



Friends or foes: Can large-scale mining companies partner with small-scale miners? Yes, they can?

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ABSTRACT

This paper (re)examines the nexus between large-scale mining (LSM) activities and artisanal and small-scale mining (ASM) operations. Broadly speaking, the existing combative resource politics between the two mining entities has created room for the emergence of divergent opinions on sustainable solutions encapsulated in standpoints of ‘cohabitation’ vis-à-vis ‘autonomy’. Employing ‘partnership’ as an analytical lens, this study provides a refreshing perspective of the ‘cohabitation’ of LSM and ASM where they develop and flourish together. Firmly rooted at the base of this success, however, is the formalisation canon that has long ignored the partnership opportunities for ASM operations in many resource-rich countries. We, therefore, argue for formalisation policies to design cohabitation agreements that focus on creating synergies devoid of resource conflicts. Further, we discuss ways through which resources that cannot be fully enclosed by LSM companies can become sources of compromise and negotiation rather than of conflict and violence.

1. Introduction

The artisanal and small-scale mining (ASM) frontier continues to advance in many resource-rich countries, with reports describing the operations as one of the most important rural non-farm activities in the developing world (World Bank, 2019). The expansion of such operations, among others, has been attributed to rising economic hardships in rural spaces and the ‘agricultural poverty’ syndrome (Arthur-Holmes et al., 2022; Hilson and Garforth, 2012, 2013). Whatever the reasons for the rapid proliferation of ASM, its expansion invariably takes a geographical form, often ‘overlapping pre-existing land uses’ (Mitchell, 2016). In most cases, the mineral-rich lands small-scale operators seek to exploit are also of interest to other economic entities, such as large-scale mining (LSM) companies (Patel et al., 2016). Thus, ASM and LSM operations, where they are present and especially in close proximity, increasingly interface at, for example, both the physical and the ‘asset’ levels (Cano and Kunz, 2022; Kemp and Owen, 2019), making the probability for conflict, as well as the potential opportunity for flourishing together, immense (Libassi, 2022; Rodríguez-Novoa and Holley, 2023).

ASM and LSM share intricate, dynamic, and antagonistic relationships (Bansah et al., 2018; Kemp and Owen, 2019). They are intricate

because they sometimes occupy the same geographic space and share and/or compete for the same factor input, primarily, mineral-rich land (Hilson, 2002a); and are dynamic because they are influenced by exogenous factors including commodity prices, and, for example, trade arrangements regarding the by-products of their operations (Bansah et al., 2018). Further, both scales of operations are known to be attracted initially by the presence of the other. In relation to LSM, evidence of ASM workings at the prospecting or exploitation stages is often regarded as a positive indication (Luning, 2014). Similarly, ASM can be attracted to LSM sites where excavated ground, or tailings, provide healthy access to rich ore (Kemp and Owen, 2019). Paradoxically however, these forms of attraction and intersection usually become the same forms of antagonism between the operations with claims of encroachment on land becoming the primary pivot of contention between the two sectors (Kemp and Owen, 2019).

Broadly defined, LSM operations refer to capital-intensive, legal mineral extraction usually performed by companies or associations with cleaner and more efficient rates of production; the operations are typically associated with multi-national or multi-site companies, embedded in global capital and finance markets (Hilson et al., 2020; Kemp and Owen, 2019). In contrast, ASM is broadly defined as individual or collective labour-intensive mineral extraction with limited capital

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investments using basic tools, manual devices, or simple portable machines (Ferring et al., 2016; Jönsson and Bryceson, 2009). In recent times, however, such operations have witnessed the utilisation of heavy machinery and the support of commercial business entities (Hilson et al., 2020; Kemp and Owen, 2019). In this regard, IGF (2017a) broadly defines ASM as a complex and diversified sector that ranges from poor informal individual miners seeking to eke out or supplement a subsistence livelihood to small-scale formal commercial mining activities that can produce minerals in a responsible way, respecting local laws.

Both sectors are known to serve as avenues of employment for most people especially in mineral-rich areas (Arthur-Holmes and Abrefa Busia, 2022a; Langston et al., 2015). Evidence of mobile miners participating in mining activities, and in the supply chains of both sectors, at different points in time, has been provided (Jönsson and Bryceson, 2009). Both sectors create local employment and economic multipliers, although to different degrees in different places (Kemp and Owen, 2019). However, whereas LSM employs significant numbers of people in formalised jobs, providing better job security and safer working conditions for employees, the benefits of capital transformation do not accrue locally (Langston et al., 2015). The LSM economy is largely an enclave economy, disconnected from local markets (Arias et al., 2014; Langston et al., 2015; Owen and Kemp, 2012). Contrarily, although ASM is largely informal, it is known to have broader distributional effects, with the number of people engaged in the operations outstripping those employed in LSM. As formal barriers for entry are lower for accessing ASM work opportunities, a larger proportion of women and younger people tend to be engaged in the sector (Arthur-Holmes et al., 2022; Arthur-Holmes and Abrefa Busia, 2020; Geenen and Bikubanya, 2024; Kemp and Owen, 2019; Ofosu et al., 2024).

In the regulation of both operations, studies have noted what is commonly referred to as a 'large-scale mining bias' (Hilson, 2019; Sauerwein, 2020). Following this perspective, Banchirigah and Hilson (2010) highlight that in most countries, ASM formalisation has been a 'legislative afterthought', introduced after LSM companies have monopolised access to mineral-rich zones. Thus, an omnipresent narrative of the ASM sector ascribes its informality as an intentional construct on the part of policymakers and donors, who prioritise LSM over ASM, while making it almost impossible for individuals to secure the necessary paperwork and licences to participate in ASM (Hilson and Maconachie, 2020; Siwale and Siwale, 2017).

Over the years, government policy has also prioritised investor-friendly LSM regimes by providing an enabling environment, such as tax incentives to attract foreign investment (Hilson, 2017). This has also meant the release of vast concessions to LSM companies, thus denying local people access to mineral-rich areas that might not even be viable for LSM operations in the first place (Hilson et al., 2007). Displaced farmers and ASM operators have very limited options in the formal economy, and as a result, a majority are turning to illegal ASM mainly on the concessions of LSM companies (Aubynn, 2009; Banchirigah, 2008). As indicated earlier, government mining policies have contributed to this phenomenon in many mining communities in mineral-rich regions around the world (Hilson, 2019; Sauerwein, 2020). In this storyline, to borrow and paraphrase from Lahiri-Dutt (2016), 'Invisible to the state's view are roles played by the ASM sector in the livelihoods of millions of poor who live on the mineral tracts of the ASM world'. Accordingly, the neglect of the ASM sector and the concomitant nurturing of the LSM sector has often led to tensions and sometimes violent confrontations between the operators of both sectors, especially over access to mineralised areas (Libassi, 2022; Okoh, 2014). Hence, other discussions elsewhere contextualise the LSM-ASM contestations within the existence of legal pluralism mechanisms present in most dual mining regimes (Mensah, 2021; Nyame and Blocher, 2010).

To minimise the tensions between these rival mineral-resource claimants and ensure cooperation among their interests, governments, sometimes with the support of foreign donors, have advocated for and

advanced non-competitive cooperation arrangements in what is commonly referred to as a 'cohabitation or coexistence' (Veiga et al., 2022; World Bank, 2009; Yakovleva and Vazquez-Brust, 2018). This arrangement basically entails, among other things, the provision of technical and legal support for ASM activities, whereby LSM companies allow ASM operators to work in specific areas of the mining concession on the condition that they minimise access to the area and control incursions into leased sites (World Bank, 2009; Yakovleva and Vazquez-Brust, 2018).

Some scholars, however, have argued that the idea of cohabitation between LSM and ASM as a development strategy is short-sighted and untenable (Camba, 2021; Hilson, 2024; Hilson et al., 2020). For example, building on a case study in the Philippines, Verbrugge (2017) argues that negotiated settlement schemes may reflect and even reinforce historically rooted inequalities, not just between ASM and LSM but also within the ASM sector. According to Hilson et al. (2020), fluctuating prices of mining commodities (which would always mean that LSM companies take back concessions in times of higher prices), and the frequent merger and acquisition of LSM companies would always have crippling consequences for ASM operations, making them the weaker partner in the cohabitation phenomenon. Given these uncertainties, it is recommended that host governments and donors encourage the autonomous *coexistence* of both parties, an approach which would yield maximum returns economically and developmentally (Hilson et al., 2020).

The cohabitation arrangements so far explored in the literature have been known to be unsuccessful in the medium and long-term (Aubynn, 2009; Hilson et al., 2007; Teschner, 2013). This phenomenon, according to our extensive reading of the literature and based on our understanding, is because the LSM companies have mostly had to deal with informal/unlicensed ASM operators. Legitimacy and legality arrangements are usually not addressed in the cohabitation agreements. In the agreements, the main benefits to the LSM companies are commonly encapsulated in the containment of informal ASM operators whose operations would otherwise be detrimental to the operations of the LSM companies. Examples abound in the literature especially in the Ghanaian case where in Prestea, for example, Golden Star Resources had to deal with or negotiate with informal mining operators (galamsey) on their concessions (Hilson et al., 2007; Hilson and Yakovleva, 2007). Similarly, Abosso Goldfields Limited had to accommodate informal ASM operators on its concessions in Tarkwa in the Western Region. Also, the interaction between Gold Fields Ghana and ASM bordered on issues with informal/unlicensed ASM operators (Teschner, 2013). In the sub-Saharan Africa region, similar findings confirm interactions between legal LSM and unlicensed/informal ASM operators in Cote d'Ivoire (Sauerwein, 2023). Similar cases abound in the Colombian extractive space (Güiza-Suárez and Kaufmann, 2024).

Crucially, issues around formal/licensed ASM partnering or working on the concessions of LSM companies have not been explored. So far, the cohabitation arrangements enacted in practice, and examined by scholars and policymakers, chiefly seek to address conflicts over access to mineral resources between informal ASM actors and large-scale mining title holders. Thus, as earlier stated, the phenomenon where formal/licensed ASM operates on the concessions of LSM companies with mutually agreed upon economic benefits and revenue-sharing arrangements has not been explored. This phenomenon seems new in the debate on the LSM-ASM interactions, and this is the gap this study seeks to fill. So far, studies have established that when LSM meets informal/illegal ASM, the relationship becomes tenuous, often culminating in violent confrontations between ASM operators and LSM operators (Aubynn, 2009; Hilson and Yakovleva, 2007; Teschner, 2013).

The critical question (and one that has been left unanswered), then, is what happens when formal/licensed ASM meets LSM. How are interactions and negotiations between legal LSM and legal/formalised ASM formulated and manifested in practice? Here, it is important to state that this present study focuses on the activities of formalised/

licensed small-scale operations, which differ significantly from the very artisanal mining (often informal/illegal) operations where miners work individually or in small groups, sometimes on a seasonal and subsistence basis, without mechanised equipment and with little capital (see, for example, [Ferring et al., 2016](#)).

The issue of LSM-ASM contestations/cohabitation/coexistence has been the focus of many studies (we will examine this further in the next section). However, a critical look at the studies reveals a trend where the nexus, as indicated earlier, has been viewed from the standpoint of the obvious informality associated with ASM. Indeed, many ASM-related works have examined issues related to ASM in its broad frame of informality. This is, however, not surprising considering that over 80 percent of ASM operations are found in informal spaces and carried out by individuals and groups who are not in possession of a licence ([IGF, 2017b](#)). Also unsurprisingly, due to the high rates of informality of ASM operations, the contestations with LSM have often been viewed through conceptual frameworks such as resource conflicts, grievance, and access ([Aubynn, 2009](#); [Geenen, 2014](#); [Geenen and Claessens, 2013](#)). Thus, in seeking to examine the issue of the ramifications emanating from a cohabitation agreement between a formalised/licensed small-scale mining operator and an LSM company, a new framework (in our case ‘partnership’) is required. Therefore, it is crucial to delve into LSM-ASM cohabitation arrangements in different socio-cultural contexts considering the fact that frequently, the proposed cohabitation/coexistence arrangements fail to address issues such as legitimacy, trust, obligations, economic benefits, and revenue-sharing arrangements. However, these issues raise important questions.

Thus, to provide new and refreshing perspectives on the discussion of the cohabitation of LSM and ASM, transcend the preoccupation with informality, and add to the gradually growing body of scholarship on formal ASM operations ([Martinez et al., 2021](#); [Ofosu et al., 2025](#); [Ofosu and Sarpong, 2022, 2023](#)), this present study examines the LSM-ASM cooperation from the framework and standpoint of formality. Drawing insights from [Hilson et al.’s \(2014\)](#) study of Chinese miners partnering to provide mine support services to Ghanaian mining entrepreneurs, we present a case of a ‘partnership’ arrangement between an LSM company and a formalised small-scale mining operator in Ghana where the latter provide mine support services on the concessions of the former under the provisions of Article 59 of Ghana’s Mineral and Mining Act (703):

Persons or companies providing prescribed services to a holder of a mineral right and registered with the Commission may be granted concession as prescribed.

In this regard, our study seeks to (re)examine the question: Can ASM and LSM cohabitate/coexist and flourish together? Drawing on fieldwork carried out in Ghana in 2020 and 2021 and complemented by semi-structured interviews undertaken mainly with the top management and staff of a formalised/licensed small-scale mining company and an LSM entity, our findings suggest that LSM and ASM are not contradictory/conflictual activities, as mining-regulatory regimes and some scholarly discourse would seem to suggest. Addressing issues of legality, legitimacy, obligations, and economic and revenue-sharing arrangements, the two mining entities can cohabitate with beneficial consequences to both parties.

1.1. Friends or foes: the LSM-ASM interactions

Existing studies have recognised the growing contestations and the need to address the intensifying competition of land areas between LSM and ASM ([Andrew, 2003](#); [Bainton et al., 2020](#); [Geenen and Verweijen, 2017](#); [Güiza-Suárez and Kaufmann, 2024](#); [Holley et al., 2020](#); [Katz-Lavigne, 2019](#); [Lahiri-Dutt et al., 2021](#); [Verbrugge, 2017](#); [Yakovleva and Vazquez-Brust, 2018](#)). The literature largely alternates between cohabitation/coexistence, and conflict. With regard to the former, evidence of elements of synergistic and friendly relations between ASM and LSM has been noted ([Jiménez et al., 2024](#)). [Bansah et al. \(2018\)](#), for example,

provide an example of trade arrangements in relation to tailings between the two mining entities. Elsewhere, purchase agreements between the two entities in the DRC have been highlighted ([Deberdt, 2022](#)). It is not uncommon for ASM activities, for example, the extraction of mineralised ores, to be tolerated at LSM sites ([Aubynn, 2009](#); [Jiménez et al., 2024](#)).

The interface, however, has not been all smooth sailing. Conflicts between the two entities, usually resulting from claims to contested resource territories, are common ([Aubynn, 2009](#); [Kemp and Owen, 2019](#); [Libassi, 2022](#)). LSM and ASM operators have most often found it difficult to cohabitate or coexist. On the one hand, ASM operators, especially autochthones, tend to harbour grievances over impediments, such as the inadequacy or lack of mineralised land on which to operate ([Aubynn, 2009](#); [Geenen and Verweijen, 2017](#); [Hilson and Yakovleva, 2007](#)). On the other hand, the pronounced negativities associated with ASM operations (see [Arthur-Holmes and Abrefa Busia, 2022b](#); [Kitula, 2006](#); [Ofosu et al., 2020](#)) seem to redouble the desires by LSM operators to suppress ASM. For example, LSM operators are faced with the challenge of diffusing tensions over issues perceived in a negative light by mining communities and their responses to these concerns, which may include encroachment on to their leased concessions, physical assaults on their personnel, and the invasion of underground facilities ([Okoh, 2014](#)).

Also, problematically, ASM operations, which usually target alluvial deposits situated at or near the land surface ([Hilson, 2002b](#)), have a virtual disregard for land reclamation exercises ([Botchwey et al., 2022](#); [Dampney et al., 2020](#)). This inevitably poses a challenge for successive land use operations. Hence, for example, mining on devastated lands may prove very difficult for LSM operators who might want to target underground or hard rock ores in leased areas. Relatedly, ASM is usually an informal activity; thus, formal and regulated LSM operators, seeking investments and cleaner production endorsements, would not want to be seen to be associated with ASM operations, as such an association may imply the enabling of illegality. These phenomena have broadly been observed in many mineral-rich settings, such as Indonesia ([Libassi, 2022](#)), Ghana ([Hilson and Yakovleva, 2007](#); [Okoh, 2014](#)), Tanzania ([Pedersen et al., 2019](#)), and the DRC ([Geenen, 2014](#); [Geenen and Claessens, 2013](#)). Flagging up one of the LSM-ASM contestations, for example, [Yankson and Gough \(2019\)](#) offer evidence from Ghana to show how loss of employment opportunities, due to capital-labour substitution mechanisms, and a shift from underground to surface mining in LSM led to a proliferation of ASM activities. The proliferation could not be tolerated by a coexisting LSM operator, leading to heightened conflict.

In some locations, large numbers of ASM operators have been forcibly displaced from highly productive mineral zones for the construction of industrial-scale mining projects ([Geenen, 2014](#); [Kemp and Owen, 2019](#)). The release of large tracts of land, including farmlands, to LSM leads to few employment opportunities in the rural economic space. ASM thus becomes the only viable economic option. This, however, leads to frequent encroachment on to the leased concessions of LSM operators which, in turn, leads to conflicts. In this vein, artisanal miners are usually provided with alternative mining locations, which might not be as productive or appropriate for mining as previous mining sites ([Hilson et al., 2007](#); [Hilson and Yakovleva, 2007](#)). In some cases, alternative economic programmes are offered, which also may not be as productive as ASM ([Hilson and Yakovleva, 2007](#)). Within these contexts, miners have often found ways to contest what they perceive to be the dispossession of their collective mining and livelihood rights by, for example, mining ‘clandestinely’ on concessions of LSM operators ([Katz-Lavigne, 2020](#); [Libassi, 2022](#)). As the state has granted the LSM operator exclusive rights to extract minerals, public and private security are empowered to apprehend trespassers and remove them from the pit area. Several fatalities have occurred in the eviction process ([Hilson, 2024](#); [Yankson and Gough, 2019](#)).

Elsewhere, some studies have gone beyond the micro-dynamics

between ASM and LSM to examine national and international regulatory frameworks that underpin the LSM-ASM contestations. In the DRC, Huggins (2022) highlights that traceability schemes—a kind of conflict free mineral policy—impacts negatively on efforts at LSM-ASM collaboration. Camba (2021) offers evidence from the Philippines and Indonesia to note how cohabitation arrangements suffered from the unintended consequences (e.g., the displacement of ASM groups from mining concessions) of indirectly related national regulations.

These conflicting interfaces continue to ignite debates on LSM-ASM interactions. Divided between ‘cohabitation’ and ‘autonomy’, proponents of the former contend that states and organisations need to help LSM and ASM work together, while the latter suggests that states need to institute different policy frameworks, goals, and organisations for autonomous developments in ASM. Hilson et al. (2020) are particularly sceptical of cohabitation arrangements, arguing that even when cooperation is possible, these partnerships are optimal only under an exceptional set of circumstances and sustainable for only a finite period. For example, the relationship between ASM and LSM is subject to significant changes throughout the mining cycle (Hilson et al., 2020; Kemp and Owen, 2019). During the exploration phase, junior/young LSM companies would often tolerate ASM operators, or may even use them as ‘pathfinders’ providing ‘exploration info’ (Luning, 2014). However, at the production stage, mining companies may, at best, opt only to tolerate ASM operators in marginal parts of their concession, or they try to evict them altogether (Hilson et al., 2020).

Hilson et al. (2020) identify two main problematic trends that make cooperation untenable either in the short or long term: the fluctuating prices of mining commodities and the frequent merger and acquisition of LSM companies. Their analysis indicates that LSM-ASM cooperation appears palatable to LSM companies when the prices of mineral commodities are low; under such conditions, it may not be economically prudent for companies to access the less valuable areas of their concessions, which they can leave for ASM. However, when the price increases, profit maximisation may encourage them to evict ASM operators. The merger of different companies, and subsequent changes in mine site ownership, undermines agreements and reduces trust between different actors. For these reasons, a model of ‘autonomous co-existence’ is proposed in which ASM operators receive support through policy reform and access to mineralised areas such that they operate in separate arenas from LSM (Hilson et al., 2020).

What all these studies share is a near-universal agreement that LSM-ASM interactions are fraught with problems, primarily with regard to access and control over mineralised lands. And with the mining-regulatory framework becoming more welcoming to LSM arrangements, ASM would inevitably be the losing partner. A reading of these studies also reveals a certain particularity – a focus on informal/illegal ASM. As already indicated, the LSM operators have mostly dealt with informal/illegal operators, with no arrangements to deliver financial and economic benefits to the LSM entities. The arrangements are usually made as a conflict-containment measure (Aubynn, 2009). As such, our understanding of how cooperation between formalised/licensed ASM and LSM can flourish and configure the mining landscape has remained incomplete. Not surprisingly, also, due to the high rates of informality of ASM operations, the contestations have often been viewed through conceptual frameworks such as resource conflicts and grievance (Okoh, 2014), access, displacement and resistance (Geenen, 2014), and subjectivities (Libassi, 2022). Thus, in seeking to (re)examine the issue of the ramifications emanating from a cohabitation agreement between a formalised/licensed small-scale mining operator and an LSM company in Ghana, a new framework is required. More problematically, the cohabitation arrangements usually proposed fail to address issues such as legitimacy, trust, obligations, and economic benefits and revenue-sharing arrangements. For example, should LSM operators cede portions of concessions to ASM actors, what should be the economic benefits to the LSM companies? How should post-mining reclamation arrangements be approached and who should be obligated to undertake

such activities? Should ASM operators be allowed keep informal labour arrangements with their employees in contrast to the labour arrangements of LSM operators seeking legitimacy in the eyes of investors? We address these issues through the lens of partnership, which we deem appropriate in unearthing the findings of this study.

1.2. The concept of partnership – the need for partnerships

Partnership approaches continue to receive widespread support from across the socio-political spectrum, including policymakers, officials, and local communities (Knoben and Bakker, 2019; McQuaid, 2000; Sarpong and Davies, 2014). Indeed, they are likely to remain high on the policy agenda of most institutions at all levels (McQuaid, 2000, 2010). The term ‘partnership’ covers widely differing concepts and practices and is used to describe a wide variety of types of relationship in a myriad of circumstances and locations (McQuaid, 2000; Moss et al., 2022). Primarily, partnership involves co-operation, i.e., “to work or act together” and in a public policy can be defined as co-operation between people or organisations in the public or private sector (central and local governments, the local community, the private sector, individuals etc.) for mutual benefit (Holland, 2017; Moss et al., 2022). Partnerships are usually constructed in the context of an agreement to contribute resources to a process, with each party acting as a partner for the attainment of a common goal. According to Harding (1998), one type of partnership, namely, ‘private public partnership’, can be construed as any action that is based on the agreement of stakeholders in the public and private spheres and that also contributes in some way to the improvement of an economy or the quality of life (Hodge and Greve, 2017). For Bailey (1994), a private-public partnership in urban regeneration, for example, is the mobilisation of a coalition of interests drawn from more than one sector in order to prepare and oversee an agreed strategy for the regeneration of a defined area. Bennett and Krebs (1994) define partnership as co-operation between actors where they agree to work together towards a specified economic development objective. In this vein, one of the basic assumptions underlying the definitions of partnership is the potential to pool resources to achieve a synergy of some form, so that projects can benefit each partner or the broader community, and thus ‘the sum is greater than the parts’ (McQuaid, 2000; Moss et al., 2022; Zhang and Gu, 2021). According to Eshel and Shaked (2001), individuals seek to become partners when it is in their best interest to help each other; by doing so, they increase the probability of being together in the future when, for similar reasons, they will continue to help each other.

Crucial to the success or otherwise of a partnership is a high level of trust. This can be exemplified as in the view of partnership as a marriage, which develops over time but is undergirded by mutual trust and a belief in the positive gains for both partners (Knoben and Bakker, 2019; Moss et al., 2022; Zhang and Gu, 2021). Thus, one partner may accept minimal short-term gains if this leads to considerable benefits for the other partners. In the long term, however, there may be some expectation of a ‘quid pro quo’. Partnerships may be expected to continue even if their focus and rationale changes over time. Other partnerships may, however, be referred to as ‘real politik’ and based upon the self-interest of the partners, so that partners may leave or the partnership be disintegrated once their gains cease or reduce (McQuaid, 2000).

At the local level, continued or greater involvement in partnership approaches is likely between public bodies and/or private bodies due to pragmatic factors such as resource constraints (McQuaid, 2000, 2010). These factors include a belief in the overall advantages of a partnership approach and a recognition that any one local stakeholder often does not have all the competencies or resources to deal with the inter-connected issues raised in many policy areas (McQuaid, 2000).

Accordingly, one of the main reasons for entering into a partnership may be to gain extra resources by combining various types of resources in order to transform one or more of the partner organisations (Hodge and Greve, 2017). This may include allowing one or more of the partners

to act more entrepreneurially through loosening some constraints or impediments and introducing new, efficient and effective ways of operating (McQuaid, 2000; Moss et al., 2022). Additionally, the partnership may help to manipulate one of the partners to support various or diverse activities or to overcome local opposition in relation to the implementation of certain community-sensitive projects. Partnerships help achieve some substantive or symbolic goals that no partner could achieve independently (Harding, 1998; Peters, 1998).

Generally, most relationships in partnerships are constructed in formal domain structures ranging from formal, legally-binding contracts to unenforceable public agreements or general agreements to co-operate (Hodge and Greve, 2017). Formal partnerships generally include specific objectives and mechanisms. More rigid sets of formal partnerships are usually based upon legally-binding contracts, particularly where there are direct commercial transactions (McQuaid, 2000, 2010; Zhang and Gu, 2021). In many cases, partnerships are moving towards a legal basis with legal contracts tying partners to specific inputs and actions. However, there are dangers with this mechanism or approach. The 'contract culture' phenomenon has been known to often lead to a 'bureaucratic paperchase' and may reduce voluntary co-operation or decrease the speed with which projects are executed (McQuaid, 2000).

Although there are potential disadvantages of partnerships, including unclear goals, resource costs, and unequal power, the benefits of partnerships, summarised as 'access to resources and synergies', effectiveness and efficiency, and legitimacy, have been widely known to offer major beneficial consequences to stakeholders of partnership agreements (Muhammad and Johar, 2019; Sarpong and Davies, 2014; Watson et al., 1995). This present study also highlights these beneficial consequences in relation to LSM and ASM operations.

2. Methodology

The two mining companies examined for this study are Kanbib Gold (KG) and Selb B. Mining (SB).¹ KG is a registered LSM entity with the Minerals Commission (MC) of Ghana, while SB is a registered/licensed small-scale mining company operating in the Eastern region of Ghana. We draw on fieldwork carried out in Ghana in 2020 and 2021 and complemented by semi-structured interviews undertaken mainly with the management and staff of KG and SB. The selection and negotiating of access to the case organisations was one of the defining activities of this study. The process of selecting and negotiating access, as described by Harrington (2003), is the acquisition of consent to go where you want, observe what you want, talk to whom you want, obtain and read whatever documents you require, and do all of this for whatever period you need to satisfy your study purpose. In this regard, KG especially was identified through the website of the Ministry of Lands and Natural Resources of Ghana.

After the identification of the mining firms, contact was made with some senior officials of the MC in the Eastern region to ascertain the operational status of the firms. The officials indicated and confirmed that the company (SB) undertook small-scale mining operations on registered concessions of KG and that a type of formal arrangement was in place between KG and SB. This arrangement, according to the officials, was in line with the 'mine support services' provision in the Minerals and Mining Act (703) of 2006. Following initial conversations with the MC officials, the researchers started to negotiate access to the companies. Messages were sent inviting the companies to participate in the research. Working in close collaboration with the officers of the MC, mutual expectations, research protocols, and confidentiality issues arising with respect to data collection and publications were agreed. After these detailed explanations regarding the purpose of the research had been given, the managers of the companies agreed to the researchers' request to undertake an on-field study at the empirical

research site.

This study employed a qualitative research design involving semi-structured interviews with the management and staff of both KG and SB. As indicated earlier, both companies are located in the Eastern region of Ghana, and KG has concessions in excess of about 20 km². Although KG actively exploits its concessions, it has arrangements with SB to undertake extractive activities at different sections of the concessions amenable to small-scale mining operations. SB, however, employ its own labour force. Interviewees consisted of 12 members of the management and staff of KG and 15 members of the management and staff of SB (the total number of employees at SB was about 100). The interviewees included the mine captain and the project manager of KG. For SB, the interviewees also included the project manager and the mine captain. Other interviewees were the environmental officer, processing supervisors, excavator operators, and plant attendants among others. In addition, three officials of the MC were interviewed (Table 1 provides an overview of some of the key interviewees/research participants). The purposive sampling technique was employed in selecting the members of management (especially the project managers and the mine captains of both companies).

The rationale for the use of purposive sampling to interview top management was that we were interested in unpacking and understanding the basic legal or formal arrangements that underpinned the partnership agreement between the two mining entities. This is information that ordinary workers rarely have or cannot divulge. The purposive sampling technique was also employed because it is known to help identify research subjects based on their potential to provide specific insight or information on a topic of interest (Robinson, 2014). As indicated earlier, a semi-structured interview guide was employed in soliciting the responses of interviewees. The use of in-depth semi-structured interviews allowed us to gain deeper insights into the operations of the mining companies. In this regard, members of the management of both companies were asked questions relating to the formal arrangements and licensing procedures. For the other workers, questions were asked about their work contracts, working conditions, and remuneration. From our interviews, four themes emerged from the KG and SB partnership, which we found to form the foundation of SB's activities on the concession of KG. These themes include 'partnering for resources and efficiency'; 'labour arrangements'; 'environmental management'; and 'cost, margins, and profits'. These themes are discussed below in the findings section.

At the start of every interview, interviewees were informed that their participation in the study was voluntary and that they were free to opt out anytime they wanted. The idea of participation being voluntary was iterated throughout the research process. Interviewees were also assured of their confidentiality and anonymity during the interview process. A high degree of flexibility was also exercised during the interview process. The majority of the interviews were conducted in the local

Table 1
Overview of some of the key interviewees/research participants.

interviewee	Number of years of industry experience	Number of years employed by KG/SB
Project manager (KG)	26	10
General manager (KG)	28	12
Mine captain (KG)	21	09
Environmental officer (KG)	15	06
Project manager (SB)	20	03
Mine captain (SB)	22	03
Excavator operator (SB)	07	02
Environmental and safety officer	03	02
Minerals Commission officer	09	–
Minerals commission officer	07	–

¹ For the sake of an interviewee agreement, both names are pseudonyms.

language (Twi). The interviews typically lasted 40–50 min each; they were tape-recorded with the participants' full informed consent and were later translated into English within 24 h of data collection.

2.1. Data analysis

The data analysis comprised several stages. In the beginning, the audiotapes were carefully listened to many times. This was to make sure that the audio data were accurately reflected in the transcribed data and the personal notes taken at the time of the interview. This was also done to ensure that the audio was in line with what was heard in the field. All responses were put together in a word document to form a transcript. The responses were then coded and inductively analysed, with the researchers employing manual coding to identify reoccurring responses and variations within the responses.

The researchers, particularly the first researcher, sought to identify the common themes across the data. To ensure reliability, the other researchers also probed the data to ascertain the main themes and other sub themes identified. At this point, judgements about the meanings of contextual statements were made so that the relevance and importance of issues and implicit connections between them could be made (Hardy and Bryman, 2009). Here, the authors made cross-references between the transcribed data, mental notes, and field notes, and the original audio file, to get a better understanding of the recurrent and obvious themes.

In the next stage of the analysis, the field issues and challenges raised by the research participants were used to further probe the data to match their various accounts to determine how well they fitted in with our initially generated themes. This involved the active recycling of the emerging and dominant concepts and perspectives and the refining of some early insights and ideas that appeared inconsistent or contradictory to the empirical evidence. Finally, the thematic frameworks identified were then applied to the entire dataset by annotating them with numerical codes, which were also supported with short descriptors that elaborated the headings (Ridder, 2014; Ritchie and Spencer, 1993). This helped to develop a meaningful and more robust understanding of the data, which enabled the subsequent interpretation and the verification of meanings (Miles and Huberman, 1994). Following this, we engaged in what we consider to be a systematic and rigorous comparison of our indexed themes, which had reached a point of saturation, with the existing literature to build up an understanding of the formal arrangements of the organisations in order to develop greater insight into their operations.

2.2. Findings

2.2.1. Partnering for resources and efficiency

The interviews revealed that KG applied for and obtained its permits more than a decade ago. At time of the research, the company's concession was in the region of more than 20 km². In line with the arrangement below, compensation have been duly paid to the land-owners whose lands have been leased to KG.

Where a licence is granted in a designated area to a person other than the owner of the land, the licensee shall pay compensation for the use of the land and destruction of crops to the owner of the land that the Minister in consultation with the Commission and the Government agency with responsibility for valuation of public lands may prescribe (Article 94 of the Minerals and Mining Act of Ghana).

Payment of compensation packages ranged from 1 year up to 5 years depending on the type of minerals predominant at the sites. In the mostly alluvial places, the packages are usually paid for one to two years. This flexibility allows for lands to be reclaimed and returned to landowners for post-mining operations such as agricultural activities.

Management of KG revealed that their concessions contain both alluvial deposits and hard rock gold deposits. Their expertise and

machinery, however, are more tailored to the operations of the latter. Currently undertaking hard rock mining at some of the sites, they estimate that it could take them at least 4 years to complete some of the operations at those sites. Thus, they have strategically partnered with some registered small-scale mining companies, including SB, to undertake alluvial mining operations on some of the concessions. According to the senior officer, they needed to work with the small-scale mining companies under a particular provision in the Minerals and Mining Act. In this regard, the small-scale mining operators operate by providing mine support services (service providers) for KG. A senior officer of KG said:

We've found it prudent to allow small-scale mining companies to work on our concessions under Article 59 of the Minerals and Mining Act. We are more efficient in open hard rock mining while they are effective in alluvial operations. The sharing arrangement is that we take about 20–25 percent of daily production while they keep about 70–75 percent to cover operational and labour costs.

In this vein, the concessions are divided into not more than 25 acres per operation at a time. This is to allow for effective supervision and to comply with concession allocation with respect to small-scale mining operations as enshrined in the Minerals and Mining Act of Ghana. However, KG is ultimately responsible to the MC in terms of environmental management, prime among them being the reclamation of post-mining sites. Here, it is worth highlighting that the arrangements between KG and SB are legal and formal and thus are very different from those that are usually witnessed between LSM and ASM operators in the literature (see, for example, Aubynn, 2009; Hilson and Yakovleva, 2007). A senior officer of KG explained:

We have formalised and legalised the arrangements. We have no plans to evict or disrupt the operations. For as long as the alluvial deposits are available and the licence of SB is not expired, we'll both continue to work together

The basic arrangement entails, among other requirements, that the small-scale mining company must first be duly registered with the MC. Documents concerning this must be submitted to the management of KG for verification. Before partnering with KG, for example, SB's licence had expired. Therefore, they had to renew their licence and become formal operators before receiving concessions. The manager commented:

Once we knew that we could secure concessions from KG, but only through the formalised arena, we had no problem renewing our operating license.

Also, with regard to the arrangements, KG requires that the small-scale mining company must have the necessary equipment to undertake operations. If this becomes a constraint, however, the company can deploy the concession as collateral to hire equipment or seek funds from the capital market. A manager of KG highlighted:

We have legally-binding arrangements with them, so we have no problem allowing them to use the concession assigned to them as collateral to hire equipment or seek funds. Everything is, however, scrutinised by the management.

The project manager of SB confirmed:

Because we have been in this mining business for quite some time, some of our equipment had become obsolete at the time this concession was allocated to us. We therefore needed money badly in order to purchase some of the equipment. One of the banks decided to give us a loan after a thorough examination of our documents concerning the mineral-rich nature of the concession. They even had to bring in an external geologist to confirm the richness of the concession. Luckily, the concession was rich enough, so they granted us the loan.

2.2.2. Labour arrangements

According to the arrangement with KG, SB recruits its own labour. However, aligning labour relations with those of KG, as insisted on by KG, workers must also be registered and formalised. Therefore, workers must have contracts, negotiated fixed salaries, and the payment of insurance. Discussions with the management of SB and the workers revealed that all these had been complied with. Workers currently working for the company are employed as permanent workers, and every single worker has been given a contract of employment. This was confirmed by all the workers interviewed in this study. One excavator operator confirmed it as follows:

Yes, I was interviewed for the job and was asked to begin work on a particular date. When I arrived on the premises of the company on the said date, my appointment letter was handed to me by the secretary. All the other materials and explanations I needed in order to begin work were also provided.

In addition, workers receive their salaries regularly every month, and their retirement insurance packages are also paid. The regular payment issue was confirmed by the interviewed workers. One employee confirmed it thus:

We are paid regularly and on time. There have been no defaults on payment as far as I know. Management is very keen on our payments, and this is no different from when I worked in the formal government sector.

Another worker confirmed it in the following words:

There are no problems with salaries. Once you work, you are paid. We are also aware that if you cannot come to work and you have a genuine reason for not coming, you will be paid.

2.2.3. Environmental management

SB is obligated to reclaim the lands immediately operations are completed. However, as indicated earlier, the ultimate responsibility rests with KG. The MC insists on the reclamation process, with both companies running the risk of losing their licence if they fail to remediate/reclaim the lands. Thus, KG was acting as 'Big Brother' watching to ensure SB had complied with the reclamation exercises. During several of the visits, the first author observed reclamation processes with the safety and environmental officer providing guidance and explanations. The officer explained that management of SB is very keen on the reclamation process, so the project manager makes sure that the pits are covered and the lands are reclaimed as soon as excavation is over. The environmental and safety officer explained that this phenomenon is referred to as progressive reclamation, i.e., reclamation at one section of the concession goes hand-in-hand with excavation at another section of the concession. It is not necessary that all the lands are wholly mined before reclamation begins. Some of the lands had been allocated back to the landowners, some of whom had put the land back to its prior use including farming activities. According to the environmental and safety officer:

Environmental safety issues and the reclamation agenda is high on the list of priorities of this mining company. My section, as you may be aware, has been specially set up to deal with issues of environmental management.

2.2.4. Costs, margins and profits

Obviously, to consider the arrangement between KG and SB a success, finances must be discussed. The project manager of SB indicated that workers' salaries and other operational costs, including the purchasing of fuel and servicing of equipment, adds up to a substantial sum (about Ghc 300,000 (ca. US\$ 50,000)). This is, however, manageable. Indeed, as confirmed by the project manager:

We are still in this business because the margins are very okay. We are able to offset our debts and cover most of the operational costs. Our financial statements at the banks are also quite okay.

A management member of KG added:

We did the paper work concerning earnings and finances together. Even at the lowest gold prices, the business, we believe, would run without many problems. So far, I think it's been a win-win for both parties.

Another management member remarked:

So far, so good. The arrangement with the small-scale miners is going fine. Economically, we do not have to expend on labour and operational costs on the concessions amenable to small-scale mining. As you have already been told, we also receive financial benefits, while the small-scale operators are also making quite good returns.

3. Discussion and conclusion

This study sought to re(examine) the highly debated contestations and the interface between ASM and LSM operations. As highlighted in the existing scholarly literature and policy documents, LSM operations have been the prime beneficiaries of structural adjustment programmes and neoliberal mining reforms (Hilson et al., 2020; World Bank, 2009). Reforms have created the ASM-LSM interface, specifically, World Bank interventions aimed at facilitating the opening up of sub-Saharan Africa region's LSM and mineral exploration economy, which has brought companies into contact with ASM operators (Hilson et al., 2020). A shortage of land and the inability of individuals to secure small-scale mining licences in landscapes under the control of LSM and mineral exploration companies has fuelled the growth of informal ASM activities (Hilson et al., 2020).

This comes as little surprise, though, considering that revenues derived from LSM extraction, which typically go largely to the public sector, and indeed to the public finances, help remove huge barriers to development: the lack of financial resources needed to fuel the provision of basic public goods. ASM, on the other hand, is positioned at the negative end of these mining-regulatory reforms. This is also unsurprising considering the negative socio-economic and environmental externalities often generated by ASM activities (see, for example, Bansah et al., 2024; Clifford, 2022; Siaw et al., 2025, 2023). However, making a credible case for the formalisation of and a support-oriented regime for ASM, scholars have indicated the highly positive distributional effects of ASM, especially to rural economies (Hilson and Banchirigah, 2009; Langston et al., 2015; Mkodzongi and Spiegel, 2019). LSM may attract the needed revenues and rents for the national coffers, but its enclaved nature hurts subsistence and poor rural economies.

These fiscal and policy contestations between LSM and ASM at the national level are usually carried on to the interface and the various on-the-ground mining spaces, engendering combative resource politicisation between LSM and ASM. In this arena, ASM operators and autochthones contest their neglect and stigmatisation by making claims to their customary ownership of mineralised lands (Nyame and Blocher, 2010). This manifests in situations where they are known to mine illegally, often on the concessions of LSM and mineral exploration companies, spawning clusters of difficult relationships between both entities (Aubynn, 2009).

Seeking to minimise tensions, in some instances, ASM operators have been allowed to engage in extractive activities in the same areas as LSM when certain minerals are of little interest to LSM – a cohabitation/coexistence arrangement. This phenomenon of cohabitation, however, usually descends into eviction scenarios whenever large-scale operators seek rapid access to the resource to take advantage of rising commodity prices (Hilson et al., 2020).

It is worth noting that in the contestations, ASM operators are mostly

depicted as passive victims of the supposedly negative land and regulatory reforms. ASM operators rarely identify or are identified as partners of LSM with the aims of seeking to share in the benefits and risks of mineral extraction. Their actions have mainly involved the establishment of associations to petition or coerce LSM operators to release concessions. Meanwhile, the ASM sector is evolving, becoming capitalised and mechanised. In this case, cohabitation arrangements also need to evolve. Questions need to be asked and answered.

Thus, in this study, we seek to use the circumstance of the arrangement between the two mining companies in our case study to showcase that LSM and ASM operators, at least in the case of Ghana, can avoid mineral resource conflicts by going into partnership arrangements. Studies examining the LSM-ASM interactions have usually highlighted tense and conflictual situations because, as seen in the literature, it has always been a case of a legal LSM negotiating with an informal/illegal ASM (Hilson, 2024; Hilson and Yakovleva, 2007). The power dynamics and contractual arrangements are always asymmetrical. Normally, it is a case of ASM operators encroaching on to the concessions of LSM companies that sparks the debate on partnerships. In this regard, we note that addressing issues of legality and financial benefits, LSM operators can cede sections of mineralised concessions to licensed ASM operators and allow economic benefits and risk arrangements to be negotiated and shared. As is important to cleaner production mechanisms in extractive communities, post-mining reclamation arrangements need to be instituted within the LSM-ASM partnership scheme and be guaranteed by the LSM companies since ASM operators are known for their informal methods of extracting minerals, which negatively impact the environment. In sum, partnership arrangements that border on issues of legitimacy, trust, legality, and revenue-sharing arrangements are needed in the LSM-ASM discussions. LSM and ASM can live and flourish together on partnership principles.

In this vein, contrary to the commonly held view that good and sustainable relations between LSM and ASM cannot be realised, our findings suggest that the parties can cohabitate and flourish together. This, however, requires a strategy that includes a process of licensing and formalising the relationship. The strategy also requires ceding portions of concessions that may be economically viable to ASM. Furthermore, arrangements should also be made to yield concrete economic/financial benefits to LSM companies whose concessions the ASM operators work. The arrangements should not be couched only as a conflict-containment measure. Perhaps, what might have escaped the attention of governments and scholars is that LSM companies decide to evict ASM operators from their concessions when gold prices are high and when mergers and acquisition occur (Hilson et al., 2020; Sauerwein, 2023) because the LSM operators do not actually get concrete financial or economic benefits from the arrangements with ASM operators. Perhaps if policies could be put in place to enable LSM operators to benefit financially (through revenue-sharing arrangements), as highlighted by the findings of this study, the 'live and let live' strategies could be sustained. This arrangement could be a win-win for both parties because LSM companies would receive financial benefits, save labour and operational costs on concessions amenable to ASM, while curtailing conflict with local communities and helping to improve livelihoods by providing mineralised concessions and employment opportunities to ASM operators.

In addition, other issues that touch on the policy and practice of ASM need to be highlighted. With regard to the findings in this study, for example, one may ask: Why was the LSM operator afforded the luxury to possess mineralised alluvial concessions in the first place if their expertise is tailored to hard rock operations? This issue, as indicated earlier, borders on policy. In this case, we agree with recommendations from other scholars that at the exploration phase of mining, mineralised zones, suitable for small-scale mining activities, should be delineated and designated for ASM activities as a way of helping to curb conflicts between LSM and ASM operators (Hilson et al., 2020; Hilson, 2024).

Although policymaking may now begin to demarcate lands for ASM

operators going forward, it is well known that most LSM operators already possess mining zones that are suitable for ASM operations. Thus, the land reform recommendations must also consider the positive opportunities that may emerge by allowing ASM operators to partner with, and utilise LSM-titled concessions, as showcased in the study, and elsewhere (Jiménez et al., 2024). In this regard, we note that in order to fully recover the dynamics surrounding the LSM-ASM interactions, scholars would need to move beyond the ASM as a low mechanisation and informal activity narrative. Otherwise, we run the risk of getting stuck at one pole position with narrow interpretations from which few lessons can be learnt, or at another position which does not broadly consider other external and possible underlying principles that may hinder or help LSM and ASM exist and flourish together. Perhaps it would be better to help ASM partner with LSM operations to allow for a spillover or transfer of, for example, mineralised lands and knowledge in order to minimise conflicts on the mining landscape.

CRedit authorship contribution statement

George Ofosu: Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Francis Arthur-Holmes:** Writing – review & editing, Investigation, Formal analysis, Conceptualization. **Daniel Siaw:** Methodology, Supervision, Validation, Writing – review & editing. **David Sarpong:** Methodology, Supervision, Validation, Writing – review & editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The data that has been used is confidential.

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