.28	1.09	389	Extreme
Dollar Power Accra	0.32	1.00	313	Extreme
Banda Nkwanta	2.78	0.74	27	Moderate
Senye	1.15	0.59	51	High
Sakpa	2.46	0.48	20	Moderate
Gbenfu	0.06	0.27	450	Extreme
Dakuripe	1.25	0.26	21	Moderate
Teselima	1.31	0.17	13	Low-Moderate
Wakawaka	1.91	0.12	6	Low-Moderate
Kilampobile	1.48	0.09	6	Low-Moderate
Jama	3.00	0.08	3	Low
Chache	0.51	0.05	10	Low-Moderate
Camp	0.17	0.04	24	Moderate

Pressure Index: *Extreme (>200%); Very High (80–200%); High (30–80%); Moderate (15–30%); Low–Moderate (5–15%); Low (<5%).*

In mining communities such as Tutumba where alluvial mining is practised, years of unregulated surface mining have left behind extensive areas of degraded land cover characterised by open trenches and heaps of excavated material. These areas have been abandoned for newer sites which are undergoing similar or even more severe forms of degradation. Lateral expansion of degraded land cover was also observed at an abandoned mining site at Wakawaka. At the time of fieldwork, mineworkers had discovered a new site with underground rock mining potential, and the entire workforce had relocated to the new site, leaving behind few workers who basically used metal detection equipment to scavenge for gold. In communities where underground mining is practised, the vegetation cover and the surface conditions of the land appear less disturbed by mining activities. Our interaction with mineworkers at the Tinga site revealed that a few stems were often harvested to prepare the ghettos and to facilitate the easy movement of

workers in and out of the pits. But some participants also expressed fears that in places where mineworkers have set up rock processing plants at the site, high noise levels might force fauna out of certain areas. A participant said this during an interview:

> *"Naturally, whenever human activities begin to increase in an area, the insects and birds' populations reduce because they now run deep into the riverside. Normally, when they blast the rock, it gives some vibrations on the land and you would hear the sound too." (FDG Participant, Tinga, May 2026).*

Mining activities have altered the built environment of the study districts through the proliferation of squatter settlements in the bush. In communities, such as Tinga, these settlements are considered as extensions of mainland Tinga, offering semi-permanent accommodation for a fluid worker population. They have functional and interactive relations with the mainland, relying on it for basic services. By contrast, Dollar Power and Tutumba have no proximate physical connection with any existing regular settlements and have consolidated into large residential agglomerations without government recognition. Mineworkers across these sites have constructed makeshift structures using various materials. These structures serve as accommodation for mineworkers and provide convenient spaces for ancillary economic activities.

3.6.2 Proximity of mining sites to protected areas

Bole District is host to a number of forest reserves, namely, Kenikeni, Yerada and Yakombo forest reserves, which together with the Bui National Park cover a total land area of 1,929.98 km² representing 31.47 percent of the district's total land cover. Figure 3.42 shows that all mining sites in Tinga are operated inside the Yerada forest reserve and the site at Kui is near the Yerada reserve. Similarly, Wakawaka and Maluwe have their mining sites located near the fringe lines of the Bui National Park while Tutumba is close to Yakombo forest reserve. The location of mining activities within or in close range to the boundaries of existing reserves and protected areas raise concerns about invasion and potential future succession of adjacent protected areas. These reserves support the ecological integrity of the district and should be preserved to safeguard its ecological.

3.6.3 Proximity of mining sites to water bodies

Figure 3.43 shows the relationship between mining sites and water bodies in the Bole district. The map shows how close mining sites are to stream channels in the district. A significant concentration of stream channels is observed in the southern

and southwestern sections of the district, close to feeder streams linked to the Bui Reservoir. The concentration of stream channels in the district implies that mining sites do not necessarily have to be located close to water bodies per se to pose potential risk of contamination to water sources. Sites found along stream tributaries may still be functionally connected to downstream water bodies so that surface runoffs could still transport mine wastes to contaminate reservoirs downstream.

The central corridor of the district hosts multiple mining sites in places with high stream density such as Tinga, Maluwe, Senye, Wakawaka and Sakpa. There is a greater likelihood of some functional interaction between mining sites in these communities and natural channels for surface runoffs in the area. Similarly, mining sites in places such as Banda Nkwanta are close to the immediate drainage environment of the Bui Reservoir, thus, posing potential risk to water quality issues downstream the reservoir. Dollar Power Dablakoro is also located near a network of streams that appear to drain towards the Bui Reservoir. Beyond the clusters, one also finds several standalone mining sites in places like Dakuripe and Tutumba. These sites are located close to streams and can constitute localised risks if they are located along drainage lines. Mineworkers at Tutumba were noted to work in nearby streams during the dry season. This came out during key informant interview in which a participant made the following remarks:

> *"Where our people used to work, that is where they [a Chinese firm] have taken over and when you look at the community, we don't have water. The only valley where we all work during the dry season is where they have taken over, so automatically, our people do go there and sometime ago they brought some police to provide security for them." (Key Informant, Tutumba, May 2026).*

Figure 3.43: Map of Bole district showing mining sites' proximity to water bodies

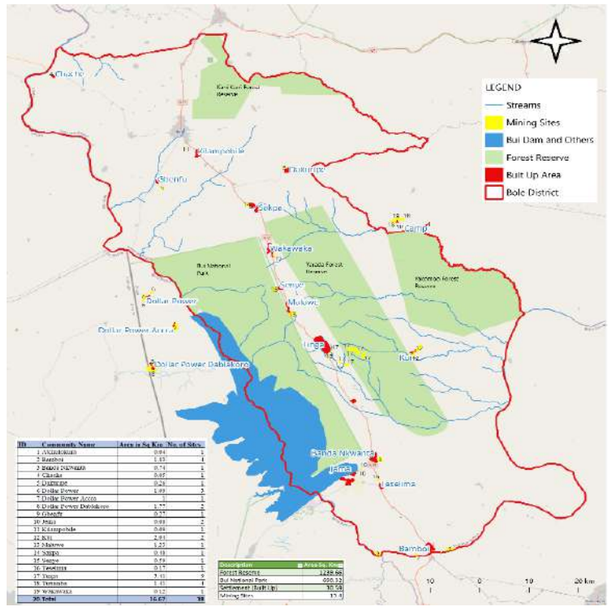


Figure 3.43: Map of Bole district showing mining sites' proximity to water bodies

While proximity analysis alone may not provide prove of harm on water quality or contamination, it gives indication of potential places where a much more detailed environmental risk assessment and buffer analysis could be performed to determine impacts.

3.6.4 The built environment of ASM sites

Results of the survey show that an overwhelming majority of participants at the mining sites lived in homes made with rubber[5] (193, 47.2%) (Figure 3.44), another 136 (33.2%) lived in homes made with iron roofing sheets whilst 41 (10.0%) people lived in homes built with cement blocks. Some 36 (8.8%) people lived in wooden structures and only 3 (0.7%) persons lived in mud houses. Most participants who live in homes built with cement blocks were most likely those who resided in regular settlements while commuting daily to work in the mines. One of the participants at Wakawaka explained that most mineworkers live in the settlement. The plastic estates could not be developed at the site because the first underground mining site the community discovered was close to the Bui Nature Reserve boundary line. They could not set up a settlement for people to live and work at the site. The plastic estates were only visible at the gold processing centre in the community.

5 Also referred to as *plastic estates*.

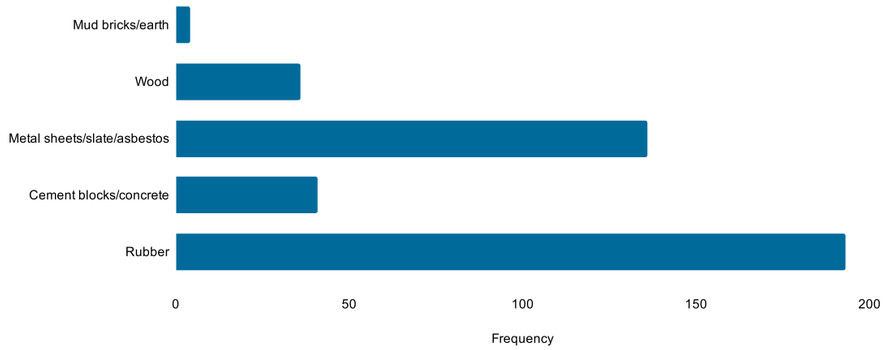


Figure 3.44: Wall material of dwelling in mining site

The floor materials were mainly cement/concrete (58%) with some 29 percent using carpet (Figure 3.45). Similarly, iron sheets (228, 55.7%) were the main material for roofing followed by rubber (176, 43.0%). The wall and roofing materials at various sites raise serious concerns about thermal comfort within the structures, and the overall health and well-being of mineworkers. These concerns are particularly serious considering that roofing and walling materials have been noted to influence indoor temperatures (Wilby et al., 2021).

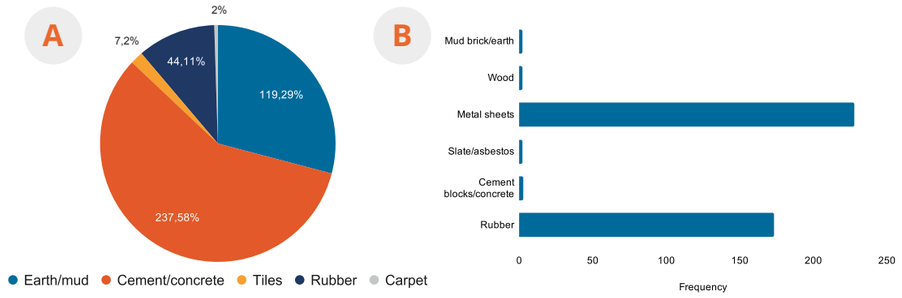


Figure 3.45: Floor material of dwelling (a) and roof material of dwelling (b) in mining site

Water supply for household use and mining operations is primarily sourced from boreholes sunk by mineworkers. An overwhelming majority of survey participants (235, 57.5%) indicated that they sourced water from boreholes while (55, 13.4%) sourced water from rivers and streams (Figure 3.46). Another 55 (13.4%) participants also bought sachet water for their use. Some of the participants explained why boreholes are the dominant sources of water supply at the mining sites in the following excerpts:

> *"What they do here is that if you want to use water you have to dig your own borehole. Yes, because if you want to go into mining, you will need water, and if you don't drill a borehole, there is no source of water around that you can go and tap. So, it is compulsory that if you want to do mining, you dig your own borehole, or you must find someone who already has a borehole so you can merge [partner] with him/her. At the end of the day, you will share and pay [the associated costs]. The boreholes also serve as a source of drinking water."* *(FGD Participant, Tinga, May 2026).*

> *"Now, because of the way they say that we destroy waterbodies and those things, we have decided to drill boreholes, and it is the boreholes most of the miners are now using to wash. You see that when you were coming, you saw the pipes, so we are now saying that if you can dig a borehole, come and dig and be using that to wash."* *(FGD Participant, Tutumba. May 2026).*

Sanitary facilities such as toilets are absent in these communities. Over 95 percent (423) of survey participants have confirmed the absence of toilet facilities at the various mining sites. The non-availability of toilet facilities at the mining sites implies that mineworkers may be defaecating in the open, a practice which is generally considered to have enormous public health risks.

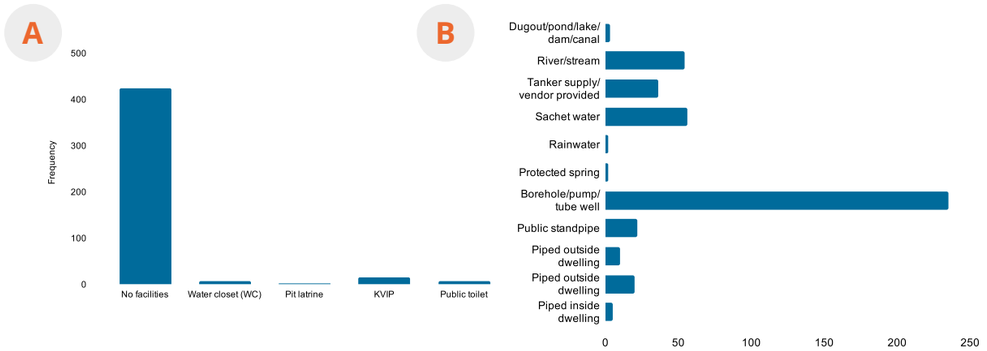


Figure 3.46: Main water supply (a) and toilet facilities (b) at mining sites

The settlements have access to off-grid electricity for household use and for mining operations powered by generators. At Dollar Power and Tutumba, the generators also power Starlink internet access for subscription by individuals and households. Sites noted for physical proximity to regular settlements such as Wakawaka, Tinga, Dakuripe and Banda Nkwanta have established rock processing centres within the main settlements. These centres utilise electricity from the gridlines to power the processing machinery. Although this development facilitates gold processing for mineworkers, it poses a risk of straining electricity supply in the communities, and a significant environmental contamination risk due to the use of hazardous chemicals in mineral processing.

3.7 Labour Mobility, Migration Patterns, and Cross-border Linkages of ASM Labour Markets and Gold Trading Networks

3.7.1 Labour mobility, migration patterns and challenges

Migration (both internal and external) exists across communities in Ghana for various reasons. This phenomenon is observed across the surveyed communities. The data show that while just a little over 2.0 percent of the respondents in mining communities migrated to another country in the last year for mining activities, only 1.3 percent of the respondents in non-mining communities migrated (Figure 3.47).

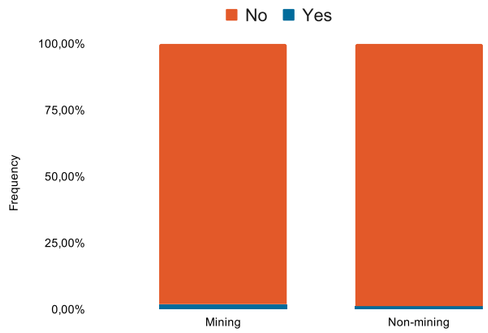


Figure 3.47: Migration to another country for mining

For internal migration, many more respondents (i.e., 38%) indicated they had ever migrated to another community in Ghana for mining purposes (Figure A.1 in appendix) than those who migrated last year – 8 percent (Figure 3.48). Comparing the international to internal migration, it is obvious that migration within the country is much more prevalent than outside the country, confirming an observation by Orkoh and Blaauw (2025). However, while Orkoh and Blaauw (2025) observed that rural-urban migration is the dominant type of internal migration, we observe the reverse – urban-rural migration as the dominant type – as this is a mining-specific migration.

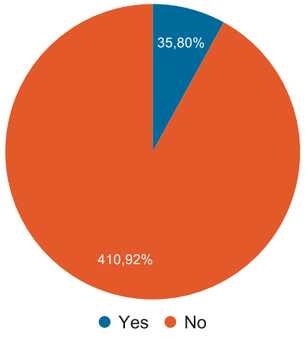


Figure 3.48: Migration last year

For those who migrated last year, the frequency of migration differed. From Figure 3.49, the majority (i.e., 40%) of those migrating last year did so multiple times, followed by those who migrated only once (i.e., 37%), and then seasonal migrants (23%). The results in Table 23 indicate that both men and women migrate about four times on average, depicting how mobile labour is in the surveyed communities.

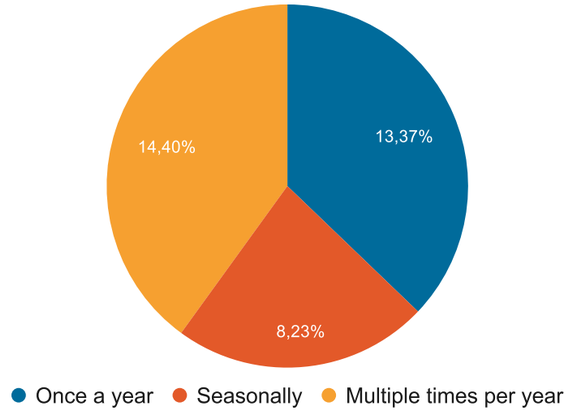


Figure 3.49: Migration frequency

Respondents have observed other people migrate in and out of their communities more than they themselves have migrated. Figures 3.50 (a) and (b) indicate that 87.0 percent and 91.0 percent of the respondents indicated they have observed others migrate out of and into their communities for mining purposes, respectively. These results imply that migration in and out of the surveyed communities for mining purposes is ubiquitous.

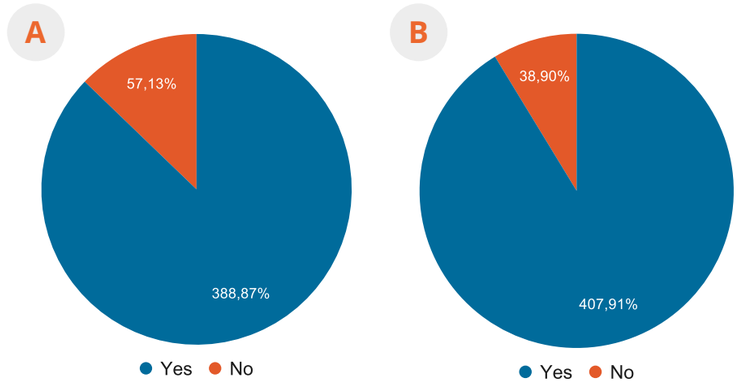


Figure 3.50: Frequency of others' outmigration (a) and in-migration (b)

As documented in the literature on artisanal and small-scale mining (ASM), migration to ASM communities is driven by many factors which can be broadly categorised into economic-pull and adversity-push factors (e.g., Arthur-Holmes & Busia, 2022; Maclin et al., 2017; Jønsson & Bryceson, 2009). The situation in the surveyed communities is not very different. Figure 3.51 shows that the majority of those who migrated cited higher gold yields as the topmost reason for migration. This is followed by better working conditions and wage rate differences, in that order. The reasons as shown in Figure 3.50 point to economic reasoning by mineworkers thus confirming the observations by Maclin et al. (2017) for ASM operators in the Democratic Republic of the Congo (DRC), and Jønsson and Bryceson (2009) for mineworkers in eastern Tanzania. Other reasons for migrating are ease of access to mining equipment at the destination location and security situation at the original site compared to the destination or reception site, as observed by Maclin et al. (2017).

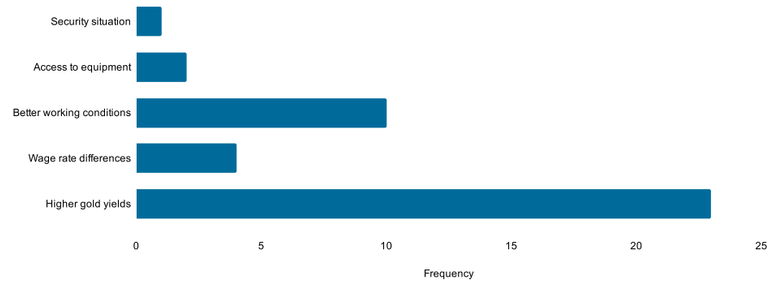


Figure 3.51: First ranked reason for migration

As shown in Table 23, respondents face various challenges in their migration for mining purposes. The major challenge encountered by the respondents is cost of travel. While 78 percent of men cited this as a major challenge, all the women (i.e., 100%) who responded to this question cited cost as a major challenge. Indeed, more women than men considered this a major challenge, as a test of differences returned a statistically significant outcome. The other important challenges are language barrier and discrimination, in that order.

Table 23: Selected migration characteristics

Variable	Men		Women		All	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Number of times migrated	3.70	1.34	4.00	1.15	3.79	1.25
Migration challenges						
Language barrier	0.17	0.39	0.17	0.39	0.17	0.38
Discrimination	0.13	0.34	0.17	0.39	0.14	0.36
Legal issues	0.09	0.29	0.17	0.39	0.11	0.32
Cost of travel*	0.78	0.42	1.00	0.00	0.86	0.36

Note: * *means statistically significant differences between men and women.*

For those migrating, the facilitator is mostly 'self', that is, migration is facilitated by the individuals themselves (Figure 3.52). The other (less important) facilitators are labour recruiters or agents, friends and family, and traders or financiers. Regarding whether mineworkers intend to migrate permanently for mining purposes, only 2 percent (see Figure A.2 in the appendix) of the respondents currently mining answered in the affirmative. This implies that the mineworkers do not have the immediate intention of permanently migrating for mining purposes.

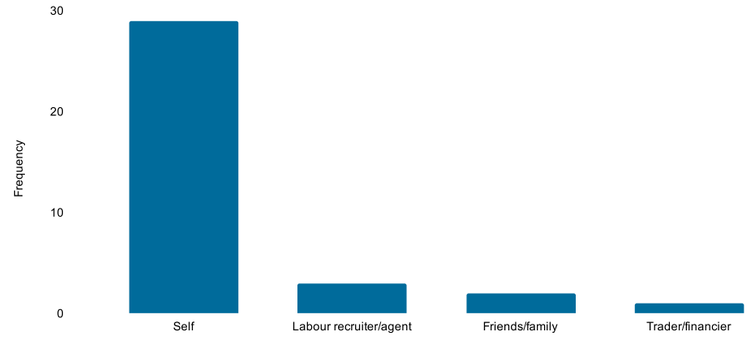


Figure 3.52: Facilitator of migration

3.7.2 Employment arrangement and gold trading

In terms of the main employment arrangement, for example, regarding how mineworkers are paid, they mostly receive wages on daily basis (Figure 3.53). This is followed by receipt of share of gold ore output in much the same way that pit owners or sponsors[6] pay landowners (Stacey, 2025), and those working on family pits and thus do not receive direct payment.

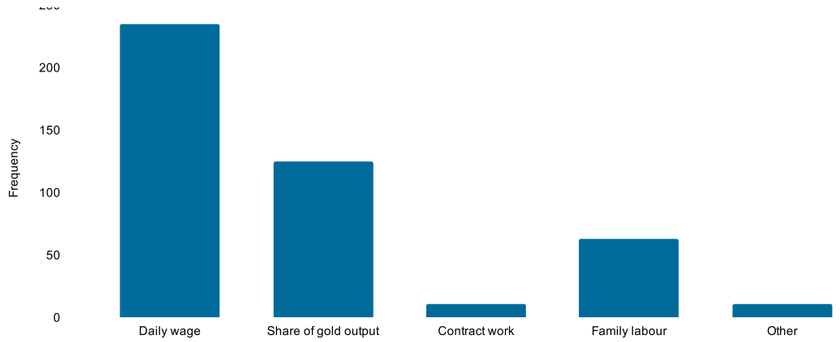


Figure 3.53: Employment arrangement

6 'Sponsor' is a major *bankroller* or financier of mining activities and who may own or manage mining equipment. A sponsor invests directly in mining activities/ventures or may pool resources from other sources for that purpose.

With the coming into force of the Ghana Gold Board Act, 2025 (Act 1140)[7], the Ghana Gold Board (i.e., GoldBod for short), among other things, will "... undertake the buying, selling, assaying ... or other related activity in respect of gold" (paragraph 2a, page 5). The Act establishing the GoldBod represents an attempt at centralising gold purchases, formalising the gold trade, improving traceability of gold, and reducing smuggling among artisanal and small-scale mining operators. Indeed, all gold from artisanal and small-scale mining must be sold to GoldBod through its licenced aggregators. This implies that such mines or miners must be legal to be able to sell to the GoldBod.

The results shown in Figure 3.54 indicate that most mineworkers mainly sell their gold to local buyers. These local buyers are mostly not licensed, but activities of the GoldBod are less known in the study districts (of Bole, West Gonja and Sawla-Tuna-Kalba), except at the Tinga site. This raises questions regarding the destination of gold purchased by local buyers. Could some licensed aggregators be buying gold from such sources? This is most likely the case, as also observed by Stacey (2025, page 8) that *"[...] the national strategy [of buying gold] also forges a relationship which inadvertently rewards illegal extraction, as galamseyers bring in gold for cash to the licensed agents, who in turn sell on to the PMMC for export."* Such local buyers may also sell to licensed aggregators. This assertion is strengthened by the fact that some mineworkers sell directly to licensed traders, albeit those in this category are few. There are also those selling to middlemen, and then to cross-border buyers, even though this latter category is negligible.

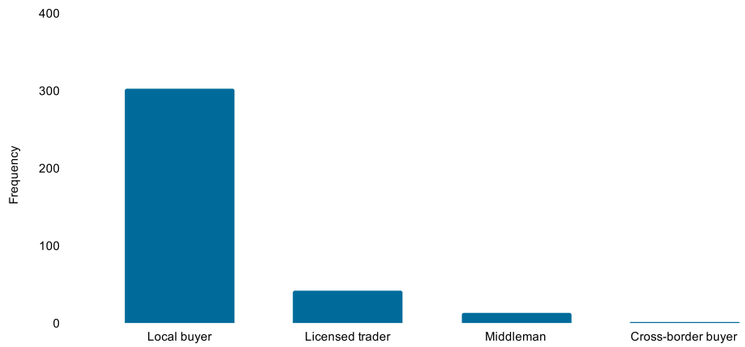


Figure 3.54: Main gold buyer

The foregoing discussion implies that the activities of the GoldBod[8] unwittingly or otherwise might be encouraging illegal gold mining, running counter to the functions of the Minerals Commission, another state institution, of ensuring

7 Republic of Ghana (2025). Ghana Gold Board Act, 2025 (Act 1140). Ghana Publishing Company Ltd. Assembly Press, Accra. GPCL/A2024/450/04/2025.
8 Note that the GoldBod is the successor body to the Precious Mineral Marketing Company (PMMC) per the Ghana Gold Board Act, 2025 (Act 1140).

inter alia that only licensed entities or individuals operate in the mining space to enforce legal and responsible mining (Stacey, 2025). This situation, in which state institutions might pursue goals that appear contradictory within the ASM sector, requires serious attention.

The buyers of the gold mostly reside in the same community as the mineworkers (Figure 3.55). Some respondents mentioned that the buyers are from other regions and other communities in the same region. However, a few respondents noted that buyers are from other countries. Of course, the latter case is possible because transactions at the mining sites are mostly informal, as also observed by Stacey (2025), Adranyi et al., 2024), and Arthur-Holmes and Busia (2022). However, this presents a difficult situation as it can serve as a conduit for illicit activities and money laundering (Moshi, 2012).

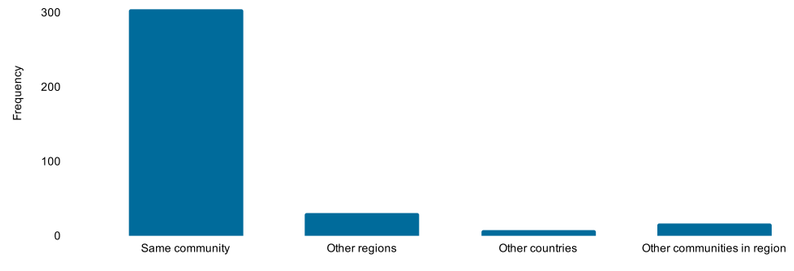


Figure 3.55: Buyer location

For the mineworkers who sell gold, the majority (87.0%) note that the price at which they sell is dictated by the prevailing market price (Figure 3.56) as determined by the market forces of demand and supply. From Figure 3.56, a few of them, 8.0 percent and 5.0 percent, indicated that the price at which they sell is determined through negotiation and exclusively by the buyer, respectively.

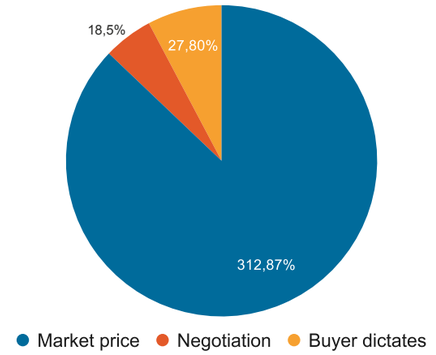


Figure 3.56: Price determination

Unsurprisingly, almost all the respondents (98%) noted the common mode of payment for the gold they sell as cash, with the remaining 2 percent indicating mobile money only or a combination of cash and mobile payment (Figure 3.57). Indeed, cash transactions are symptomatic of informality and are thus prone to money laundering (Moshi, 2012). Thus, it presents a security challenge that warrants vigilance.

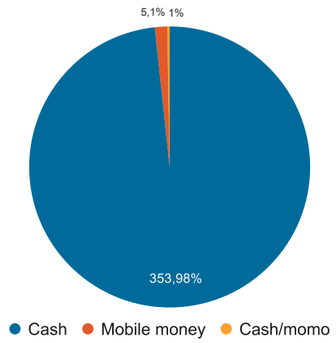


Figure 3.57: Common payment

3.8 Social and Economic Status of Mineworkers after Quitting ASM

3.8.1 Roles of former mineworkers and occupation after quitting

Some former mineworkers were interviewed as part of the research. These former mineworkers mostly played the roles of miners (pit diggers or those working underground), processors, pit owners, service providers, traders, ore transporters, and digital gold detectors. These essentially constitute the value chain at that local level.[9] It can be seen from Figure 3.58 that, like the active mineworkers, majority of the former mineworkers were into processing, mining (direct pit digging or underground work), service provision, trading, ore transportation, in that order. The striking thing here is that the various roles seem gendered, as observed by Arthur-Holmes and Busia (2022), and Jenkins (2014). While predominantly male mineworkers worked underground, those owning pits and those engaged in computerised or digital gold detection were exclusively male. Female former mineworkers dominated processing, trading, service provision, and ore transportation (Figure 3.58). On average, the former mineworkers worked in mining for at least four years before quitting (Table A.4).

9 The only category within the value chain missing here is the role of *sponsor*.

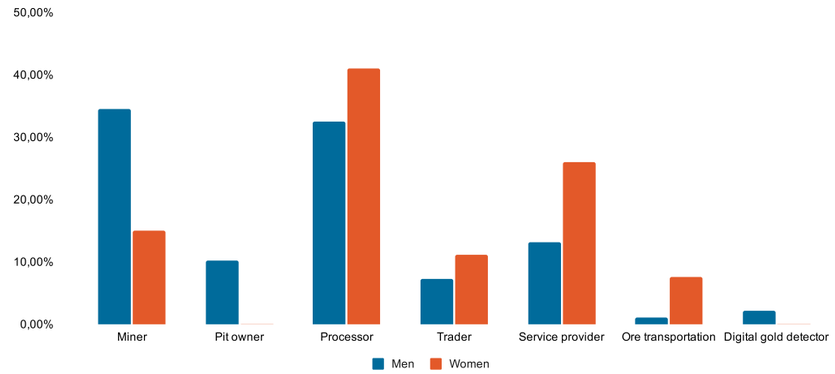


Figure 3.58: Main roles of former mineworkers

Majority (i.e., 61.0%) of those that have quitted did so after the year 2020, and the trend has been increasing since 2000 (as shown in Figure A.3). From Table 24, there are various reasons for which the former mineworkers left mining. The major reasons are that it is dangerous or life threatening (cited by 37.0% of all respondents), low earning or the feeling that they were no longer earning as much as before (29.0%), health concerns (27.0%), and family reasons (21.0%).

Table 24: Reason former mineworkers quit

Reason	Men		Women		All	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Low earning	0.31	0.47	0.19	0.40	0.29	0.45
Dangerous/life threatening	0.39	0.49	0.26	0.45	0.37	0.48
Health concern	0.26	0.44	0.30	0.47	0.27	0.45
Arrested before	0.00	0.00	0.04	0.19	0.01	0.09
Government regulation	0.03	0.17	0.04	0.19	0.03	0.18
Better opportunities elsewhere	0.12	0.33	0.11	0.32	0.12	0.33
Environmental concern	0.02	0.14	0.07	0.27	0.03	0.18
Family reason	0.20	0.40	0.26	0.45	0.21	0.41
Work finished	0.06	0.24	0.07	0.27	0.06	0.24
Education	0.03	0.17	0.00	0.00	0.02	0.15
Age	0.01	0.10	0.00	0.00	0.01	0.09

Former mineworkers who are still strong take on other jobs. These are listed in Figure 3.59, which shows that the majority of those quitting engage in trading/selling (not gold), agriculture, technical trade/artisanship, and dressmaking. The men are mostly or exclusively engaged in agriculture, technical trade/artisanship, and construction work, while women are mostly involved in trading/selling (not gold), dressmaking, and wage labour.

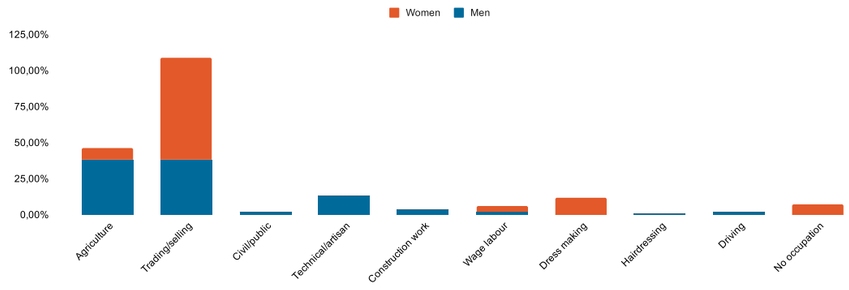


Figure 3.59: Main occupation after quitting

They (i.e., former mineworkers) face various challenges in the work they do after quitting mining (Table 25). Prominent among them are inadequate capital (as cited by 86.0% of all the respondents), inadequate skills (34.0%), poor market access (25.0%), and limited job opportunities (22.0%). The other important issue challenging them is lack of land or resources. It is important to note that these challenges are not peculiar to the former mineworkers alone, as all other small-scale businesses face similar challenges.

Table 25: Challenges former mineworkers face in current work

Variable	Men		Women		All	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Inadequate capital	0.87	0.34 6,5%	0.84	0.37	0.86	0.35
Inadequate skills	0.34	0.48	0.32	0.48	0.34	0.48
Limited job opportunities	0.23	0.42	0.16	0.37	0.22	0.41
Social stigma	0.00	0.00	0.00	0.00	0.00	0.00
Lack of land/resources	0.09	0.29	0.12	0.33	0.10	0.30
Poor market access	0.26	0.44	0.20	0.41	0.25	0.43
Other	0.01	0.10	0.04	0.20	0.02	0.13

3.8.2 Income, alternative livelihood issues and quality of life of former mineworkers

Only 20 percent of former mineworkers (see Figure A.4) indicated that they had multiple income sources. This reflects in most of the former mineworkers indicating that compared to their previous engagement in artisanal and small-scale mining (ASM), their current income levels are much lower or slightly lower (Figure 3.60). The results in Figure 3.60 show that the level of income after quitting mining appears to be gendered. While the majority of women indicated much lower to slightly lower current income levels, the majority of men indicated about the same to higher current income levels than previously.

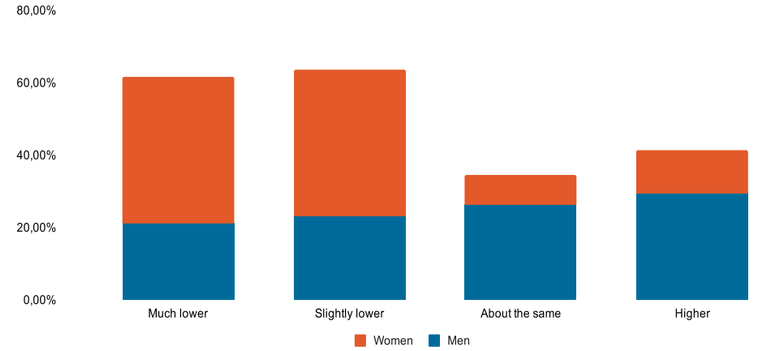


Figure 3.60: Income comparison to mining

About 5.0 percent of the former mineworkers had any training after quitting ASM (Figure 3.61), and this training was mainly provided by non-governmental organisations (NGOs) or the private sector, with only one former mineworker receiving financial support (loan/grant) for alternative livelihood. The findings reveal the broader issues of lack of state support and alternative livelihood opportunities which serve as drivers for people's engagement in ASM (Arthur-Holmes & Busia, 2022; Hilson & Hu, 2022).

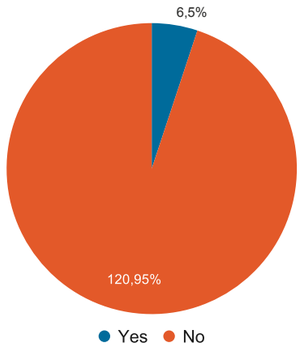


Figure 3.61: Training after quitting

In terms of ease of transitioning to their current occupation, most of the former mineworkers felt it was difficult, followed by those who felt it was easy, and then very difficult, in that order (Figure 3.62). This phenomenon also presents some gender dimensions or undertones, as most women former mineworkers fall within the 'very difficult' and 'difficult' categories, while most men fall within the 'easy' and 'neutral' categories. Even though few, only men former mineworkers felt that transitioning to alternative livelihoods was very easy.

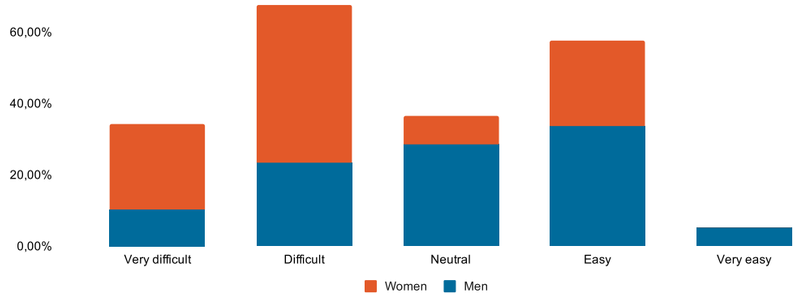


Figure 3.62: Ease of transition to alternative livelihoods

The former mineworkers suggested what could have best helped their transition from mining to other livelihood activities. In Figure 3.63, the majority (69, 55.0%) of the former mineworkers held that providing credit to them would have been very helpful for their reintegration after quitting mining. Other support types mentioned by the former mineworkers are skills training (36, 28.0%) and job placement (21, 17.0%). Indeed, these suggestions by former mineworkers point to ways in which public and private institutions can galvanise support to evolve alternative livelihood strategies that can help stem the menace of ASM activities.

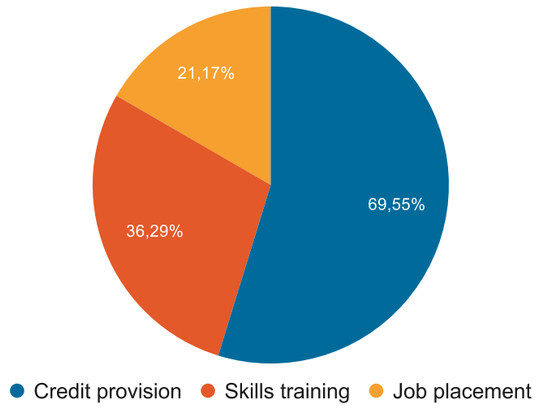


Figure 3.63: Suggested transition support

Generally, former mineworkers are satisfied with their current jobs after quitting ASM. Figure 3.64(a) indicates that most of the former mineworkers were satisfied (58, 47.0%) or partly satisfied (51, 41.0%) with their current jobs, with only 12.0 percent (i.e., 15) not satisfied. This reflects in the proportion of former mineworkers intending to return to mining. Figure 3.64(b) shows that only a little over 6.0 percent of all former mineworkers indicated that they had the intention to return to ASM.

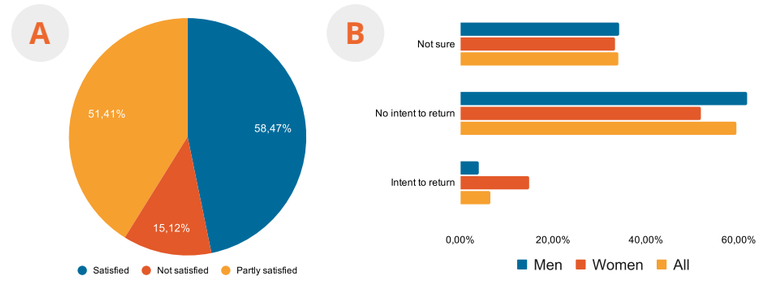


Figure 3.64: Job satisfaction (a) and intention to return to ASM (b) by former mineworkers

Regarding their health status, 16.0 percent (i.e., 20) of the former mineworkers indicated that they suffer from mining-related illnesses, with the vast majority indicating that they were generally fine (Figure 3.65(a)). Indeed, as shown in Figure 3.65(b), majority of them indicated that they observed improvement in their health status after quitting, while very few noted that there was no improvement in their health status.

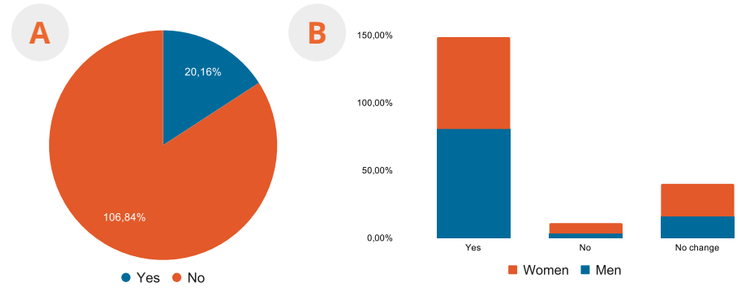


Figure 3.65: Those suffering from mining-related illness (a) and those with improved health status after quitting (b)

Most of the former mineworkers held the view that their quality of life now is better than or the same as when they were mining (Figure 3.66(a)), with a few indicating that their life is worse or much better. This observation is consistent with their responses regarding their overall life satisfaction after quitting ASM. From Figure 3.66(b), the majority of the former mineworkers indicated they are either satisfied (103, 82.0%) or very satisfied (7, 5.0%), with those feeling dissatisfied (15, 12.0%) and very dissatisfied (1, 1.0%) being in the minority.

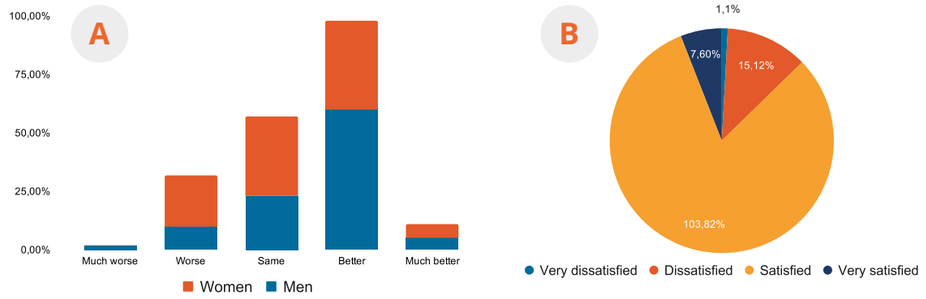


Figure 3.66: Quality of life comparison (a) and overall life satisfaction (b) by former mineworkers

On how secure they feel about their future livelihood, most of the former mineworkers fall within the 'neutral' to 'very secure' categories, with few indicating that they felt 'insecure' to 'very insecure' (Figure 3.67(a)). This, of course, translates to how economically stable they felt without returning to ASM (as shown in Figure 3.67(b)). These observations imply that ASM operators are perhaps aware of the demanding nature of their job and are conscious that they will need to exit that in the future; therefore, they prepare adequately before exiting or quitting.

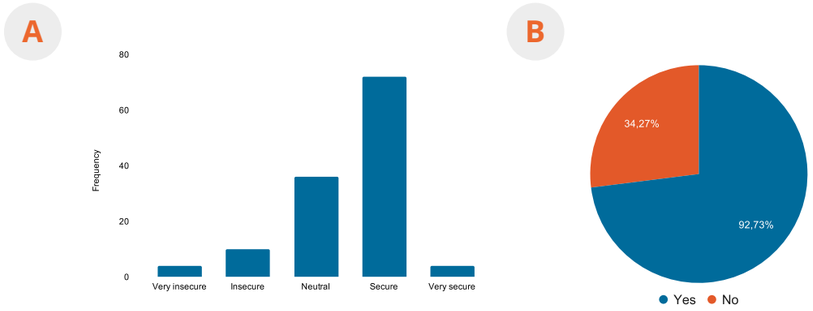


Figure 3.67: Perceived security of future livelihood (a) and economic stability (b) of former mineworkers

3.9 Selected Characteristics of Non-Mining Communities

Some people in some non-mining communities have engaged in mining before, mainly by migrating to communities in Ghana where ASM activities are taking place. The results in Figure 3.68(a) indicate that 13.0 percent (i.e., 50) of the respondents in non-mining communities have engaged in this activity before. Along the value chain, these people have predominantly engaged in mining (pit digging or underground work), processing, and service provision (Figure 3.68(b)). Up two (2) of the respondents have indicated owning pits. About 18.0 percent of those who ever engaged in ASM (i.e., 9 out of the 50) in non-mining communities are still engaged in ASM (refer to Figure A.5).

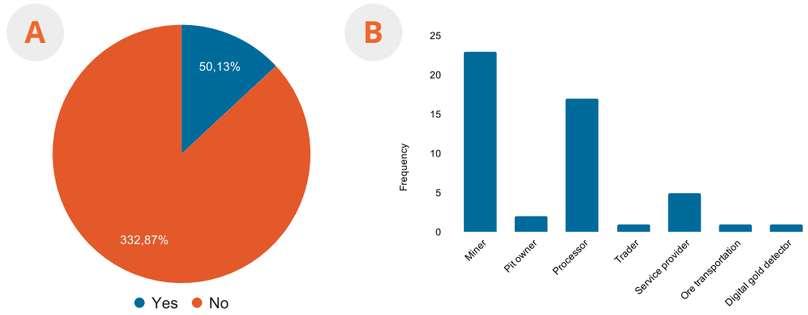


Figure 3.68: Those ever engaged in mining (a) and main specialisation (b)

Majority of the respondents (302, 79.0%) in the non-mining communities are of the view that more men are engaged in ASM than women, with 16.0 percent (i.e., 61) indicating that they believed men and women engage in it equally while a paltry 5.0 percent (i.e., 19) indicated women engaged in it more than men (Figure 3.69). Even though these are just perceptions, they reflect the general emerging trend in this report that more men engage in mining than women.

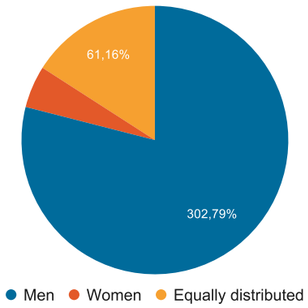


Figure 3.69: Gender distribution in mining

This, they indicated, is followed by the middle-age category (i.e., 41-60). Again, this reflects the actual findings on the age categories actively engaged in mining as revealed in the earlier part of this report (in subsection 3.1.1).

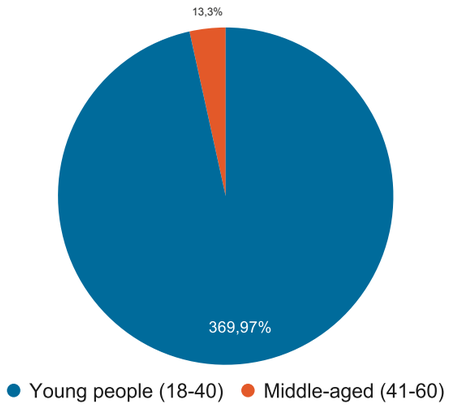


Figure 3.70: Perception of people in non-mining communities of age distribution in mining

3.10 Socioeconomic, Security and Conflict Implications of ASM Activities



With the support of chiefs, the mining committees provide security protection for mineworkers, mediate disputes among them and oversee the overall management and safety of their operations

This study has profiled and carefully analysed ASM activities in three districts of the Savannah region. The study has brought to the fore the complex interplay of socioeconomic, political and governance issues which characterise ASM activities in the districts. We observe the significant and multifaceted nature of mining activities and the numerous livelihoods that are interwoven with the ASM value chain. Mining has become a survivalist strategy for many young people who will go to greater lengths to sustain their operations. However, the informal nature of mining within a multilayered customary land tenure arrangement coupled with poor or non-existent regulatory oversight, opens several avenues for potential conflict and security risks, and undermine the long-term sustainability of ASM activities in the districts. For example, the search and discovery of potential gold mining sites is beginning to generate heated contestation over customary land boundaries, with hierarchies of traditional authorities claiming ownership rights and control over mining sites. The boundary dispute started with competing claims between the chiefs of Sakpa and Wakawaka. It subsequently escalated to a dispute between the chiefs of Bole and Sonyo. This has compelled the Overlord of the Gonja Traditional Area (i.e., the Yagbonwura) to assume direct responsibility over the area to diffuse the tensions.

Another conflict and security issue relates to the governance of mining sites. Mineworkers across all sites appear to rely solely on authorisation from the chiefs to commence operations, which makes it difficult for statutory agencies to exercise full regulatory oversight. Chiefs have set up functional committees to manage the sites and there is an arrangement for mineworkers to channel proportional share of mine proceeds to the palaces, a form of informal taxation. Considering the way in which authorisation from traditional authorities have nurtured and sustained mining operations in the study districts, the talk about regularisation comes with the risk of creating a split authorising environment with community members relying on chiefly approvals whilst other firms rely on government licensing. This has the potential of creating tensions between mineworkers recognised by the state and those working with authorisations from the chiefs. At the time of fieldwork, mineworkers at Dollar Power and Tutumba were already dealing with a complex situation where the Minerals Commission issued mining or prospecting licences to private mining firms covering areas already under active mining and authorised by the local mining committee. One of the participants expressed concerns about the conflict situation at Tutumba during an interview as follows:

> *"When they came, they said they had the permit from above, but at the initial stage we said we would not agree because of the way they normally bring soldiers to come and bully people. They took us to Damongo and explained to the authorities that they would not bring military men to worry us. They had to even use force, during the NPP regime, and the then Regional Minister said it was a force for them to come and work." (FGD Participant, Tutumba, May 2026).*

> *"When J H Resources came here, they said the whole land belongs to them, so we told them that if government gives them all the land, there is no problem, but they should also give us part of the land to mine. So, we negotiated with them before they gave us a portion of the land." (FGD Participant, Tutumba, May 2026).*

Another participant commenting on the influx of large-scale mining firms in the area had this to say: "*If they come and want to sack us from the place, that is when we will have problem with them. We are landowners; if we had the power, we would not allow them."* (Key Informant, Dollar Power, May 2026).

Traditional authorities are already raising serious concerns over the Minerals Commission bypassing chiefs in the issuance of mining licences. They suggest that chiefs are not properly consulted in the processing and issuance of various forms of mining licences in the area. Mining firms arrive in the area almost every day to undertake prospecting or mining without recourse to chiefs and they transfer leases or sublet their concessions without the knowledge of landowners. One of the key informants explained the problem with Minerals Commission in the following excerpt:

"Minerals Commission would sit in Accra and without reference to the landowners just register people and sneak them into the system without our notice. Sometimes you would just take your file and see that a company has been transferred to new owners without even notifying you, because it is a business for them. I am the owner of the land, but because of these laws, you just send people down to come and start digging without any consent from us?" (Key Informant, Tinga, May 2026).

From interviews, we discovered that the number of concessions awarded without recourse to traditional leaders was a common grievance in the study area. This has prompted one of them to petition the Council of State and the Ministry of Lands and Natural Resources. The Minerals Commission acknowledges that chiefs agitate when large companies arrive in their communities without prior community entry. The conflicting mandates between traditional authorities and statutory agencies have created tensions in the area. This structural gap risks undermining social licence with the potential to generate conflict as large-scale investment increases.

Related to the preceding discussion is the apparent contradiction in the execution of the roles of various state institutions. For example, and as discussed earlier, while the Minerals Commission works tirelessly to ensure small-scale mining activities in our communities are legit and so come under regulation, GoldBod sometimes is fixated on gold purchases without thorough checks of the source(s) of the gold. This rewards illegal small-scale gold mining and counters the efforts of another or other state agency/agencies at curbing illegal mining and sanitising the ASM sector. This contradiction presents security concerns or risks and requires that state agencies within the ASM space engage constructively to navigate such enforcement bottlenecks.

Another significant security concern is the potential link between ASM activities and the security vulnerabilities of the districts. Some of the mining communities have no active physical connectivity with existing settlements in the districts. Their remote locations in the contexts of the study districts, coupled with obvious physical accessibility challenges make them potential safe havens for criminal activities. Mining communities such as Dollar Power is located near the Côte d'Ivoire border and given that these areas accommodate foreign nationals from neighbouring countries, they constitute easy targets for extremist activities. This results largely from the lack of state presence in the areas, the numerous unapproved routes linked to these sites, the fluid nature of migrant populations in and out of the locations, and the limited surveillance capacities of District Security Councils (DISECs).

The isolated nature of some mining communities and the fact that transactions in the gold trade are conducted in cash make these multicultural spaces potential hubs for money laundering activities. It was discovered during interview with participants that most *ghetto sponsors*[10] were foreign nationals who come into these places with huge sums of money to sponsor gold extraction and buy the gold. Gold buyers operate at all sites, purchasing gold from washers and mineworkers based on competitive pricing. All gold transactions are conducted in cash including purchases by foreign nationals. Prices fluctuate daily, ranging between GHS 800.00 and GHS 1,300.00 per blade (a standard weight unit) at the time of fieldwork. One of the key informants explained the role of foreign nationals in gold trade at the various sites as follows: "*They bring sponsorships from their home governments and during Ramadan they all go back home. It is immediately after fasting that they come back here to continue their work. When they are going home, they carry the gold along, and when they are coming back, they come with more money to buy again."* (Key Informant, Tinga, May 2026).

The cash-based transactions at the mining sites, intersect with multiple layers of vulnerabilities to heighten the risks of conflict and security in mining communities. The GoldBod taskforce seems to work towards breaking the cross-border link of gold transactions, but the scope of their operations is limited to licensed mining sites. Furthermore, the cash-based transactions that fuel gold trade at the various sites appear not yet constitute a significant security concern in the ASM sites.

Informal mining settlements that do not have any physical connection with existing regular settlements (i.e., Dollar Power and Tutumba) and are exposed to multiple vulnerabilities due to lack of government presence are negotiating for recognition by the relevant local government authorities. Despite being outside the scope of the local governance system, these settlements already express serious grievances regarding the absence of public services and infrastructure deficiencies. There is no doubt that regularising these settlements presents a

10 This sponsor or '*ghetto*' financing is a form of an informal credit system. Once they sponsor, they are assured of the gold proceed, and interest is obtained in the form of discount sale.

window of opportunity to manage the complex security, and conflict risks they pose to the wider region. The regularisation of these settlements will certainly come with increased state presence, especially in terms of the relevant security and regulatory agencies, to counter the perception or reality of crime in these areas and forestall the e nvironmental and ecological risks associated with mining. The settlements are fully recognised by the traditional authorities on whose land they developed. Recognising these settlements will stretch the capacity of local authorities to extend public services to the areas and make them conducive for human habitation. There will be no problem if the local government can institute measures to collect fees and charges and get the revenue from mining activities to compensate for the extension of public services. The most pressing question, however, relates to the long-term sustainability of the settlements themselves. These are settlements with makeshift housing and infrastructure that are designed to temporarily accommodate a fluid population of mineworkers. There is no guarantee that these settlements will remain as such in the event of mine closures which come with environmental hazards and socio-economic decline.



4. CONCLUSION AND RECOMMENDATIONS

4.1 Conclusions

This study has found that ASM provides important livelihood and employment opportunities for a vast majority of the population in the Savannah region and beyond. A disproportional distribution of ASM activities was observed in the study areas with the highest concentration of active mining sites in the Bole District compared to the Sawla-Tuma-Kalba and West Gonja districts. The mining sites offer direct employment avenues for young people and open a wide range of business opportunities for the wider communities, and their spread effects are to be found in the district and the region. To ensure the smooth governance of the mining sites, the communities have set up vibrant mining committees comprising various stakeholders, including traditional authorities, leaders of tribal groupings and clans. With the support of chiefs, the mining committees provide security protection for mineworkers, mediate disputes among them and oversee the overall management and safety of their operations. Mineworkers have maximum confidence in the work of the committee as they represent the authorising environment for their operations. A much more formal governance structure is being developed at the district level with the establishment of a District Mining Committee (DMC). This DMC is intended to provide proper coordination and regulations of mining activities in the district to ensure that mining is done in an environmentally benign manner. Given that most of the mining sites do not have licences, DMC has already initiated processes to regularise mining activities in communities whose operations do not fall under the restricted zones of the Minerals Commission. Active mine sites were located and geo-referenced within the Bole district with a few sites falling outside it, but no active mines were located at the West Gonja and Sawla-Tuna-Kalba districts. The location of mining activities within or in close range to the boundaries of existing reserves and protected areas raise concerns about invasion and potential future succession of adjacent protected areas. In light of the wide range of activities along the value chain, mining sector employment was found to be inclusive and non-discriminatory. Everyone, not disqualified by age or conduct, participated freely in mining work. Mining work was also highly gendered with men dominating in the upstream mining work and women leading in downstream activities such as washing and the provision of ancillary services. Across all the mining sites, women are not involved in the decision-making structures of the mining committees. The nonrepresentation of women in these structures reflects the patriarchal nature of the mining communities. Finally, the common mode of payment for the gold at the various sites is cash, reflecting the informality of the sector and how prone it might be to money laundering. This, thus, presents a security challenge that warrants vigilance.

4.2 Recommendations

ASM has the potential to reduce poverty, improve living conditions, and ensure the overall development and transformation of mining communities, the district and the region. In view of this potential, the following recommendations are made to guide decisions in the ASM space and ensure that their operations align with district, regional and national development priorities. The recommendations are structured along the lines of governance, market formalisation, conflict and security, inclusive local development and environmental rehabilitation.

1. ASM governance/institutions

- The first step to realising the full benefits of mining activities is to develop a spatial development framework for the districts. This plan will clearly map active mining sites and outline steps to contain or regulate their activities while preventing the proliferation of new sites. Within this framework, mining sites outside the block out areas of the Minerals Commission could be profiled for regularisation and licensing. The spatial development framework will also serve as a tool for controlling mining activities in the districts.

- Women are mainly absent within the ASM governance structures. The establishment of women-only ASM advisory forums or committees at each site as a structured governance entry point is necessary. These can represent parallel governance structures rather than demanding seats in male-dominated committees right from initiation. The DMC can then apply 30% minimum women presence. This, over time, can normalise their presence and provide evidence of effective participation that can be used to advocate for change in community structures.

- Investments should be made in women's governance and financial literacy through trainings as the foundation for meaningful participation. Financial constraints are the top barrier for women and governance exclusion means women cannot influence how royalties earned significantly through their labour are spent. Women who cannot read permit conditions, verify royalty calculations, or understand GoldBod pricing are at a structural disadvantage in any governance space, regardless of whether they have a seat at the table. Achieving women's participation thus requires fixing such bottlenecks.

- The most striking safety finding is the gender gap in sexual harassment perception. This is a reflection that a greater number of men than women do not recognise it as a problem. In addressing this, a gender-responsive community security system is necessary. One way to do this is to provide all community security personnel with structured training in gender-based violence recognition and referral approaches that ensure confidentiality and trust.

- While some state institutions, like Minerals Commission, work to ensure ASM is legit, the aggregation drive of the Ghana Gold Board (i.e., GoldBod) may unwittingly reward illegal miners thereby resulting in contradictory goals by state institutions within the same sector. This major governance challenge can be resolved through the activities of the DMC, which provides a platform for the state institutions to dialogue and harmonise their aims.

2. Formalisation of ASM

- Where a site qualifies for licensing, it is recommended for the Minerals Commission to consider issuing cooperative licenses to prevent situations where individuals sublet their licenses to large scale mining firms. The terms of the cooperative license should align with the prevailing mining practices in the area.

- Where licensing is possible, steps should be taken to provide equipment and machinery including personal protection equipment for mineworkers to enable them to optimise yield and maximise returns on their efforts. This is against the general believe that the current technology for mining and processing only allows mineworkers to trap less than 40% of gold. The rest of the gold is filtered into the dust.

- To mitigate the risk associated with cash-based transactions in the ASM sector, the DMCs should encourage financial institutions in the districts to extend banking services to licensed mining sites and promote flexible banking products to mineworkers. The uptake of banking services by mineworkers will be the first step towards regulating financial transactions in the ASM sector. Over time, the banks can institute innovative savings and investment products, including financial literacy strategies to ensure that mineworkers who desire to exit mining have enough savings and skills to step on to alternative livelihoods.

- The results show that majority (i.e., about 74.2%) of the survey participants are unaware of regulation within the ASM sector, implying that non-compliance is partly due to lack of knowledge. Enforcement alone is thus not a feasible strategy to ensuring compliance in the sector. Community-level awareness building and dialogue remain key strategies to formalisation.

3. Conflict and security

- To avoid future conflicts between small scale mineworkers and large-scale concessionaires over encroachments, part of the declassified lands at Dollar Power should be negotiated and licensed for small-scale mineworkers in the community. This should form part of efforts by the DMC to regularise the activities of the mining sites.

- At present, there are serious concerns from traditional authorities in the study districts over the bypassing of chiefs in the issuance of mining licences by the Minerals Commission. To ensure lasting peace in the area, it is prudent to actively involve traditional authorities in all processes leading to the issuance and/or renewal of mining licenses. The current system where licensed mining firms only come to observe community and site entry protocols after obtaining licences from the Minerals Commission breeds discontent and heightens the risk of conflicts in the area.

- The seeming tensions arising from traditional land boundary contestations need to be carefully managed to prevent their escalation to full scale community conflicts in the region. To this extent, the DMC must engage with relevant divisional and paramount chiefs to establish a truce. The outcomes of such engagements and the decisions thereof should then be forwarded to the Gonja Traditional Council and the Savannah Regional House of Chiefs for onward ratification. Closely related to this is the potential future conflicts between administrative districts in the Savanna region regarding ownership rights and control over the Dollar Power cluster sites and Tutumba. These mining sites lie outside the corporate boundaries of the Bole district even though mineworkers and committee identify themselves with Bole district authority due to the overlap of traditional boundaries.

- The DMC should also consider establishing a joint taskforce comprising military, police and immigration officers to provide regular surveillance over the mining sites. The taskforce's mandate will be to monitor these spaces against infiltrations by violent extremist groups and other forms of criminal activity.

4. Inclusive local development/livelihoods

- Mineworkers should be connected to local sponsors who have the capacity to finance pit construction and maintenance until the rock is hit. Where foreign mineworkers take up sponsorship roles at the mines, they reap a disproportionate share of the benefits.

- Mining in the study area is so ingrained that stopping it altogether might not be a feasible strategy. What might be important and mutually beneficial to the communities and the state is to evolve ways of regularising and thus regulating the activities of the mineworkers in the study districts.

- Former mineworkers hardly had any training or received financial support after quitting ASM, revealing the broader issues of lack of state support and alternative livelihood opportunities which serve as drivers for engagement in ASM. These former mineworkers held that providing credit, skills training and job placement to them would have been very helpful for their reintegration after quitting mining. This revelation drops hints on what strategies might be employed by the state, Coginta and other partners to ensure smooth transition from mining to other livelihood activities thereby containing or minimising the negative effects of ASM in the study districts.

5. Environmental rehabilitation and safety

- Land degradation and loss of vegetation are the most visible biophysical impacts of mining activities across all study sites. The EPA should strengthen its regulatory functions by mandating the clearance of as little indigenous vegetation as possible at mining sites and insist on the use of indigenous vegetation in post-mining environmental rehabilitation works. These requirements should be made conditions precedent to the issuance and renewal of mining licences. For the avoidance of doubt, mining sites which urgently require environmental rehabilitation are Tutumba, the Dollar Power cluster sites and Kui. These sites exhibit extreme pressures from expanding mining sites relative to the built area. Similarly, the EPA should insist on the use of silent power generators to power equipment and machinery at mining sites to minimise the situation where noise generated from mining activities force fauna out of mining sites.

- Access to gold processing sites that are near human settlements should be restricted to authorised mineworkers. The mining committees should be encouraged to fence off these sites from the surrounding area to prevent incursion by children and animals. There should be notices and warning signs displayed at the sites to alert the public not to enter these spaces to avoid potential exposure to hazardous chemicals.

- Women's role as primary ore processors exposes them to mercury contamination daily. Women currently wash ore with bare hands and bare feet in mercury-contaminated water. This demands an immediate, practical action. The EPA confirmed that despite training programmes delivered across communities, mineworkers including women processors were still using mercury. The problem is not that women lack awareness, but they lack alternatives. Mercury-free methods require equipment they cannot afford, and no amount of training will change this reality. Two complementary actions are therefore required, and they should be implemented together. The first is the immediate provision of personal protective equipment to all active women processors. Gloves, rubber boots, waterproof aprons, and dust masks are low-cost relative to the health outcomes they prevent. The second is the establishment of women-led, mercury-free processing demonstration units at each major site. Each unit should be sited within existing women's processing areas and a cohort of women trained as certified operators and peer trainers. There should be community ownership of these units so that maintenance and reinvestment decisions remain within the community.



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APPENDICES

Appendix 1: Tables

Table A.1: Sampled communities and sample size

District	Community	Sample
Bole	Bamboi	26
	Banda Nkwanta 1	25
	Banda Nkwanta 2	25
	Chache	25
	Dakuripe	25
	Dollar Accra	25
	Dollar Dablakoro	25
	Dollar Power	25
	Gbenfu	26
	Jama	25
	Kilampobile	25
	Kui	25
	Kwamekwesi	25
	Maluwe	26
	Sakpa	25
	Senye	25
	Teselima	25
	Tinga 1	25
	Tinga 2	26
	Wakawaka	25
Sawla-Tuna-Kalba	Bali	52
	Gindabour	50
	Kpali	50
	Nahari	51
	Saru	41
West Gonja	Camp	26
	Attributo	50
	Ngbaripe	50
	Sor No. 2	53
	Tutumba	26

Table A.2: Child school dropout and ethnicity

Characteristic	Mining		Non-mining		All	
	Freq.	%	Freq.	%	Freq.	%
School dropout						
Dropout	18	3.15	64	16.75	82	8.60
No dropout	553	96.85	318	83.25	871	91.40
Ethnicity						
Gonja	204	35.73	129	33.77	333	34.94
Vagla	15	2.63	2	0.52	17	1.78
Safalba	13	2.28			13	1.36
Chorba	3	0.53			3	0.31
Nomee			6	1.57	6	0.63
Brifor	22	3.85	123	32.2	145	15.22
Hanga	2	0.35	2	0.52	4	0.42
Kamara	5	0.88	3	0.79	8	0.84
Dagomba	15	2.63	5	1.31	20	2.1
Tampulma	2	0.35			2	0.21

Characteristic	Mining		Non-mining		All	
	Freq.	%	Freq.	%	Freq.	%
Dagaaba	102	17.86	61	15.97	163	17.1
Wala	34	5.95	29	7.59	63	6.61
Frafra	2	0.35	5	1.31	7	0.73
Moshi	32	5.6	1	0.26	33	3.46
Lobi	4	0.7			4	0.42
Grushie	3	0.53			3	0.31
Panta	6	1.05			6	0.63
Bimoba	1	0.18			1	0.1
Konkomba	3	0.53	1	0.26	4	0.42
Ashanti	21	3.68			21	2.2
Akuapim	1	0.18			1	0.1
Bono	4	0.7	1	0.26	5	0.52
Ewe	21	3.68	3	0.79	24	2.52
Fante	2	0.35			2	0.21
Ga-Adangbe	1	0.18			1	0.1
Krobo	1	0.18	1	0.26	2	0.21
Kusasi	8	1.4			8	0.84
Mamprusi	5	0.88	1	0.26	6	0.63
Nzema	2	0.35			2	0.21
Sefwi	1	0.18			1	0.1
Sissala	21	3.68	6	1.57	27	2.83
Zabarima	5	0.88			5	0.52
Other	10	1.75	3	0.79	13	1.36

Table A.3: Asset ownership

Variable	Mining		Non-mining		All	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Shovel/spade	0.43	0.50	0.17	0.38	0.33	0.47
Pickaxe	0.39	0.49	0.18	0.38	0.30	0.46
Mattock	0.04	0.20	0.06	0.24	0.05	0.22
Hoe	0.37	0.48	0.78	0.41	0.54	0.50
Crowbar	0.02	0.14	0.02	0.13	0.02	0.14
Sledgehammer	0.27	0.44	0.08	0.27	0.19	0.39
Chisel	0.24	0.43	0.06	0.24	0.17	0.37
Head pan	0.25	0.43	0.25	0.44	0.25	0.43
Wheelbarrow	0.11	0.31	0.07	0.25	0.09	0.29
Changfan	0.12	0.32	0.01	0.09	0.07	0.26
Generator	0.08	0.26	0.01	0.07	0.05	0.21
Water pump	0.11	0.31	0.01	0.07	0.07	0.25
Compressor	0.05	0.21	0.00	0.00	0.03	0.16
Excavator	0.00	0.00	0.00	0.00	0.00	0.00
Radio	0.36	0.48	0.45	0.50	0.40	0.49
Computer (desk/laptop)	0.10	0.30	0.04	0.21	0.08	0.27
Television	0.56	0.50	0.28	0.45	0.45	0.50
Bicycle	0.13	0.34	0.20	0.40	0.16	0.36
Motorcycle	0.53	0.50	0.49	0.50	0.51	0.50
Tricycle	0.18	0.38	0.11	0.31	0.15	0.36
Car	0.05	0.22	0.01	0.11	0.04	0.19
Mobile phone	0.99	0.08	0.94	0.23	0.97	0.16

Variable	Mining		Non-mining		All	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Tractor	0.01	0.08	0.01	0.10	0.01	0.09
Combine harvester	0.00	0.04	0.00	0.00	0.00	0.03
Donkey cart	0.00	0.00	0.00	0.00	0.00	0.00
Cutlass	0.63	0.48	0.82	0.38	0.70	0.46
Knapsack	0.16	0.37	0.34	0.47	0.23	0.42
Thresher	0.00	0.04	0.01	0.11	0.01	0.08

Table A.4: Roles played by former mineworkers and years engaged in mining

Variable	Men		Women		All	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Miner	0.47	0.50	0.11	0.32	0.40	0.49
Pit owner	0.16	0.37	0.00	0.00	0.13	0.33
Processor	0.52	0.50	0.56	0.51	0.52	0.50
Trader	0.11	0.32	0.22	0.42	0.13	0.34
Service provider	0.32	0.47	0.37	0.49	0.33	0.47
Ore transportation	0.03	0.17	0.11	0.32	0.05	0.21
Digital gold detector	0.02	0.14	0.00	0.00	0.02	0.13
Number of years in mining	4.22	3.27	3.70	2.60	4.11	3.13

Note: * *means statistically significant differences between men and women*

Appendix 2: Figures

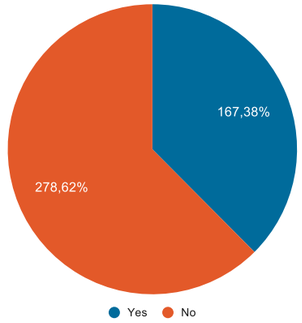


Figure A.1: Migration to another community in Ghana

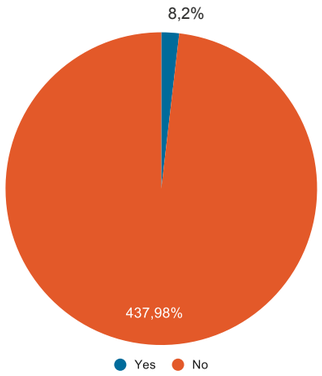


Figure A.2: Permanent migration intention for mining

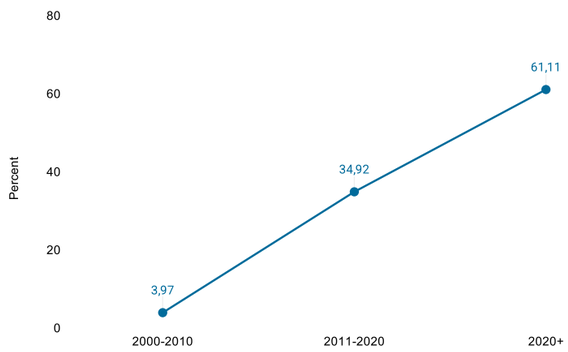


Figure A.3: Period quitted

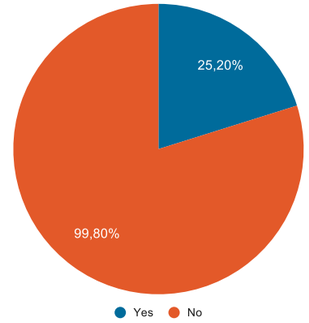


Figure A.4: Multiple income sources of quitters

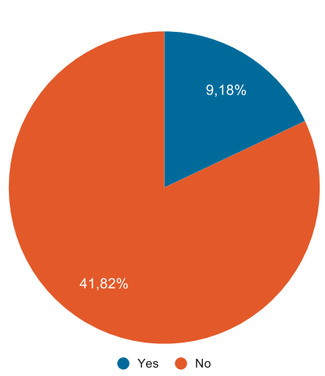


Figure A.5: Those still engaged in ASM in non-mining communities





ABOUT COGINTA

Coginta is a non-governmental organisation incorporated under Swiss law and recognised as being of public benefit, which works to promote economic and social development by addressing the structural causes of instability, poverty and exclusion. Its work lies at the intersection of local governance and security, conflict prevention, natural resource management and socio-economic development, recognising that these aspects are closely interlinked and essential to social stability and cohesion. Coginta has its headquarters in Geneva and country offices in Burkina Faso, the Central African Republic, Chad, Côte d'Ivoire, the Democratic Republic of Congo, Ghana, Guinea, Mozambique, Niger and Senegal.

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