Decentralization and Sustainable Resource Management

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The World Bank and other international donor communities have often supported decentralization of natural resource management (NRM) based on the assumption that it would bring governance down to local level actors and generate a range of positive outcomes, including ecological sustainability and poverty reduction. Ghana makes an interesting case study to critically analyze the intertwined relationship among decentralization policy, mining title formalization, and CRAFT because of the prominent role that they play in current NRM practices. Like many Sub-Saharan African countries, the exploitation of gold ore in Ghana is shaped by three main sources of formal rules, including public policies, mining concession, and customary law. Customary law governs surface land rights while statutory laws and regulations govern subterranean mineral resources, leading to a situation where gold ore mining is the result of the interactions of customary law and government laws and regulations. This affects the governance and coordination of mineral wealth exploitation, which can positively or negatively affect resource sustainability.

decentralization sustainability formalization artisanal mining conflict

1. Aligning the New Institutionalist and Political Ecology Perspectives

We rely on political ecology [1] and components of the new institutionalism in social anthropology [2][3][4] as a heuristic and conceptual approach to analyze redistribution processes associated with decentralization of NRM and the consequences on social, economic, and environmental sustainability. In the context of legal pluralism and the acknowledgement of different actors' powers and interests in NRM in Ghana, bringing together the two approaches is apt in the sense that the New Institutionalism defines concepts of the interrelations of factors leading to institutional changes and describes the use and overuse of surface and underground resources, while political ecology brings in a concrete analysis of power held by local power-holding actors, state agencies, and multinational entities.

Institutions—"the rules of the game"—regulating resource management and use constantly arise in a given historical, political-legal, and socioeconomic context, which is shaped by power relations that political ecology focuses on describing [5]. To this end, new institutionalism in social anthropology [3][4] shows how internal and external market forces and the dynamics of the resource context for ASM lead to rationale strategies and forum/institution shopping (selection of customary and statutory rules and regulations) by actors competing for access to land for mining and the arrangement that distributes resources unevenly. This variant will direct our analysis on how decentralization in NRM phases out or diminishes constraints (high transaction costs) and

enhances resource users' incentives to access and invest in land and land-related resources. It will add to our understanding of how mining rights can be structured to avert externalities to resource owners and the society at large.

Political ecology [1] offers a concrete analysis of power relations and focuses on who receives what and when and the corresponding winners and losers. The perspective will help us understand the "agency of social groups in the redistribution processes occurring in decentralization of NRM" by examining the narratives "including materialist aspects (price of input, market selection, struggle for survival)" and counter-narratives "including idealist aspects (beliefs, framing struggles, networks)" [6][7] and how unequal relations of power create a situational rationality that forces local resource users to destroy their environment.

2. The Main Mining Regulation Efforts since Colonial Era

Since the British colonial administration in Ghana, minerals and mining legislations have been initiated by successive governments to enable actors to gain, control, and maintain access to resources and ensure responsible mining. In northern Ghana, the colonial administration enacted the Mineral Rights Ordinance, which vested all mineral rights in the British crown [8]. The ordinance empowered the governor to restrict local chiefs from granting concessions, regulate the use of mercury in gold mining, and constrict the mining rights of Indigenes. The exclusionary measures marked the beginning of informal ASM, which became a major threat to European mining concessions, rural inhabitants, and the ecosystem of local communities.

Soon after Ghana's independence in 1957, several laws and regulations were enacted to consolidate state control of mineral wealth [9][8]. Article 257(6) of the 1992 Constitution upheld that "every mineral in its natural state … is the property of the Republic of Ghana and shall be vested in the President on behalf of, and in trust for the people of Ghana". Therefore, the state is the ultimate owner of mineral resource wealth and shall be in full control and supervision of the exploitation, development, processing, and utilization of any mineral in water and above and under any land surface thereof. The Ghanaian President can vest authority in the appointed Minister of Lands and Natural Resources to administer and dispose of the state's mineral resource reserves.

Following Ghana's economic stagnation in 1970–1980, the World Bank and the International Monetary Fund introduced the structural adjustment program (SAP) to revive the mining sector. Subsequently, the Minerals and Mining Law of 1986 was enacted, which provided mine incentives to attract foreign mining investors to Ghana. The law criminalized ASM and provided multinational corporations an avenue to exploit vulnerable communities and pushed local citizens to shift to marginal and progressively diminishing parcels of land for their livelihood.

In 1989, three additional legislations were enacted: the Mercury law—Provisional National Defence Council Law (PNDCL) 217—regulates the use of mercury in gold mining, the Precious Minerals Marketing Corporation (PMMC) law (PNDCL 219) provides official marketing channels for gold produced by miners in Ghana, and the Small-Scale Gold Mining law (PNDCL 218) was the first attempt to introduce a license system and district assistance centers to regulate ASM. In 2006, the Minerals and Mining Act (Act 703) was passed to enhance tenure security and eliminate

barriers to improve sustainability. Section 83(a) emphasizes that only adult Ghanaians (18 years and above) can be granted a license for ASM operations. Additionally, Act 703 recognizes the role foreign mining companies can play in the area of mine support services to concession holders.

Under Act 703, artisanal and small-scale miners can apply for a concession of 25 acres (10 hectares) of land in designated areas of a district through the Minerals Commission (MC). Current estimates are that less than 30% of artisanal and small-scale miners have a license [10]. The large majority who remain informal draw on the customary institutional framework to legitimize their claim to land and related resources, which results in conflicts between them and concession holders. In this context, mining rights and access are about relations among social actors involving benefits or values, including appropriation, accumulation, transfer, and distribution. In the past 15 years, efforts to consolidate decentralization have increased to improve the access and control of ASM in Ghana.

3. Decentralization Efforts in Ghana

In Ghana, the move towards decentralization involved efforts to shift control over NRM to a range of local government actors [11][12]. The changes in rights and powers in NRM are supported by the argument that there will be an increase in local control over resources—whether in the hands of user groups or Indigenous communities—and is therefore a good thing [13]. For example, in Ghana's forest management strategy, the central government backs user groups over elected local governments to govern forest reserves, thus empowering traditional nondemocratic authorities over forests [14].

In the late 1980s, the PNDCL 207 was enacted to grant local government—Metropolitan, Municipal, District Assemblies (MMDAs)—significant discretion over mediation in disputes as well as the right to issue business permits to owners of processing facilities, to enforce environmental laws, and to stipulate that any project or program that may cause air, soil, and water pollution; resource depletion; climate change; or the loss of biodiversity requires the approval of the affected MMDAs [12]. In addition, the MMDAs are entitled to a share of the resource revenues, royalties, and ground rents from activities involving the development of mineral resources within their territorial jurisdiction. Moreover, the PNDCL 207 grants control over small-scale gold mining in the MMDAs.

In response to the growing grievances of informal ASM in the early 1990s, the MMDAs established checkpoints to collect tax revenues to address the environmental crisis resulting from ASM. This strategy was short lived as the national government enacted Act 490 to grant the Environmental Protection Agency (EPA) the power to issue environmental permits to any project likely to have a potentially adverse impact on the environment. The EPA appears to promote this specific policy measure in favor of an eco-rent development interest to reinforce their own benefits. While the EPA short-term profit maximization objectives take the upper hand, environmental degradation continues to increase. Comparing the 1990s to today, environmental degradation and water pollution have worsened in an unprecedented manner, which raises concerns about sustainability challenges.

4. Sustainability Challenges in Ghana

Sustainability in this context refers to the adoption of practices in the mining operations stage that results in environmental and social advancement with the aim of diminishing negative impact, while maintaining the health and safety of mine workers, the interests of diverse stakeholders, and the affected communities, in order not to endanger the potential needs of future generation [15]. Since the 1987 Brundtland Commission, the 1992 Rio Earth Summit, and the 2030 Agenda on Sustainable Development, the government of Ghana has taken initiatives in response to the grievances in the extractive sector that are being described as antithetical to sustainability to make communities inclusive, safe, and resilient.

Apart from the government's environmental laws and the formalization of mining rights, other international socioecological labelling and certification organizations introduced initiatives to promote equitable and sustainable exploitation of mineral resource wealth [16][17]. One of such initiative is CRAFT, which facilitates engagement between downstream supply chain actors and upstream ASM producers to source gold in conformance with the Organization for Economic Cooperation and Development Due Diligence Guideline. CRAFT enables ASM producers to participate in international markets since many gold buyers in the global North and environmental activists have associated responsible gold mining practices with healthiness and environmental sustainability [16].

However, in recent years, Ghana's mining sector faces difficult sustainability challenges because of the growing social and environmental grievances, human rights abuses, and lack of health and safety measures in mines. Studies [18][19] of mining operations in Ghana showed that the forest cover (~2.51 million hectares) and green vegetation have been removed due to open pit mining activities, which imperils the surface land to water erosion, resulting in loss of nutrient-rich topsoil. With this background in mind, we formulate two broad working hypotheses that will not be tested statistically but will provide guidance for our data collection and discussion to answer the research questions.

5. Working Hypotheses

The H1 presents how the decentralization process is envisaged to work according to its proponents. The H2 builds on insights from political ecology and new institutional economics to politicize the redistribution of use rights to resources resulting from decentralization efforts. H2 therefore focuses on actors' strategies and power games in decentralization.

Hypothesis 1 (H1). Decentralization in NRM will lead to positive social and environmental outcomes. As decentralization empowers Indigenous and local communities through a more direct involvement in NRM, local citizens are incentivized to create and implement transparent social and environmental standards themselves—devoid of external influence—and perform downward accountability, leading to sustainability and equity in benefit sharing.

Considering that actors do not stand idly by while mining procedures are being decentralized, we expect that H1 might not fully capture the processes at play.

Hypothesis 2 (H2). The decentralization of procedures in ASM leads to different actors repositioning their strategies to promote their interests and increase their bargaining power, which ultimately leads to a negative impact on social, economic, and environmental sustainability. This is to be explained by the following mechanisms:

1. Central government actors will not let their responsibilities go to local people. As national authorities have agency, they will reinforce a neopatrimonial political culture to take advantage of public positions for private gains. This takes the form of noninterference where informal activities are tolerated, leading to resource over exploitation and environmental crises.

2. Decentralization in NRM enables newcomers to gain access to local resources, leading to conflicts between newcomers and locals. As newcomers usually have exclusive rights to land and related resources guaranteed by the state due to their financial and political capital, they will enclose common pool resources (CPR)—i.e., resources (e.g., irrigation water, pastures) whose uses are competitive and whose characteristics make it difficult to prevent newcomers from using them. This will compel the excluded locals to shift to more marginal land resources, which are then overexploited to make income. Under these circumstances, anger will set in among locals who are willing to fight newcomers over CPR that are becoming increasingly scarcer.

6. The Politics of National Policy Implementation

In Ghana, the MMDAs and local communities had high expectations for the establishment of a district-level MC to provide doorstep services. Nevertheless, this process was challenged by the central government's inventive use of neoliberal resource governance to reinforce tendencies associated with neopatrimonial political culture to undertake a series of complex fiscal and administrative interventions that aim to disempower the MMDAs. In the context of ASM, the state implemented a selective decentralization reform and concurrently enacted Act 703 where the authority to administer and dispose of mineral resources wealth is now taken over by the Minister of Lands and Natural Resources and is administered by the MC. Act 703 provides for a clear-cut system of mineral resource governance where the Minister has several mineral tenurial instruments at his/her disposal to issue mining rights. He/she directs the MC to identify ASM areas in the district and to perform the technical and commercial evaluation of the area. Thereafter, he/she directs ASM operators to make claims to the mineral resource wealth area by obtaining a small-scale license from him/her (Act 703, Section 82). It seems that the centralized control over mineral resource wealth in the national government stimulated interest among foreign mining companies, leading to a dramatic increase in mining applications in the last decade.

As such, the Minister takes advantage of his public position for political-economic considerations by relegating the MMDAs, which are mandated to implement national government policies including law enforcement. In 2017, the Minister instituted a moratorium on ASM for two consecutive years on the backdrop of national media environmental conservation discourse. Subsequently, a national taskforce—militarized enforcement initiative—was established to enforce the moratorium. The

taskforce entered the MMDAs territories and undertook operations, resulting in the destruction of mining assets. Since October 2017, local miners have lobbied the Ghanaian President through the Council of State and National House of Chiefs to lift the moratorium because of the loss of employment, income, and livelihoods. Subsequently, the Minister lifted the ban, vetted ~900 miners, and recommenced the issuance of mining licenses.

6.1 Impact of ASM

Environmental Impact

The widespread scars of explosives on the land surface include opened pits, deforestation, encroaching desertification, and the dramatic transformation of stream and hand-dug wells. Residents also informed us that children and livestock frequently fall inside abandoned pits and die, if unnoticed early. Local elites, such as the gold committees, do not enforce land reclamation after mining the gold ore from the soil because their livelihoods do not depend on farming or livestock keeping. Field observation results show that the streams receive a greater load of mine sediment and contamination of hazardous chemicals, sewage, and solid waste from adjacent mining sites. An elevated level of mercury in the water in mining communities is above that of the recommended World Health Organization for potable drinking water [20]. Residents said that the stream is rendered unsuitable for both animal watering and domestic use. We are informed that in the raining season (May–September), the swollen stream deposits toxic silt immediately next to the bank, which contributes to rendering the floodplain unproductive for dry season gardening. The vast floodplain surprisingly looks infertile and native grass species are stunted and look scorched [9]. In the past, the land immediately next to the stream was the most productive, yielding 21 bags of maize per acre for peasants, but now it supports no plant or animal life. Presently, Indigenous people make claims to the best lands and build plots for themselves, while the less desirable land closest to the stream is reserved for poor settlers [9].

6.2. Economic Impact

Majority of local community members perceive informal ASM as a major income source, which increase their capacity to establish new local businesses and pay school and health fees of household members. However, the scale of environmental degradation arising from informal ASM has affected the aquatic ecosystem and worsened agricultural production for people whose livelihood does not depend on mining. In the past decade, locals catch low fish and do not obtain eggs from endangered crocodile species for subsistence and income. Additionally, the presence of heavy metals in the streams increases the costs of water treatment for locals. Household wells nearby the stream and mining sites are contaminated due to discharge from mine sites. Nearly, 84% of local community members reported not having access to potable water from within. The onerous task is that women and children from poor households trek far to fetch water for domestic use. The

16% of local community members buy bottled and bagged water for household daily needs. The ability of miners to be resilient during the COVID-19 pandemic was reduced as many women and children who worked as cooks, transporters, and crushers lost employment and generated no cash to buy food for consumption during the lockdown (March–September 2020). Those who had money could not buy food locally because farmlands had been converted into mining.

6.3. Social Impact

The study results indicate that the differential distribution in money causes problems, including behavioral indiscipline in schools. Usually, pupils (12–17 years) who participate in informal ASM show disrespect to their teachers and community elders who attempt to prohibit them from working in informal ASM. The additional money pupils make is often spent on attending weddings, parties, and casinos, thus resulting in less time to stay home to do homework exercises/assignments. The advantage of boys going down narrow tunnels to collect gold ore endows them with a powerful role in informal ASM, while girls and women transport the ore to crush for milling. However, they face harsh working conditions, lack job security and safety materials, abuse drugs (e.g., tramadol, marijuana, alcohol) to work harder, and face threats and intimidation from their employers. This arises due to a lack of contractual agreements and lack of collective efforts to unionize labor, which has contributed to tension between mine workers and owners.

7. Discussion: Sustainability Challenges

In this section, we go back to our working hypotheses (see Section 5) to discuss them, keeping in mind the comparative results of the two case studies. As a first step, we recall that our H1 states that decentralization in NRM will lead to positive social and environmental outcomes. The proponents of decentralization hold the assumption that local enfranchisement in NRM will lead to an improvement in social and environmental standards, which will maintain crucial ecological functions and simultaneously safeguard essential livelihoods and the economic values of resources. Any positive outcome of decentralization is largely dependent on the distribution of power, a set of management rules attributed to the concerned resource, equity in benefit sharing, and the performance of downward accountability toward the local population [13].

Our empirical case study results do not coexist with the optimistic expectation of decentralization (H1). The expected outcomes of decentralization in NRM are seldom realized because democratic decentralization is hardly implemented [1][2][14]. Moreover, under the so-called participatory management arrangement, changes in the rights and powers to manage the resources are skewed in favor of customary authorities and the gold committee, which partially fulfil the conditions that would enable improved social, economic, and environmental sustainability results in the entrenched “bossism” and social inequality [4]. Like concerns raised by critical observers of decentralization in some parts of the world, “this raises important concerns over elite capture of the decentralization

process" [4] (p. 450). This confirms our initial suspicion that the null hypothesis cannot fully capture the processes at play. We recall that the decentralization of procedures in ASM leads to actors repositioning strategies, which ultimately has a negative impact on social, economic, and ecological sustainability. H2 postulates that the following mechanisms contribute to explain the actors' repositioning strategies.

7.1. Central Government Authorities Did not Let Their Responsibilities Go to Local People

We show how economic factors (e.g., rents, gold price), political factors (e.g., selective decentralization, vote), and bargaining power relations influence national government officials not to let their responsibilities go to local people for them to progressively expand their control over the mining sector, which gradually falls prey to corruption and resource mismanagement. The centralist system of NRM in successive postcolonial governments, which resulted in the enactment of new pieces of legislations, including PNDCL 218 in 1989 and Act 703 in 2006, is influenced by the British colonial administration that lay the foundation for a centralized system, vesting ownership of all mineral resource wealth whether in public or private land to the colonial state [21][22].

Since 2006, attempts by central government authorities seem to roll back local people's participation and control of mineral resource exploitation amidst Act 462. The empirical case study results show that central government authorities implemented selective decentralization on grounds of so-called sustainable management, contrary to observations in other sectors, such as local governance [23], education [24], sustainable urban development [25], and environmental management [26]. In the Ghanaian case of NRM for ASM, selective decentralization only worked in limited sustainable management practices at local levels. MMDAs are not allowed to grant licenses to miners at the local level, and the establishment of a district level MC to perform a critical formalization role at the local level is intentionally delayed, resulting in poor implementation of sustainable mining practices and a poor capacity to monitor detrimental ASM practices. The study indicate that central government authorities aim to sustain a neopatrimonial relationship for the extraction of various rents and fees and to reward political party supporters in return for votes.

Like the PNDCL 218, Act 703 also turned out to be unsuccessful as an instrument for ASM formalization because very few ASM operations have been approved by the Minister to operate, while most informal ASM takes place inside the concessions of mining rights holders, often without their official consent, resulting in local conflicts [4]. The selective implementation of decentralization contributes to miners' lack of access to information, leading to nepotism; rent-seeking during the distribution of licenses, leases, or permits; complexity; and the high cost of registration procedures [4][5]. In many mining communities, the central government's bypassing of the assembly to fight against informal ASM in its territory suggests ambiguity regarding rule interpretation (e.g., Act 462 and Act 703) and enforcement. The central government's weak mechanism of stopping informal ASM through a militarized taskforce failed to defuse ASM operation in the communities [10].

7.2. Decentralization in NRM Enables Newcomers from Outside the Communities to Gain Access to Local Resources, Leading to Conflicts between Locals and Newcomers

Our study results show that local elites have shown strong support for the mining economy by deflating any direct and indirect measures that might threaten the continued operation of informal ASM due to the monumental income it generates for some actors. The results also indicate that newcomers' land access has led to the territorial displacement of marginal groups and peasants. Yet, local citizens have not formed a collective resistance strategy to challenge their dispossession because of the seemingly incompatible interest of the various groups [9]. Only a few marginalized individuals rebuked royalty-receiving landowners, mining financiers, gold committees, the district assembly, and the state's reluctance to implement effective land reclamation strategies, thus reducing land availability for agricultural activities [4]. This forces disenfranchised local citizens to shift to more marginal land resources far from the community for sustenance, which are then overexploited leading to environmental degradation [12]. As a result, exasperation among locals emerges, resulting in instances of intracommunity conflict between locals and newcomers.

The newcomers' huge rush for customary land for gold ore mining from 2008 onward due to their financial and political capital, which helps them to gain exclusive rights of access often guaranteed by the state, results in vulnerable and disenfranchised people who are on the losing end of the equation, increasingly bereft of meaningful access to CPR [4][11][10]. This leads to colossal local conflicts between resource users and owners, which are usually shaped by Indigeneity [9][27]. Indigenous identities are constructed in response to struggles over resources and can be seen as resistance identities formed as part of a legitimating narrative to assert preferential claims to resources and to resist dispossession [27]. The use of Indigeneity as a basis for territorial claims implies that locals have been exposed to international discourses and are able to articulate their identity in a way that is recognizable and usable by their advocates [27][24].

The study result supports Gerber and Haller's [5] argument that the bargaining power of local groups and their capacity to self-organize for a collective action depends to a large extent on the perceived benefits and loss of the resource. For example, the perceived losses of ground rents to tindanas due to the local chief's bypassing them to grant lease rights have led to the formation of the union of tindanas to resist their marginalization by referring to the ancestral domain and constitutions (institution shopping).

8. Conclusions

Our paper has intended to contribute to broader debates on the relationship among decentralization in NRM, the formalization of mining rights, and sustainability. We relied on a combination of political ecology and new institutionalism to direct central attention to the ways in which power and resources are distributed across society. The added value of this analytical approach is its ability to capture both the institutional and practical complexities in the implementation of decentralization in the Ghanaian ASM sector and its effects at the local level, which enables us to produce a set of more

context-specific narratives. Our case study results show that Act 462, which aims to decentralize control over mineral resource wealth to the local population, coexists uneasily with the minerals and mining Act 703, which forms the basis for the formalization of mining rights [4]. This causes institutional ambiguities wherein different actors are now making claims to mineral resource wealth, leading to intragovernment conflicts over law interpretation and enforcement, conflicts between locals and newcomers, conflicts between informal miners and concession holders over access to above- and underground mineral resource wealth, and conflicts among customary authorities (chiefs and tindanas) seeking to secure ancestral domain rights and the associated royalties.

Despite the conflicts, decentralization has improved a selected few local actors' access to mineral resource wealth and threatened the majority with dispossession, leading to social, economic, and environmental sustainability challenges. We argue that the Ghanaian national government tends to undervalue the threats of sustainable development as a constitutional objective resulting from the selective implementation of decentralization. Since local government actors are disempowered, and the state taskforce cannot be everywhere to monitor and supervise local resource exploiters, environmental degradation continues relentlessly.

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