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FORMALIZATION OF ARTISANAL AND SMALL-SCALE GOLD MINING IN GHANA: WHY HAS IT FAILED?

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ABSTRACT: *Despite decades of governmental interventions, the formalization of artisanal and small-scale gold mining (ASM) in Ghana has largely failed. This paper examines the structural, institutional, and policy factors that hinder formalization, drawing on a critical analysis of scholarly literature, government reports, and policy analyses. Key barriers include high licensing costs, restricted access to mineralized land, bureaucratic centralization, enforcement bias, and miners' livelihood dependency. Policy accounts that frame informality as illegality or environmental irresponsibility further depoliticize structural drivers, legitimizing punitive approaches while overlooking progressive solutions. Institutional fragmentation and limited capacity at national and local levels exacerbate administrative delays, misalign regulatory frameworks with local realities, and weaken trust between miners and authorities. This study demonstrates the persistence of path dependency and policy inertia, showing how repeated reform cycles reproduce informality rather than reduce it. Evidence shows that effective formalization requires livelihood-sensitive, decentralized, and community-based governance strategies that integrate technical support, land access reform, and economic alternatives to ASM. This paper adds to debates on sustainable mining policy in sub-Saharan Africa by providing a comprehensive framework for understanding the continuing gap between ASM formalization objectives and practice.*

KEYWORDS: Artisanal and small-scale mining, ASM formalization, policy failure, governance, livelihood dependency, institutional capacity.

INTRODUCTION

Artisanal and Small-Scale Mining (ASM) plays a central role in Ghana's rural economy, providing livelihoods for over one million people and indirectly supporting several million more (Hilson,2017). Despite this economic significance, the sector has remained predominantly unregulated and is widely associated with environmental degradation, social conflict, and regulatory non-compliance (Kumah, 2006; Aryee et al., 2003). In response, successive governments in Ghana have pursued formalization as the primary policy solution, beginning with the Small-Scale Gold Mining Law (PNDCL 218) in 1989 and continuing through subsequent reforms, including the Minerals and Mining Act (Act 703) and the recent Community Mining Scheme.

Formalization is premised on the assumption that bringing miners into the legal sector through licensing, regulation, and monitoring will simultaneously improve environmental performance, enhance labor conditions, and increase state revenue (Hilson & Potter, 2005; Damonte, 2021; Huggins & Kinyondo, 2024). This approach has been widely promoted by international development agencies and has become the dominant governance paradigm for ASM across the Global South (Spiegel, 2015). However, empirical evidence from Ghana consistently shows that formalization efforts have failed to achieve sustained compliance, with the majority of ASM operators continuing to work outside the legal framework (Hilson et al., 2018).

The persistence of informal operations raises a critical policy question: why has ASM formalization in Ghana repeatedly failed despite decades of legislative reform and enforcement efforts? Existing studies point to factors such as bureaucratic licensing procedures, high transaction costs, limited access to mineralized land, and the criminalization of informal livelihoods (Hilson, 2017; Andrews, 2015). Yet these explanations are often treated in isolation rather than as interrelated organizational constraints embedded in Ghana's political–economic context. In this paper, "failure" is operationalized as the persistent gap between formalization objectives and measurable outcomes, including low licensing uptake relative to estimated ASM participation, recurrent suspension or restructuring of formalization schemes, continued dominance of informal production, and repeated reliance on militarized enforcement to secure compliance (Hilson, 2017; Hilson et al., 2018; World Bank, 2019). Despite legislative reforms, these indicators suggest limited sustained transition of livelihood-dependent miners into stable, legally compliant systems. By synthesizing three decades of academic literature, policy documents, and donor reports, the paper provides a critical analysis of Ghana's ASM formalization trajectory and identifies recurring structural barriers that have undermined reform outcomes.

By doing so, the study contributes to broader debates on informality, resource governance, and development policy, offering lessons relevant not only to Ghana but also to ASM-dependent economies across sub-Saharan Africa.

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METHODOLOGY

This paper adopts a secondary qualitative content analysis to examine the evolution, design, and outcomes of ASM formalization in Ghana. Sources were selected based on relevance to the research question, focusing on peer-reviewed articles, policy documents, books, and reputable news sources published between the late 1980s and 2025; sources lacking empirical or analytical insight on ASM formalization were excluded. Keywords included “artisanal and small-scale mining,” “formalization,” “land tenure,” and “mining governance.”

To enhance methodological rigor and minimize bias, multiple coders cross-checked thematic interpretations, and perspectives from academic, practitioner, and donor sources were deliberately balanced. The inclusion of diverse data types and triangulation of findings from different sources aimed to reduce selection and interpretation bias. As Tisdell et al. (2025) argue, secondary data obtained from books, peer-reviewed articles, policy documents, and other online publications is comparable to using preexisting datasets and can generate insights similar to those derived from observations or interviews, while involving fewer ethical concerns.

Conceptual Framework: Formalization, Informality, and Political Economy of ASM

Formalization theory conceptualizes informality as a transitional condition that can be corrected through legal recognition, regulation, and integration into the formal economy (De Soto, 2000). Within the ASM policy, this perspective assumes that miners will comply with environmental and labor standards once barriers to legality are removed. Ghana’s ASM legislation largely reflects this logic, emphasizing licensing, zoning, and environmental permitting as pathways to compliance.

In contrast, informal economics questions the assumption that informality is simply a regulatory defect. Scholars argue that informal livelihoods persist because formal systems are often exclusionary, costly, and poorly adapted to local realities (Andrews, 2015). From this perspective, informality in Ghana’s ASM sector is not accidental but rational, arising from insecure land access, capital constraints, and administrative complexity.

Political economy approaches further highlight the roles of power, enforcement bias, and path dependence in shaping ASM governance outcomes. Hilson and Maconachie (2020) demonstrate that African ASM policy has increasingly relied on coercive enforcement rather than institutional reform, reinforcing cycles of illegality and conflict. In Ghana, militarized crackdowns and temporary bans have repeatedly displaced miners without addressing the core drivers of informality.

Bringing together these perspectives allows the paper to conceptualize formalization failure as a structural outcome, produced by the interaction between rigid regulatory frameworks, unequal access to resources, and enforcement-centered governance. This framework guides the subsequent analysis of Ghana’s ASM policy evolution and explains why successive reforms have reproduced similar outcomes despite changing political rhetoric.

Figure 1 depicts the conceptual framework that informs this study and illustrates how ASM informality in Ghana is reproduced through a self-reinforcing governance cycle. The framework conceptualizes informality not as a transitional deviation, but as a rational and structurally induced outcome arising from the interaction of four interlinked processes: formalization inaccessibility, livelihood dependency, enforcement-centered governance, and

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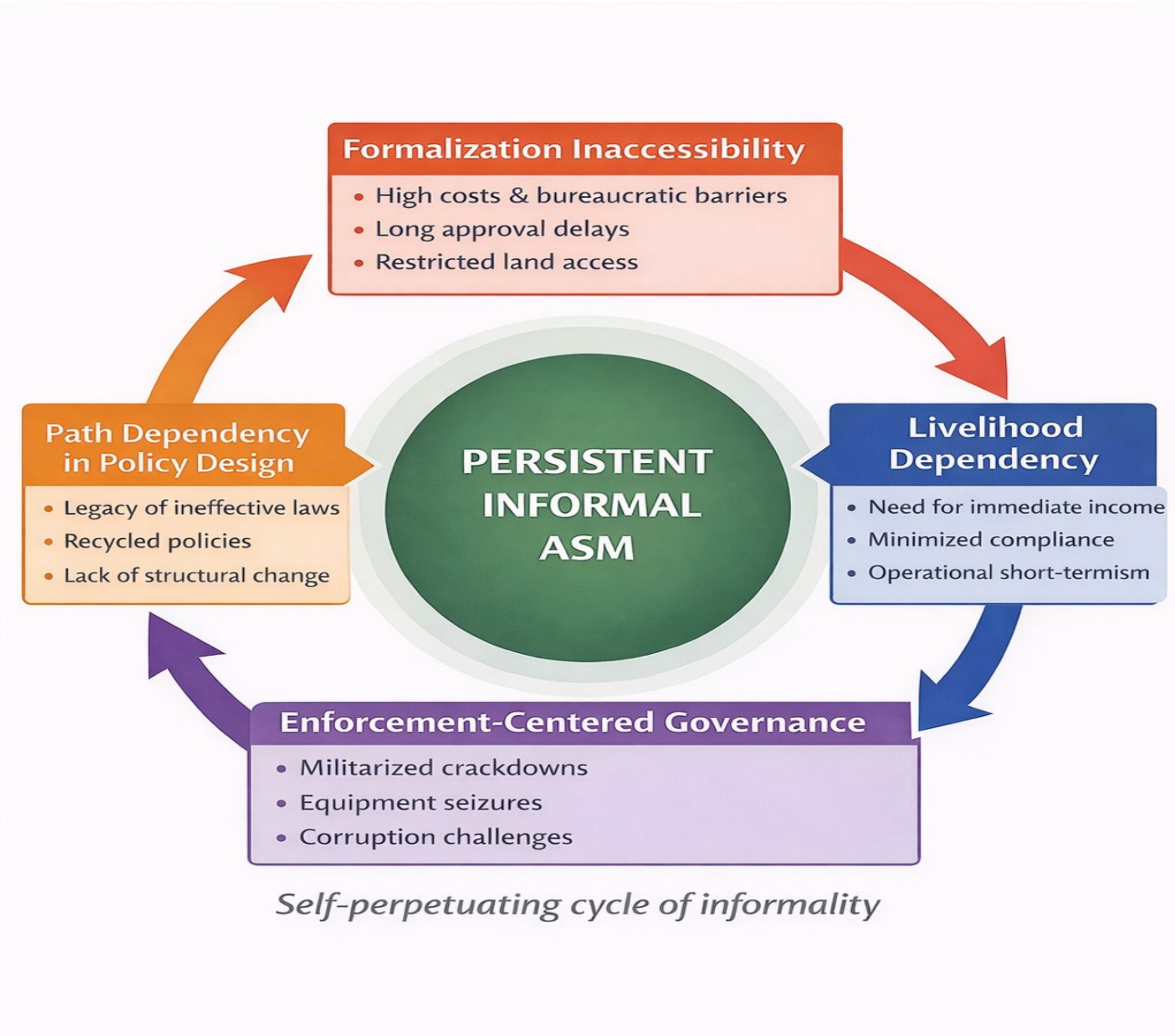
path-dependent policy design. Centralized, costly licensing systems, coupled with restricted access to mineralized land, render formalization economically risky for livelihood-dependent miners, thereby promoting continued informal operations. State responses that emphasize coercive enforcement over facilitation further weaken trust and compliance, reinforcing short-term extraction strategies and regulatory evasion. These dynamics are sustained by policy path dependency, whereby successive reforms reproduce earlier institutional assumptions without addressing underlying organizational constraints. Together, these interacting mechanisms generate a cyclical system in which informality continues despite repeated formalization initiatives.

Figure 1: Conceptual framework illustrating the self-perpetuating cycle of persistent informality in Ghana's ASM sector.



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Evolution of Artisanal and Small-Scale Mining Formalization in Ghana

Ghana is often cited as one of the first African countries to formally recognize ASM through legislation. The implementation of the Small-Scale Gold Mining Law (PNDCL 218) in 1989 represented a critical transition from the complete criminalization of ASM to its formal legal recognition (Alhassan, 2014; Musah, 2025). The law introduced a licensing regime intended to regulate production, improve environmental management, and integrate small-scale miners into the formal economy (Hilson, 2002). In practice, however, the law established bureaucratic procedures that were poorly aligned with the operational realities of most artisanal miners.

Under PNDCL 218, prospective miners were required to secure mineralized land, obtain approval from multiple agencies, and demonstrate technical and financial capacity. These requirements assumed levels of capital, literacy, and institutional access that were largely absent among rural ASM operators (Hilson & Potter, 2005). As a result, formalization from its inception privileged better-capitalized actors while excluding the majority of miners it was intended to regularize.

Alongside the enactment of the Small-Scale Gold Mining Law (PNDCL 218), the government introduced complementary legislation to regulate inputs and outputs along the ASM value chain. The Mercury Law of 1989 (PNDCL 217) sought to regulate the purchase, sale, and use of mercury in small-scale mining to reduce associated health and environmental risks. At the same time, the Precious Minerals Marketing Corporation Law of 1989 (PNDCL 219) established the Precious Minerals Marketing Corporation (PMMC) as a state monopoly responsible for providing an official market through which licensed small-scale miners could sell their gold and other precious minerals, with the objective of curbing smuggling and informal trade. In practice, however, these instruments reinforced a centralized and compliance-oriented governance model. Limited access to licensed mercury, weak monitoring capacity, and the narrow reach of state purchasing mechanisms meant that many miners continued to rely on informal supply chains and buyers, thereby constraining the effectiveness of these early formalization efforts.

The Minerals and Mining Act, 2006 (Act 703), intended to consolidate Ghana's mining laws and strengthen regulatory control (Minerals Commission, 2014). While it reaffirmed the legal status of small-scale mining, it retained the core licensing architecture established under PNDCL 218. Act 703 further centralized regulatory authority within the Minerals Commission, reinforcing administrative bottlenecks and limiting decentralized decision-making (Andrews, 2015). Crucially, the Act failed to settle longstanding tensions between ASM licensing and customary land tenure, notably in areas already concessioned to large-scale mining companies.

From the mid-2000s onward, enforcement increasingly replaced institutional reform as the state's primary ASM governance tool. Rising gold prices and rapid ASM expansion intensified environmental and political concerns, prompting periodic crackdowns, including the widely documented military-police task forces deployed after 2013 (Hilson, 2017). These interventions temporarily reduced visible mining activity but did not increase formalization rates, as displaced miners either relocated or resumed operations once enforcement pressures subsided.

In response to mounting criticism, the government introduced the Community Mining Scheme (CMS) in 2019 as a reform-oriented alternative. The CMS aimed to simplify licensing, promote community participation, and align ASM with local development objectives. While rhetorically

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framed as a shift toward inclusion, early assessments suggest that the scheme largely reproduced existing structural problems, including centralized control, limited land availability, and political interference (Hilson et al., 2018).

The weakness of the Community Mining Scheme (CMS) became evident following the political transition in early 2025. In March 2025, the National Democratic Congress (NDC), which assumed office after succeeding the New Patriotic Party (NPP) in January 2025, suspended the CMS, citing concerns that the scheme had facilitated illegal mining rather than curbing it. The government subsequently revoked all mining licenses issued under the CMS and announced a new policy initiative, the Responsible Cooperative Mining and Skills Development Program (rCOMSDEP), intended to address the perceived regulatory, environmental, and governance deficiencies of the CMS (Bansah et al., 2025).

This abrupt policy change stresses the extent to which ASM formalization in Ghana remains vulnerable to political turnover and short policy cycles, reinforcing instability, uncertainty, and low trust among miners. Instead of representing a clear institutional break, the transition from CMS to rCOMSDEP shows a recurring pattern in which new programs are introduced to replace discredited predecessors without fully resolving underlying organizational constraints related to land access, livelihood dependency, and administrative capacity.

Across three decades of reform, Ghana's ASM formalization trajectory displays a consistent pattern: legislative recognition without meaningful accessibility. Each policy iteration has sought to extend state control over ASM without sufficiently addressing land tenure constraints, livelihood dependency, or administrative capacity. Consequently, formalization has remained the exception rather than the norm, and informality has persisted as the dominant organizational mode of the sector.

Structural Constraints Undermining ASM Formalization in Ghana

Licensing Costs and Administrative Complexity

The formalization process in Ghana remains administratively demanding and financially prohibitive for most artisanal and small-scale miners. Obtaining a small-scale mining license requires engagement with multiple state institutions, including the Minerals Commission, the Environmental Protection Agency (EPA), and relevant district authorities. Applicants must satisfy administrative requirements related to land acquisition, environmental permitting, site plans, and operational documentation, each of which entails both direct and indirect costs (Hilson & Potter, 2005).

Direct costs include application fees, environmental impact screening charges, and renewal costs, although indirect costs arise from travel to administrative centers, opportunity costs associated with time spent handling bureaucratic procedures, and payments for intermediary services to facilitate documentation (Andrews, 2015). For most artisanal minerswho operate with limited capital and depend on daily production for household subsistencethese upfront costs represent a substantial financial burden.

Administrative complexity exacerbates these financial barriers. Licensing processes are highly centralized and procedurally sequential, meaning that delays at any stage can stall applications indefinitely. Empirical studies report licensing timelines extending from several months to multiple years, during which applicants are legally prohibited from mining and thus deprived of income (Hilson, 2017; Spiegel, 2015). For example, Hilson (2017) documents that licensing

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processes in the Western and Ashanti Regions extended beyond 18–24 months, during which applicants were unable to mine legally and received no interim livelihood support. Similarly, Kumah (2022) reports that several licensed miners continued informal operations while awaiting EPA approvals, showing how procedural delays directly undermine formal compliance. In the absence of alternative livelihood options, miners often resume informal operations while awaiting approval, effectively undermining the purpose of formalization.

The mismatch between regulatory timelines and ASM livelihood realities creates a perverse incentive structure. Formalization requires miners to suspend production, absorb costs, and tolerate uncertainty, while informal mining offers immediate, albeit precarious, returns. As a result, many miners rationally assess formalization as a high-risk, uncertain-benefit investment (Hilson et al., 2018). This perception is reinforced by weak post-licensing support, as licensed miners receive limited technical, financial, or environmental assistance after formal entry.

Comparative studies from other sub-Saharan African ASM contexts suggest that such administrative obstacles are a common feature of formalization regimes transplanted from large-scale mining governance models (Spiegel, 2015). These regimes often assume levels of record-keeping capacity, financial liquidity, and regulatory literacy that are unrealistic for artisanal operators. In Ghana, the persistence of these assumptions has contributed to low licensing uptake—only about 15% of ASM operators are officially licensed (Hilson, 2020)—and the entrenchment of informal practices.

A prohibitive licensing system also constrains environmental outcomes. Miners operating informally have little incentive or capacity to invest in safer technologies, environmental rehabilitation, or occupational health measures when legal recognition remains inaccessible (Hilson, 2002). Consequently, administrative exclusion not only limits regulatory compliance but also perpetuates environmentally harmful practices, undermining the stated objectives of formalization.

Access to Mineralized Land

Restricted access to mineralized land constitutes one of the most persistent and structurally embedded obstacles to the formalization of ASM in Ghana. Although small-scale mining is legally recognized, the spatial organization of mineral rights allocation has historically prioritized large-scale concessions, resulting in the concentration of prospective gold-bearing areas under corporate control (Aubynn, 2009; Andrews, 2015). This pattern has significantly reduced the availability of legally designated land for ASM operators, particularly in established gold belts.

The tension between statutory mineral rights and customary land tenure systems further complicates access to land for formalization. Under Ghana's legal framework, mineral rights are vested in the state, while surface land is governed largely by customary authorities. In practice, chiefs and family heads retain substantial influence over land allocation decisions, including for mining purposes (Nyame & Grant, 2014). However, customary consent does not confer legal mining rights, leaving miners to operate with local legitimacy while remaining statutorily illegal.

This institutional dualism creates legal ambiguity, discouraging formalization. Miners who secure customary access to land usually face difficulties translating that access into statutory licenses, especially where the land overlaps with existing concessions or is subject to

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competing claims. Conversely, miners who obtain statutory approval may encounter resistance at the local level if customary authorities were not substantially involved in the allocation process (Hilson et al., 2018; Luning & Pijpers, 2017). Dealing with these parallel governance systems increases transaction costs and uncertainty, particularly for artisanal miners with limited legal literacy or political capital.

Empirical studies have shown that land access conflicts are a major driver of the persistence of informal mining, as miners prioritize secure access over legal compliance when forced to choose between the two (Armah et al., 2011). In such cases, formalization offers limited practical benefit if it does not guarantee tenure security or protection from eviction. The resulting insecurity discourages long-term planning and undermines incentives for environmental rehabilitation or investment in improved mining practices.

Insecure and contested land tenure compromises the core objectives of ASM formalization. Sustainable mining practices require stability, predictability, and a reasonable expectation of future access to mineral resources. Where land access remains precarious, miners tend to favor rapid extraction strategies that maximize short-term returns, often at the expense of environmental protection (Aubynn, 2009).

Criminalization and Enforcement Bias

Although Ghana's legislation formally recognizes small-scale mining as a legal activity, enforcement practices have disproportionately targeted informal operators through raids, equipment seizures, arrests, and military deployments. Since the mid-2010s, Ghana has deployed militarized task forces (e.g., Operation Vanguard and Operation Halt) to curb illegal ASM activities, showing a coercive governance strategy that treats informality primarily as a law-and-order problem rather than an economic or structural challenge (Hilson & Maconachie, 2020; Bansah et al., 2025).

Bansah et al. (2025) describe the Informal Mining Repression Cycle, showing that military interventions in southwestern Ghana are commonly viewed as selective and inconsistent, with local miners disproportionately penalized while better-connected operators evade sanctions. This selective enforcement reinforces distrust between miners and regulatory authorities and exacerbates socio-economic inequalities, perpetuating the underlying drivers of informal mining.

Empirical studies indicate that militarized enforcement produces a "catch and release" pattern: miners temporarily abandon sites during interventions but rapidly resume operations once task forces withdraw (Spiegel, 2015; Hilson, 2017; Eduful et.al., 2020). Because enforcement does not address structural conditions such as insecure land access or livelihood dependency, informal operations persist and often shift to new, less-regulated areas, increasing environmental risk (Armah et al., 2011; Aubynn, 2009).

Corruption and political interference further undermine the credibility of enforcement. Anti-informal mining campaigns, including military interventions, are often weakened by rent-seeking behavior among enforcement personnel and local officials, which contributes to miners' perception of state action as illegitimate and risky (Luning & Pijpers, 2017).

The focus on coercive enforcement also has clear environmental consequences. Miners anticipating punitive action are more prone to engage in rapid, concealed, and high-impact

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extraction practices to maximize short-term returns, undermining formalization and exacerbating ecological degradation (Hilson, 2002; Hilson et al., 2018).

Overall, Ghana's enforcement-oriented approach generates distrust, selective sanctioning, and incentives for environmentally destructive informality, creating a cycle in which formalization objectives are actively undermined by the very governance mechanisms intended to enforce them (Hilson & Maconachie, 2020; Bansah et al., 2025).

Bureaucratic Centralization and Institutional Capacity

Formalization efforts in Ghana remain highly centralized, with decision-making authority concentrated within national-level institutions, notably the Minerals Commission, Environmental Protection Agency, and related regulatory bodies (Andrews, 2015). This centralized architecture is characterized by limited staffing, inadequate logistical resources, and weak coordination among agencies, collectively constraining regulatory capacity (Andrews, 2015; World Bank, 2019). As a result, administrative functions such as licensing, environmental assessment approval, and dispute resolution are often slow, opaque, and disconnected from local realities (Kumah, 2022).

Although national actors set policy and legal standards, decentralized offices, such as district assemblies and regional field units, frequently lack the authority or resources to process licenses, interpret regulations, or resolve land conflicts locally. This mismatch leads to administrative delays that are particularly burdensome for ASM operators, who depend on timely decisions to sustain their livelihoods (Delve Database, 2022). Even where district officials seek to support formalization, they often cannot circumvent bottlenecks at national agencies, reinforcing perceptions that formalization is disconnected from community needs (Kumah, 2022; Luning & Pijpers, 2017).

The institutional mismatch is especially problematic given the geographically dispersed and labour-intensive nature of ASM. Mining communities are distributed across remote rural areas where state presence is limited and local governance structures are politically complex (Hirons, 2014). Centralized governance structures struggle to respond to local variations in mining practices, social organization, and environmental conditions, reducing the effectiveness of standardized regulatory frameworks (Pedersen et al., 2021).

Research on Ghana's ASM governance highlights that national policy frameworks were originally intended for large-scale corporate mining and lack tailored mechanisms for ASM formalization (Balag'kutu, 2024; FAO, 2022). Because these frameworks do not account for differences in scale, capacity, or community context, they often impose uniform requirements that are ill-suited to the sector's operational diversity. For example, the absence of regional licensing authorities capable of issuing and monitoring permits has been repeatedly cited as a barrier to the uptake of formalization among local miners (Kumah, 2022).

Moreover, centralized governance tends to marginalize local and customary authorities—entities that exercise significant influence over land use and resource access in rural Ghana. Research indicates that when decision-making is distant from communities, the legitimacy of formalization processes is weakened, and miners are more likely to operate informally under customary sanction rather than formal state authority (Hirons, 2014; Kumah, 2022).

Bureaucratic centralization and institutional capacity constraints create a governance environment where formalization processes are slow, disconnected from local realities, and

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difficult to navigate. These difficulties not only delay regulatory action but equally reinforce perceptions that the formal mining sector is inaccessible and unresponsive to community livelihoods. Addressing these challenges may require deliberate decentralization of authority, capacity-building for local institutions, and stronger coordination mechanisms across national and subnational levels.

Livelihood Dependency and Risk Perception

For many participants, ASM is not a transitional or supplemental livelihood but a primary and often indispensable source of income, particularly in rural regions with limited economic alternatives. In Ghana's mineralized districts, wage employment, formal agricultural markets, and non-farm income opportunities are often scarce. ASM's low barriers to entry, immediate cash flows, and flexible labour arrangements make it a rational economic choice for household survival, especially for younger and lower-income groups (Hilson, 2017).

This livelihood dependency shapes miners' perceptions of formalization. Formalization requirements that temporarily halt mining activities, such as extended licensing processes, regulatory compliance inspections, or environmental permitting, are therefore perceived not as neutral bureaucratic steps, but as immediate threats to household income and food security (Hilson & Maconachie, 2020). Without viable alternatives, miners rationally evaluate formalization as a potential source of income loss rather than a means to stability.

The linkage between lack of alternative livelihoods and sustained ASM engagement has been documented across multiple African contexts. Spiegel (2015) notes that formalization policies typically assume mobility between sectors, yet this assumption fails where agrarian livelihoods are themselves precarious or seasonal. Similarly, Aubynn (2009) highlights that rural youth often remain in ASM precisely because farming incomes are low, unpredictable, and subject to climatic risk. In Ghana, the absence of diversified rural economies means that the opportunity cost of ASM participation is frequently low, reinforcing long-term dependency.

Qualitative and quantitative studies additionally show that miners' risk perceptions reflect cumulative livelihood insecurity. Where households lack savings, credit access, or social protections, the downside risks of formalization (income interruption, compliance costs, licensing uncertainty) outweigh the potential upside benefits (legal status, environmental support, market access). As Luning and Pijpers (2017) demonstrate, such risk calculus leads many miners to prioritize short-term income continuity over long-term regulatory compliance.

In addition, economic analyses link ASM persistence to structural limitations in the labour market. Aryee et al. (2003) show that in gold-producing regions, formal employment opportunities are limited, forcing labour to concentrate in the informal mining sector. Macdonald and Hamilton (2018) argue that without robust rural development programs, formalization becomes a hollow policy objective because it does not alter the economic fundamentals that make ASM a rational livelihood strategy.

This livelihood dependency has important implications. Policies that fail to incorporate realistic assessments of miners' economic contexts are unlikely to generate voluntary compliance and may instead foster instrumental resistance, practices aimed at preserving income regardless of legal status. Such resistance can take the form of covert mining, temporal evasion of inspectors, or migration to new mining communities, all of which undermine environmental regulation and formalization objectives.

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Why Reforms Reproduce Failure: Path Dependency and Policy Inertia

The repeated failure of ASM formalization in Ghana cannot be explained solely by implementation challenges or institutional weakness. Rather, it shows a deeper pattern of path dependency, in which early policy choices have constrained the range of subsequent reform options and produced self-reinforcing governance outcomes.

Path Dependency in ASM Governance

Path dependency theory suggests that once a particular institutional trajectory is established, it becomes increasingly difficult to reverse, even when outcomes are demonstrably inefficient (Pierson, 2000). In Ghana, the initial formalization framework introduced under PNDCL 218 prioritized centralized licensing, technical compliance, and state oversight. This framework set expectations about how ASM should be governed, shaping institutional mandates and bureaucratic practices that have persisted across decades.

The design logic of Ghana's early ASM-related legislation further entrenched this trajectory. Alongside PNDCL 218, the Mercury Law (PNDCL 217) and the Precious Minerals Marketing Corporation Law (PNDCL 219) institutionalized centralized state control over critical production inputs and marketing channels. These laws assumed that regulating mercury distribution and monopolizing gold purchasing through state agencies would induce compliance, improve environmental outcomes, and curb illegal trade. However, limited enforcement capacity, restricted access to licensed mercury, and the narrow reach of official mineral purchasing mechanisms meant that informal supply chains and marketing networks remained dominant. Rather than triggering institutional learning, the shortcomings of these early instruments normalized a compliance- and control-oriented governance model.

Subsequent reforms, including Act 703 and the Community Mining Scheme, largely retained this foundational architecture. Rather than rethinking the underlying assumptions of formalization, policymakers have focused on incremental adjustments such as fee reductions or procedural streamlining without addressing land access, livelihood dependency, or institutional asymmetries. As a result, each reform iteration has replicated earlier constraints, reinforcing informality.

Institutional Inertia and Enforcement Lock-In

Institutional inertia further explains why enforcement has become the dominant governance response. Regulatory agencies are often better resourced for policing activities than for facilitation or development-oriented interventions (Hilson & Maconachie, 2020). Enforcement operations provide visible signals of state action, appealing to political incentives even when their prolonged effectiveness is limited.

This enforcement bias creates a feedback loop: low formalization rates justify intensified crackdowns, while crackdowns weaken trust and reduce incentives for compliance. Over time, the state becomes "locked in" to coercive strategies, crowding out alternative governance approaches such as decentralization, negotiated compliance, or livelihood diversification.

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Policy Narratives and the Depoliticization of Informality

Policy discussion surrounding ASM in Ghana has greatly influenced the direction and effectiveness of formalization efforts. Informality is frequently framed primarily as a problem of illegality, environmental irresponsibility, or criminality, rather than as a rational outcome of structural exclusion, livelihood dependency, or historical marginalization (Luning & Pijpers, 2017; Hilson & Maconachie, 2020). This framing obscures the broader socio-economic and political contexts, such as land concentration in large-scale concessions, inadequate rural employment opportunities, and limited access to financial and technical capital that drive informal mining.

By defining informality as a matter of individual non-compliance or moral failure, policy narratives depoliticize ASM. They portray miners as agents of risk or environmental harm rather than actors responding to systemic exclusion (Spiegel, 2015; Aryee et al., 2003). This depoliticization is consequential: it legitimizes enforcement-heavy, militarized interventions, including raids, arrests, and suspensions, while sidestepping discussions of structural reform, equitable resource distribution, or sustainable livelihood provision. Policies thus emphasize compliance over transformation, incentivizing miners to adopt short-term avoidance strategies rather than promoting voluntary formalization.

Such narrative framing also affects institutional priorities and resource allocation. Regulatory agencies may prioritize monitoring, surveillance, and punitive enforcement over programs that could facilitate licensing, provide technical support, or develop alternative income streams (Hilson et al., 2018). The cumulative effect is a technocratic, punitive governance approach in which formalization is treated as a procedural objective, divorced from miners' economic realities and community needs.

Moreover, these narratives reinforce social and political hierarchies. By positioning formal authorities as the sole arbiters of legality and sustainability, policy discourse diminishes the role of customary institutions, local cooperatives, and miners' collective decision-making in shaping governance outcomes (Aubynn, 2009; Nyame & Grant, 2014). This marginalization of local knowledge and authority deepens resistance to formalization, as miners perceive the state as external, extractive, and disconnected from the realities of rural livelihoods.

Ultimately, the depoliticization of ASM in policy narratives ensures that reform cycles are repetitive rather than transformative. Without reframing informality as a structural and political issue—linked to land, capital, and access to livelihoods—formalization policies are likely to continue reproducing informality, inequity, and environmental risk rather than resolving them (Luning & Pijpers, 2017; Hilson & Maconachie, 2020).

Reform Without Structural Change

The persistence of path dependency and institutional inertia explains why Ghana's ASM reforms have produced limited change despite shifting political rhetoric. Formalization initiatives continue to prioritize control over inclusion, legality over accessibility, and enforcement over facilitation. Without dealing with these structural contradictions, new policies are likely to reproduce familiar outcomes under different labels.

Understanding reform failure through the lens of path dependency shifts the analytical focus from whether formalization can work for whom and under what institutional conditions it might

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succeed. This perspective provides a critical foundation for the discussion and policy implications presented in the following section.

DISCUSSION AND POLICY IMPLICATIONS

The analysis presented in this paper demonstrates that the persistence of informality in Ghana's artisanal and small-scale mining sector is not an anomaly but a predictable outcome of how formalization has been conceptualized and implemented. The evidence reviewed suggests that, in practice, formalization has primarily operated as a mechanism of regulatory control rather than an inclusive pathway for integrating livelihood-dependent miners into sustainable governance systems.

Rethinking Formalization Beyond Compliance

Dominant ASM policy frameworks assume that compliance will follow once miners are brought within the legal domain. However, Ghana's experience indicates that compliance-oriented formalization is ineffective when regulatory requirements remain inconsistent with livelihood realities and institutional capacity. This finding supports broader critiques in the ASM literature that question the universality of formalization as a development solution (Spiegel, 2015; Hilson, 2017).

Rather than treating informality as a transitional defect, policymakers may need to recognize it as an adaptive response to exclusionary systems. Formalization strategies that fail to reduce risk, improve access to land, or stabilize income are unlikely to gain legitimacy among miners, regardless of enforcement intensity.

Shifting from Enforcement to Facilitation

The heavy reliance on militarized enforcement has yielded limited long-term benefits while generating social costs, including conflict, displacement, and erosion of trust in state institutions. Evidence from Ghana and comparable contexts suggests that enforcement without facilitation entrenches cycles of illegality (Hilson & Maconachie, 2020).

The findings indicate that facilitative governance measures, such as decentralized licensing and negotiated compliance mechanisms, are more consistent with documented livelihood dynamics and may offer greater prospects for voluntary uptake. Such approaches are more consistent with the sector's socio-economic realities and reduce the perceived risks of entering the formal system.

Addressing Land Access and Institutional Fragmentation

Land access remains the most significant unresolved barrier to formalization. Without reforms that explicitly allocate mineralized land to ASM, formalization will continue to exclude the majority of operators. Integrating customary authorities more meaningfully into land-use planning and licensing processes could reduce legal ambiguity and improve tenure security.

In parallel, institutional fragmentation must be addressed through clearer mandates and improved coordination among regulatory agencies. Strengthening district-level capacity and devolving decision-making authority are essential for responsive ASM governance in geographically dispersed mining regions.

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CONCLUSION

This paper sought to explain why the formalization of ASM in Ghana has persistently failed despite repeated policy reforms. The analysis shows that the problem does not lie primarily in miner noncompliance, but in a governance framework that is structurally misaligned with the socio-economic realities of ASM. Formalization policies have been designed around centralized administrative control and legal compliance, while neglecting land access, institutional capacity constraints, and the livelihood dependence of mining communities.

Formalization requirements systematically exclude a large proportion of ASM operators. High licensing costs, limited access to mineralized land, prolonged approval timelines, and bureaucratic centralization create barriers that are incompatible with livelihood-based mining. These constraints are exacerbated by weak coordination among regulatory agencies, leading to uncertainty and administrative delays that discourage compliance. Under these conditions, informality appears as a rational survival strategy rather than a temporary or deviant practice.

The emphasis on criminalization and militarized interventions has undermined trust between miners and regulatory institutions while failing to reduce informality or environmental degradation. The conceptual framework developed in this paper demonstrates how enforcement bias, institutional centralization, and exclusionary policy narratives interact through path-dependent feedback loops, reproducing informality across successive reform cycles rather than resolving it.

The implications for sustainable mining governance are substantial. Formalization strategies that prioritize enforcement and administrative efficiency without addressing land access, decentralization, and livelihood security are unlikely to achieve durable outcomes. The analysis suggests that formalization strategies emphasizing enforcement alone are unlikely to achieve durable outcomes. Greater alignment between regulatory frameworks, land governance structures, and livelihood conditions may improve policy effectiveness socio-economic realities.

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