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Sustaining the Environment in an Era of Small-Scale Mining in Ghana: Optimizing the Role of Institutions

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Abstract

The study aimed at assessing the common constraints that affect the enforcement of small-scale mining laws and regulations which have created a vacuum for illegal operators to infiltrate the space with the associated environmental and social cost implications. Underpinned by the institutional theory, the study analyzes from existing theoretical and empirical studies to assess why institutions and agencies on artisanal and small-scale mining find it difficult to clamp down on illegal gold extractive activities. Retrospective literature analysis was the main method employed by the study. A synthesis from the review suggests that key challenges revolve around poor allocation of resources, poor collaboration among multiple levels and sectors, protection rackets by powerful beings in society, connivance of some traditional authorities and members, poverty, green squeezing, and cumbersome nature of ASM licensing process in Ghana. The study contends on the one hand that laws, policies, and regulations are only as good as their enforcement; whilst on the other hand, enforcement is only as good as the laws and regulations formulated in the first place. The study discusses five policy suggestions that will go a long way to help enforcement of ASM policies and institutions in Ghana.

Keywords: galamsey, illegal mining, artisanal small-scale mining, extractive industry, enforcement, institutions

1. Introduction

Governments all over the world are entrusted with the duty of care to safeguard the environment and natural resources on behalf of their citizenry (Fang et al, 2021; Feng et al, 2021). The notion of environment connotes the whole set of natural or biophysical and man-made or socio-cultural systems in which man and other organisms live and interact together. To effectively safeguard the environment, countries have consequently established institutions and agencies to help protect the sanctity of the environment, its unique resources, and their interactions with the socio-cultural systems (Feng et al, 2021; Aryal et al, 2021; Merino-Perez & Segura-Warnholtz, 2021).

In Ghana, many institutions that underpin prudent natural resource governance of the environment include the Environmental Protection Agency Act (1994); Forestry Commission Act 571 (1999); Forest Protection Decree 1974 (NCRD 243); Forest Protection (Amendment) Law 1986 (PNDCL 142) and the Forest Ordinance (CAP. 157) of 1927. Some of the public institutional agencies which are mandated to enforce these regulations include the Environmental Protection Agency (EPA); Minerals Commission (MC); Forestry Commission (FC); Forest Services Division of the Forestry Commission (FSD); Ministry of Lands and Natural Resources (MLNR); Ghana Chamber of Mines and Water Resources Commission.

Whilst efforts are put in place to safeguard the environment and its sanctity including forest resources, arable land and water bodies, the quest for livelihoods on the part of people puts enormous pressure on the environment which degrades its intrinsic quality and aesthetics. A notorious activity that continues to affect the environment and its resources is artisanal and small-scale mining (ASM), mostly the illegal ones. Mining is an economic activity with

enormous environmental, social, and economic impacts (Crowson, 2009). Globally, it is estimated that approximately 100 million people rely on artisanal and small-scale mining for their livelihood (World Bank, 2013). In sub-Saharan Africa, ASM continues to support socio-economic development by being a source of employment (Hilson, 2016), supporting government revenue in the form of taxes and foreign exchange earnings, and serving as a reliable source of income in many poor rural communities (Banchirigah, 2006; Hilson, 2016; Fisher et al., 2009).

In Ghana, it is estimated that at least one million people are engaged in mining or are beneficiaries in the mining value chain (McQuilken & Hilson, 2016). McQuilken and Hilson, (2016) observe that most of these miners operate informally without a permit and license popularly referred to as ‘’galamsey’’ which will also have implications on their methods, mining procedures, and deleterious impact on the environment (Basu et al., 2015; Bansah et al., 2016). For example, the deployment of mercury in the processing activities contributes to mercury pollution of water bodies; several health and environment-related complications directly coming from mercury usage in ASM which subsequently get emitted, released, or exposed into the environment (Zolnikov & Ramiriz Ortiz, 2018).

It must be established that ASM is not illegal, it has been legalized since 1989 following the passage of several laws including the Mining Law, the Mercury Law, and the Precious Minerals and Marketing Corporation Law to regulate the mining sector. Moreover, the government of Ghana, supported by the World Bank and other partners has embarked on several initiatives to help bring about reforms to formalize and regularize ASM operations (Hilson, 2001).

With these efforts made at regularizing and formalizing activities of ASM which have seen many state agencies and institutions help sanitize the space, the activities of illegal small-scale miners popularly referred to as ‘galamsey’ appear to overwhelm the containment capacities of the state apparatus. More problematic is, that these actors even operate in reserve forests and water bodies which do not only degrade the land but forest and water resources. What accounts for the proliferation of illegal ASM in the era of increasing rules, regulations, and institutions within the sector? It is more of a paradox that the establishment of regulatory mechanisms to regularize ASM operations appears to rather lead to increased illegal ASM, locally referred to as “galamsey” (Carson et al., 2005; Abdulai, 2017). Available evidence suggests that at least 85% of the total labour force operating in the ASM sector do so illegally, with no form of permit and authorization (see Abdulai, 2017) which has also accounted for the widespread environmental concerns including mercury pollution, land degradation, water deterioration, habitat destruction, air pollution, and the destruction of farmland (Boadi et al., 2016; Affum et al., 2016; Bansah et al., 2018). The main objective of this paper is to assess the key concerns that affect the enforcement of small-scale mining laws and regulations which have created a vacuum for illegal operators to infiltrate the space with the associated environmental and social cost implications. The study is organized into five sections, beyond this introduction section two provides a brief literature review on institutional framework and two common perspectives in the enforcement of ASM regulations and laws. Section three of the study discusses the methods and processes used in

carrying out the study. The fourth section adequately discusses the main themes of the key challenges faced in the enforcement of ASM laws in Ghana with a more emphasis on key constraints faced by agencies and officials mandated to implement the laws. The section begins by highlighting Ghana's ASM institutional and regulatory framework and proceeds to assess why despite these well-designed entities and institutions they fail to effectively achieve their goal. The final section provides key conclusions and policy suggestions or pointers on how to navigate around these challenges to help sanitize the system.

2. Literature Review

Theoretical framework

The study is underpinned by the institutional framework which argues for the need for rules, and regulations that are well known, effective, and well-enforced to achieve the target objectives. To Hodgson (2006), institutions connote social rule systems, not just or simply rules (Hodgson, 2006). According to Douglas North (1990) institutions are defined to mean the rules of the game in a society or the humanly devised constraints that shape human interaction (North, 1990). In that regard, institutions help structure incentives in human exchange, be it political, social, or economic. Consequently, the comportment and outlook of the individuals and groups living in society are greatly prejudiced by the explicitly codified rules, and the norms of society which are transmitted through socialization.

A growing body of studies on mining has posited that instituting a formal system of rules could pose constraints to some groups and individuals while favoring others (Yeboah-Assiamah et al, 2019, Yeboah-Assiamah et al, 2017). In other words, formal rules at times pose stringent barriers to entry which may exist for smaller-scale miners, with property application fees and technical requirements only within the reach of larger-scale miners (Siwale & Siwale, 2017). In such cases, pre-existing inequality and exclusion may be effectively reinforced or legitimated by the state through the process of formalization (Geenen, 2012). Those holding communal or customary land titles may meanwhile not be recognized by the state, denying them the right to participate in formal mining (Huggins, Buss, & Rutherford, 2017).

Two common perspectives on environmental regulations and institutionalism

It is generally very difficult to holistically avert all illegal activities against the environment (Albers, 2010). In that regard, an environmental enforcement approach, therefore, is premised on the efficacy and value of enforcement for discouraging those proscribed practices. More effective deterrence implies a higher level of compliance for a given level of enforcement effort (Robinson et al., 2010). Arias (2015) discusses two general approaches to the enforcement of environmental regulations which are *sanction-based approaches*, and *compliance-based approaches.*

The notion of *sanction* is premised on the need to put in place key measures and punitive measures to serve as deterrence. These are also referred to as deterrence-based approaches which are mainly to cause people to have the fear in order not to degrade the environment.

The emphasis is on the punishment or the need to use others as scapegoats.

The idea of *compliance* is also regarded as a cooperation-based approach. Both the sanction and compliance-based approaches are generally structured along with key steps to enforcement, involving detection, interdiction, prosecution, and conviction. Nonetheless, the two approaches tend to be at variance with respect to their major emphasis on the different steps highlighted above. Whilst a sanction-based approach would aim at enforcing laws by coercion and compulsion which is a punitive approach to addressing non-compliant activities by featuring the role of the courts, who enforce the seriousness of offenses via prosecutions and convictions. The goal is that deterrence acts on both levels, namely the individual offenders who will be discouraged from committing further environmental crimes, and the wider public who will be deterred from engaging in such activities due to the threat of punishment (Wellsmith, 2011). On the other hand, a compliance-based approach emphasizes the detection of deviant activity as a key step towards prevention instead of prosecuting offenders. The main thesis of this approach is centered on cooperation, collaboration, and mutual responsibility. The extant literature on enforcement is replete with the effectiveness of sanctions and fines to deter illegal practices (see Becker, 1968; Clarke et al., 1993; Polinsky, 1980; Robinson et al., 2012). Although numerous studies suggest that it is possible to observe a decrease in environmental crimes following the imposition of penalties, other scholars contend that there is limited criminal prosecution against environmental crimes because it is not sufficient to produce deterrence (Lynch et al., 2016). It seems that, while the distinction between the sanction- and deterrence-based approaches is useful for theoretical purposes, in practice most environmental regulatory systems contain some combination of both (Dasgupta, 2000). These considerations thus raise issues of factors that impede effective environmental enforcement and thus undermine deterrence and compliance. Deterrence and compliance perspectives highlight distinct explanations for ineffective enforcement against illegal activities. From a deterrence-based perspective, there are specific factors that hamper the effectiveness of enforcement methods, which include 1) insufficient resourcing, 2) lack of awareness of the true extent of crime, 3) corruption, and 4) crime not being taken seriously by enforcement authorities. Each factor can reduce the effectiveness of enforcement, and different factors may interact to magnify each other's effects (Wellsmith, 2011). From a cooperation-based perspective, it has been argued that enforcement will be limited if 1) it is not backed by participatory actions, 2) it lacks incentives for compliance by relevant stakeholders, 3) it is anti-poor, and 4) it runs against long-term environmental goals (Dasgupta, 2000).

Robinson et al. (2010) note that the literature on fines indicates that initially it was thought that preference should be given to a high level of fine and low probability of detection (as detection is costly). But they stress that more recent literature has concluded that the combination of the lower level of fine and high probability of detection is preferable. Reasons that have led to prefer the latter option include (Robinson et al., 2010): i) high fines may not be politically viable; ii) in the presence of high levels of corruption, high levels of fines may simply result in greater bribe-taking, and iii) fines should be *fair*, which involves taking into account both the social cost of the crime and the capacity to pay the fine. The latter point does

not necessarily imply that fines should be low, given that if the social cost of a crime is high, the fine should also be high. But it does imply that the optimal level of fines for crimes that cause limited social costs, and maybe committed by people with low income (e.g. stealing firewood from a protected area), is likely to be lower than it would be otherwise if fairness was not considered.

In relation to the enforcement agency's objective function, the focus of the literature has mostly been on the maximization of social welfare (which includes returns from illegal activity), and on the maximization of returns from legal activity (Robinson et al., 2010). In the latter case, the enforcement agency considers only the legal benefits that society would receive from reducing crimes. However, illegal activities may contribute to the livelihood of people (who may be even poor) so there has been debate about whether some weight in the objective function should be assigned to illegally derived benefits (Robinson et al., 2010). This debate is relevant to the forestry context, which has seen extensive debate around the question of criminalization of poor people taking products from protected forests, and the differentiation of small-scale illegal logging - carried out to achieve livelihood goals - from large scale illegal logging activities carried out by companies for profit (Tacconi et al., 2016). Robinson et al. (2010) note that whilst the literature has considered giving weight to illegal livelihood benefits, they have not been formally considered by the law enforcement agencies.

3. Methods

This study analyzes existing theoretical and empirical studies to assess why institutions and agencies on artisanal and small-scale mining find it difficult to clamp down on illegal activities. In other words, it sought to deduce from the literature the main implementation challenges to propose some policy interventions to help reduce the activities of illegal miners and to reduce their impact on natural resources such as forests and water bodies. The literature search for the study covered all terms and terminologies as approximately related to artisanal and small-scale mining and institutions: "artisanal small-scale mining", "ASM", "small scale mining", "galamsey", "mining institutions and regulations", ''extractive industry and policies''. In the process, the study combined adjectives related to common obstacles faced in the implementation processes; these words included 'challenges' 'constraints' 'problems', 'setbacks', and 'hindrances' in enforcing policies and institutions in the extractive industry to clamp down illegal activities. Finally, the study also included adjectives related to measures at enhancing the process; these keywords incorporated 'value' 'enhancing' 'promoting' 'successful' and 'effective'. The diverse words together with the notion of small-scale mining and institutions were combined via diverse techniques to obtain a pool of relevant literature on the research theme. Four main search engines were used based on their significance to the study and accessibility to the researchers *Sciencedirect, Springer, Tandfonline, and Google Scholar*. The large pool of articles from these sources was initially sorted for relevance by skimming through their abstracts. After the initial process, all the abstracts were independently reviewed by all authors. At the end of the process, the authors met to eliminate duplicates and made a shortlist of abstracts for detailed and systematic review. The individual themes raised in each article were then categorized to develop the main points in the paper. In some situations, empirical narratives from some of the studies

have also been quoted in this work to show emphasis on the points being discussed.

4. Data analysis and discussion of findings

This section discusses the institutional and regulatory framework underpinning Ghana's management of ASM and more importantly evaluates the efficacy of these institutions and what accounts for the discrepancies thereof.

4.1 Ghana's ASM institutional and regulatory framework

Safeguarding natural resources in the era of mining requires a robust institutional framework that when effectively enforced would help reduce the deleterious impact of mining on the environment. In Ghana, the policies and regulations underpinning the regulation of environmental resources such as forest and wildlife resources, water bodies, land, and air are expected to ensure that no person, group of persons, or entities would destroy environmental resources under the guise of mining or economic reasons. Consequently, the institutional framework includes

Forest and Wildlife Policy (1994) (Amended in 2012); Minerals and Mining Policy 2016; Minerals and Mining Act, 2006 (act 703) and relevant legislation; the Environmental Protection Agency Act (1994); Forestry Commission Act 571 (1999); Forest Protection Decree 1974 (NCRD 243) & Forest Protection (Amendment) Law 1986 (PNDCL 142); Forest Ordinance (CAP. 157) of 1927. These institutions are promulgated or put in place to structure how humans and corporations interact with the environment in ways that will not reduce their inherent or intrinsic quality. For instance, the Forest and Wildlife policy as amended in 2012 forbids ASM in forest zones and water bodies. There are also guidelines underpinning how large scale mining would be regulated in forest areas; the rationale behind the guiding principles is to ensure efficient use of resources; foster effective stakeholder consultation and participation on issues of mining in Production Forest Reserves; Effective administration and efficient disbursement of the 0.6% fees paid by mining companies; Its effectiveness in addressing concerns of local communities and the benefits of local communities from mining in Production Forest Reserves are maximized. Additionally, regulations and guiding principles are put in place to provide a framework for an agreed balance that benefits Ghana, the mining company, and the local community; enables controlled mining, not exceeding 2% of the permissible area of Production Forest Reserves; Provides uniform criteria to address environmental constraints and issues specifically relating to mining within Production Forests and to identify environmental management tools which promote environmental protection and stakeholder confidence.

The key agencies of the state that are tasked to enforce the regulations to structure human interactions with the environment in an era of mining include the Environmental Protection Agency (EPA), Minerals Commission (MC), Inspectorate Division on the Minerals Commission (ID), Forestry Commission (FC), Forest Services Division of the Forestry Commission (FSD), Ministry of Lands and Natural Resources (MLNR), Ghana Chamber of Mines, Water Resources Commission.

4.1.1 Efforts by state agencies at operationalizing the institutional framework: Policy outputs

It should be mentioned that there have been efforts by the state and its agencies aimed at putting into force some of the regulations with the goal of ensuring people comply and abide by the institutions and regulatory framework underpinning ASM and environmental protection. Some of the policy outputs or operationalization include Joint Military/Police, Regional and District monitoring teams; formation of the Rapid Response Unit by Forestry Commission; Recruitment of additional technical field staff; training of professional foresters in the prosecution of forest offenses; Arrest and Prosecution of offenders.

Joint Military/Police, Regional and District monitoring teams, training of professional foresters in the prosecution of forest offenses; Arrest and Prosecution of offenders are efforts that can be classified as the sanction-based approaches which are aimed at enforcing laws by coercion and compulsion which is a punitive approach to addressing with non-compliant activities by featuring the role of the courts, who enforce the seriousness of offenses via prosecutions and convictions. For example, following a public outcry and campaign against ASM, the Government of Ghana issued three weeks moratorium in April 2017 after which it deployed the use of a military approach to weed out all ASM operators. The three-week moratorium was subsequently accompanied by the establishment of a national task force against illegal ASM which became known as “Operation Vanguard” in July 2017 to deal with illegal ASM activities. The task force comprised a joint force of 400 military and police personnel mandated to patrol all illegal ASM sites in the Ashanti, Central, Western, and Eastern regions to apprehend illegal ASM operatives and impound and destroy their mining equipment. The military-style approach reignited the discussion on how best to deal with illegal ASM activities. The task force was able to temporarily cause some operators to abandon illegal ASM sites. The operations of the anti-illegal ASM task force, which involved patrolling illegal ASM sites, arresting individuals, and confiscating, burning, and destroying mining equipment, further removed illegal ASM operators. That notwithstanding, the relationship between that approach and addressing illegal ASM appears convoluted which has made some analysts argue that its superficial nature eliminating illegal ASM operations is not the solution to the issue (Eduful et al, 2020). For example, the authors contend that the anti-galamsey taskforce cannot patrol all the galamsey sites and cannot confiscate and destroy all the mining equipment because of the powerful influence of some politicians and traditional authorities who appear to provide protection rackets to illegal ASM operators. The anti-illegal ASM task force sometimes is compelled to engage in ‘cherry picking’, which is discriminatory and unreasonably causes great havoc to vulnerable galamsey operators who may be rightful community members yet may become the target of anti-galamsey operations whilst strangers would be allowed to operate (Eduful et al, 2020 p. 11).

The recruitment of additional technical field staff and public sensitization on the need to safeguard the environment, on the other hand, is a compliance-based approach that regards deviant activity as a key step towards prevention instead of prosecuting offenders. The main thesis of this approach is centered on cooperation, collaboration, and mutual responsibility.

The above notwithstanding, there are many forces that affect the effective operationalization of these policy interventions. These issues are discussed in the next sections below which throw much light on the implementation challenges and why anti-ASM policies and institutions tend to miss targets and are less effective.

4.2 Constraints in the enforcement process: why the institutions have not been very effective?

The section highlights and discusses the key forces that underpin the implementation challenges. In other words, why is it that amid numerous policies, laws, regulations, and workable practices there are still no appreciable policy outcomes? On the hand, why are there agencies, forces, and institutions mandated to clamp down illegal ASM or galamsey yet the situation has not been properly sanitized? Without effective law enforcement, other policies and approaches to forest management and conservation such as protected areas against illegal ASM, other schemes such as community-based management cannot function effectively (see Börner et al., 2015). The section attempts to explain the challenges that militate against the proper functioning of institutions and those agencies mandated to deal with the menace.

4.2. 1 Allocation of resources

Resource allocation thus refers to the distribution of state resources for enforcement among state agencies at different levels (local, state, and national) and among different sectors (detection, interdiction, prosecution, and conviction). Allocation pertains to the number of personnel dedicated to enforcement, as well as the level of material resources such as vehicles and the extent of application of technologies such as surveillance equipment (Wellsmith, 2011). Ideally, resources for enforcement should be distributed among agencies at all levels and sectors, because that allocation should permit all steps in enforcement actions to occur effectively (Arias, 2015). Addressing the galamsey or illegal ASM calls for the deployment of sufficient resources including financial, human, and equipment required to make the exercise successful. For example, there are many protected forest areas where there are no or few forest guards often without patrol vehicles or gadgets to detect whether illegal miners have encroached on the forests. The few ill-equipped officers become helpless and their lives even become threatened and mostly may want to run for cover. The environmental enforcement literature highlights the prominence of resource allocation for effective law enforcement. In developing regions and frontier areas, environmental enforcement theory predicts that enforcement costs tend to be high because the areas to be patrolled are outsized, problematic to patrol due to the fact that they are compactly vegetated, and the burden on their use is high (Albers, 2010). Enforcement actions thus require careful planning to yield positive outcomes. That in turn requires appropriate allocation of governmental expenditures across levels and sectors. In Ghana, law enforcers in the anti-galamsey field have not been provided sufficient resources to effectively deal with the menace. The resource constraints situation is not peculiar to Ghana but in many parts of the world. For example, in India, enforcement represents approximately 60% of the forest department's budget (Robinson et al., 2010). Lack of technological, logistical, and staffing capacity, a typical governance problem in implementing state regulations (ibid) has been among the primary causes of the poor state of the environment that results from mining operations (see also Crawford & Botchwey, 2016;

Mcquilken & Hilson, 2016).

In Ghana, with its fairly well decentralized small-scale mining governance system, the sector tends to face major capacity and logistical problems that hinder effective compliance in monitoring efforts (Mcquilken & Hilson, 2016). This is a major concern because between 60%–80% of its miners operate informally without the security of licenses which continues to overwhelm state officials (ibid). Some researchers have linked a lack of effective law enforcement capacity to the growing scale of illegal mining activities (Hilson, 2002). Research suggests that a centralized allocation of funds yields under-resourcing at the regional level, which usually may lead to regional enforcement agencies with limited capacities for deterrence, and local miners without incentives for formalization. Previous work in the environmental enforcement literature has highlighted that the design of actions without adequate allocation of funds is only rhetoric (Robinson et al., 2010; Wellsmith, 2011). For example, in an empirical study by Osei-Kojo et al (2016) in the Prestea-Huni Valley, the authors observed that the District Assembly to champion the cause at the local level does not have enough dedicated funds for implementing ASM laws whilst the District Office of the Minerals Commission is also handicapped. A key respondent posited that:

> *The Minerals Commission in the Tarkwa District Office lacks adequate logistics by way of vehicles, and the Environmental Protection Agency lacks the needed human resources to embark on routine checks on small-scale miners. In the case of the District Police Service, the inadequacy of vehicles necessitates embarking on operations with taxi cabs… we are lacking a lot. In terms of mobility and other things, there is only one pickup Toyota Hilux for the whole Tarkwa District which is no small area. We have to manage and handle all those areas including Shama, Daboase through Axim, and Ellembelle…Sometimes my boss takes the vehicle away and there is no vehicle. So where do you go? You cannot go anywhere if he takes the vehicle out".*

In their study, human resource constraints were cited and corroborated by a key respondent at the Tarkwa District of the Environmental Protection Agency. He averred*:*

> *"Human resource is one of the challenges we face. You cannot sit in this "hen coop" here and observe what is happening on the field. Ideally, we require an optimal number of fifteen well-trained personnel to handle this office. Additionally, we need the appropriate protective cover like wellington boots to go to the field since some of the places are swampy. … It is unfortunate that this office is not adequately resourced". (Quoted from Osei-Kojo et al 2016 p. 251)*

4.2.2 Collaboration among multiple levels and sectors

A major challenge that militates against the effective implementation of illegal ASM institutions has been the lack of coordination and poor collaboration among the numerous and relevant state agencies that have stakes in enforcing aspects of the institutions (Adu-Baffour et al, 2021). For example, as highlighted in section 4.1 of this paper, numerous state agencies are charged with enforcing ASM policies and regulations, and mostly enforcing one policy may cut across different state agencies. Given the number of enforcement agencies involved,

effective enforcement requires strong collaboration among those agencies, which occupy different levels and sectors. There are reports of low collaboration among enforcement agencies (Adu-Baffour et al, 2021. In many cases, there is a lack of collaboration among enforcement agencies across levels and distinct sectors. In the worst case, there is not just a lack of collaboration but conflict and jostling for power and jurisdiction which tend to render the process very porous.

However, most of the enforcement literature rarely incorporates layers of jurisdiction into the analysis. In cases where levels of scale are differentiated, previous work typically only distinguishes between two levels: the national government level where legislators, executives, and agencies set the rules, and the local level where law enforcement entities work to detect illegal activities (Robinson et al., 2010). However, there are additional levels that define jurisdictions for enforcement, notably the regional level. Because of the multiple levels of state entities that make up the state's enforcement apparatus, and because there are different mechanisms for collaboration, there is a potential for conflicts among state agencies and with other social actors. This is knotty because clashes among enforcement agencies may distract from the enforcement mission and thereby undermine enforcement effectiveness (Dasgupta, 2000).

4.2.3 Protection rackets by powerful beings in society

Field officers are authorized to provide technical support services and/or impose sanctions on operators who deviate from norms and standard operating procedures of small-scale mining. In Ghana, there are many constraints faced by implementing officials or staff coupled with poor, technological and logistical capacity. Yet when these officials try against all odds to detect, confront and arrest culprits, the latter will who are sometimes supported by powerful characters and forces within the government and society will be made to go scot-free. In many cases, the law enforcers at the local level have become helpless due to the apparent lack of political will on the part of 'powerful forces' in society who always would want to frustrate all efforts made by field officials. In a discussion with an environmental non-governmental, a key respondent explained:

> *"When you really go down to the mining issue, you will realize that, there are always these small groups of people, backed by powerful individuals, and even though the particular mining that they want to do is not the priority land use option preferred by the majority of people, they get their way through*

This is confirmed by an empirical study by Osei-Kojo et al (2016) in the Presta Huni Valley who observed that:

> *In this regard, an officer of the Mining sub- Committee within the District Assembly explained how political elites exploit the status quo by either interrupting arrests of offenders or aiding wrongdoing. He explained that: "You see, ineffective implementation of the laws is blamed on the 'big men', the politicians. The reason is when you attempt to take action you will realize that some of these 'big men' are behind it through the financing of their operations because they also benefit.*

Sometimes also you plan to take action with some 'big men' and they will go and leak arrest information". (p. 252)

Sometimes state regulators may technically be prohibited from accessing illegal mining concessions to offer technical support and training. Some of these illegal operators were identified as having the backing of certain powerful government officials.

The politicization of the implementation process where politicians go back on the strict application of the law in their quest for political power because a harder posture is likely to lessen their popularity which may negatively affect their political chances especially if it is closer to elections (Teschner, 2012). Further, politicians are usually dominated by the President's and Member of Parliament's (MP's) tendency to be loyal to their party (Ayee et al, 2011). Hence, the political will needed to facilitate the implementation of ASM laws is usually taken for granted in the interest of political expediency.

Meanwhile, it is a combination of effective law enforcement and political will have made some of the advanced countries what they are today. For example, the success of the mining industries in Australia and Germany has been largely attributed to strict compliance with mining and environmental regulations due to well resourced, modern, and active monitoring structures (see Kuter, 2016; Mineral Council of Australia, 2017).

4.2.4 Indiscretion on the part of security officials and judiciary: No zeal to enforce

In many cases, it has been reported that the decision to cause arrest or to blink an eye at whatever may be happening in forest areas mostly depends on the discretion of the security forces who choose to do what they regard as best and feasible at any moment in time. Community members mostly report the activities of illegal miners to the security forces yet no action gets done. There have been situations where police vehicles or patrol cars will be policing an area or a parcel with people engaged in illegal ASM yet the vehicle may not even stop to interrogate what may be happening on the field. Perhaps this may be due to frustration on their part caused by 'powerful entities' in society or they may be compromised by the galamsey operators. There may also be situations where the police officers may go ahead and cause the arrest and further prosecute these illegal mining operators yet the judicial system may tend to frustrate the process. One of these or a combination makes the zeal to enforce illegal ASM institutions very challenging which over time may embolden perpetrators whilst others may be compelled to join the bandwagon.

4.2.5 Connivance of some traditional authorities and members

A major force that tends to affect the effective implementation of mining policies, laws, and regulations to clamp down on illegal ASM has been the role played by traditional authorities who act in concert with other members of society to perpetrate the act. In Ghana, the land tenure system is such that most lands belong to families and traditional authorities. Even where the land belongs to families, the respective chief has overall authority over the lands. There are visibly reports of situations where chiefs themselves are either engaged in illegal ASM or have connived with members of society to continue with the act. When this happens, it becomes difficult for the law enforcers who are also regarded as 'subjects' to effectively

call them to order, after all, the chief may claim the land is his, meanwhile, per the laws of the land, all mineral resources are to be held in trust by the President of the country and also has the duty to safeguard natural resources. What makes the situation more challenging for local law enforcers is that they have been encouraged to adopt a more collaborative and stakeholder approach in addressing local concerns, the chief is a very powerful stakeholder who is engaged and consulted on major issues and difficulties faced by the law enforcer, therefore, if he is part of the menace the task of the law enforcer becomes very daunting and tends to walk on a very tight rope. In a study by Osei-Kojo et al (2016) in the Prestea-Huni Valley, the authors observed from a field officer in Tarkwa that:

> *'' "Some of the stakeholders like chiefs also contribute to the challenges. Let me give you an example; some chiefs take money from galamsey guys in exchange for land. As a result, such chiefs cannot stop the galamsey operations in their community".*

4.2.6 Poverty, green squeezing, and subsequent citizens' poor attitude towards the environment

In many cases too, some people have poor attitudes towards the environment and fail to see the intricate relationship between human life and that of nature. Some people take for granted the life support services human derives from the natural environment such as clean oxygen, and freshwater among others. They tend to show little concern or regard for the environment such that they tend to destroy the intricacies of the environment.

Sometimes too, a school of thought would argue that socioeconomic hardships such as poverty and unemployment compel people to engage in actions that may appear they are against the environment but it is so for survival reasons (Zolnikov, 2020). These people sometimes do complain the cumbersome nature of the legalization process makes them frustrated because the laws and their requirements tend to crowd them out of the ASM space. Bersaglio and Cleaver (2018) have proposed that the tendency for environmentally-oriented policy agendas to disadvantage poorer miners could be considered a ''green squeeze" (see also Brockington & Ponte, 2015). Teschner (2012) contends that the application of ASM laws is weakened as a result of the loopholes in the institutional framework or legal framework itself, which breeds a higher mark of political leniency and corruption in the application of ASM laws. Corruption in the implementation process, therefore, creates the opportunity for miners to operate illegally (Blunch, Sudharshan, and Dhushyanth 2001).

Probably, the fact that gold buyers from the Precious Minerals Marketing Company (PMMC) make no distinction between legal and illegal gold on the gold market is one loophole in the small-scale mining law that has to be addressed; the problem is that gold from legal and illegal miners enjoys the same competitive price in the gold market.

Per the Minerals Commission, acquiring a mining license typically ought to take three months on the condition that the applicant has satisfied all requirements. Although there may be delays at times which may be borne out by an applicant who may not fill the application forms properly or fails to honour requirements. Although Mineral Commission has district offices in the country, its task is to assist prospective miners to go through the licensing

processes effectively and to help step up the process. However, the district officers do not have the power to issue licenses, a right exercised by its head office in Accra. The process of acquiring an environmental permit could also take a month or more depending on the anticipated level of the environmental and social impact of the project by the EPA as well as permitting requirements.

The environmental permits can only be issued at the EPA head office in Accra even though the processes begin at either the regional or zonal offices. After securing both mineral rights and environmental permits (which come with water use rights) an applicant must then apply for an operating permit to begin operating. This involves submitting a mining operating plan, together with all other permits acquired and the payment of permit fees. These challenges may people to operate on the fringes hence increasing the number of illegal operators (see Lara-Rodríguez, 2021 for a similar case in Choco, Colombia). In an informal discussion with a stakeholder within the ASM value chain, he explained:

> *Overall, the inferences made from the process net mapping exercise and from interviewing respondents indicate that, if all conditions are met accordingly, an applicant requires between 4–6 months and around US$ 3,600 (or more after considering payment to landowners) between the period of identifying the prospective mining area of 25 acres and operating as a licensed miner. Unlike large-scale miners who are required to post reclamation bonds before being issued with relevant permits to begin operations, the law exempts small-scale miners from posting such reclamation bonds.*

Instead, regulators request for a detailed environmental assessment report and operation plans to be submitted as a requirement for license acquisition. Applicants who are permitted or licensed to operate are expected to strictly stick to these submitted operating programs and post-mined land rehabilitation plans. In many cases, however, compliance with such proposed plans is not followed in practice without strict and regular monitoring

The notion that institutional mining reforms disadvantage miners also connects to a broader ASM literature that has explored the role of governance measures in contributing to poorer miners' exclusion (see Fisher, 2007; Maconachie & Hilson, 2011; Geenen, 2012).

Be as it may, the issue remains clear that many people show less care for the environment and perhaps they are moved by the paradox of the common where everyone is forcing himself to increase his herd which in the end would lead to a common disaster for everyone. Poverty makes the cost of compliance with forestry laws very high, that is, it reduces compliance rates (Robinson et al., 2010; Ostermann, 2016). If compliance costs can be reduced – for example by providing access to alternative sources of forest products from community forests

5. The way forward? Conclusions and policy suggestions

Laws and regulations are only as good as their enforcement (Bullard, 2002) and the converse is also true: enforcement is only as good as the laws and regulations formulated in the first place (see Espin & Perz, 2021). Clear rules with achievable goals and provisions are needed to implement strategies and practices of enforcement (Sundari et al, 2004). Such clarity

would in turn strengthen enforcement, which in principle would produce an improvement in compliance. This section provides and discusses key measures to enhance the enforcement of mining laws and regulations which will help reduce illegal ASM or galamsey in Ghana.

Political will

From the challenges mentioned above, it is evident that most of the challenges can easily be addressed where there is a political will and commitment to deal with illegal ASM. There should be a sustained commitment on the part of the government, and security forces to be firm and resolute in bringing all perpetrators to book which instigates the deterrence aspect of enforcement. This will reduce the growing number of illegal ASM operators. Political will is also relevant as it will make leaders commit relevant and adequate resources which will be channelled to efforts at clamping down on illegal ASM in the country.

Interagency collaboration

The second factor is related to collaboration among enforcement agencies. Since multiple levels and sectors of the state are required for effective enforcement, collaboration among agencies is key. It is necessary to pay attention to the levels of coordination and conflict among agencies to understand the effectiveness of law enforcement (Robinson et *al*, 2010). The lack of inter-organizational collaboration and the existence of conflicts among agencies together result in low effectiveness of enforcement mechanisms (Adu-Baffour et al, 2021). Joint exercises, joint training, and institutional capacity building on the need for collaboration to achieve a superordinate or overarching goal of natural resource protection should be instilled in state officials and agencies irrespective of where they find themselves. The tendency to regard themselves as silos and other sister agencies as 'they' or competitors should be discouraged and a new civic culture should be promoted.

Institutional capacity

Many individuals and groups engaged in illegal ASM tend to be very sophisticated in their approach and how they even outsmart the system sometimes with the use of technology and other android devices which may at times go undetected by traditional law enforcers and mining officials. It is therefore important to regularly build the capacity of the field officials to know the state of technology and art in the field of mining, the changing modus operandi of these illegal miners, and how to even detect if land or soil, or water quality is compromised. More importantly, they need to be given improved gadgets to be able to detect encroachers even from a far distance so that they can prepare very well and match them well. It was mentioned that sometimes these illegal encroachers or miners go into operations fully armed and may injure legitimate state officials who are enforcing the rules of the game. It is therefore important to build the capacity of the latter by giving them supportive gadgets and equipment as well as a skillset to remain safe and perform effectively.

In many cases where the staff is not adequate, it is only right that additional officers are recruited and given the requisite training to equip them with the needed staff strength and skill set to deal with the issues. Day in and day out the number of galamsey operators is increasing yet the officials in charge of ensuring these activities are stopped are not adequate

to match the growing galamsey operators. The ratio is not anything to write home about, for example, if a forest guard is to police or patrol a vast hectare of forest or protected forest without the necessary logistics, what practically relevant thing can such an individual do?

Job creation through alternative livelihood programs

It is a well-known fact that many youths in the rural communities mostly do not have jobs and are not in any productive activity. Consequently, people tend to engage in illegal small-scale mining for bread-and-butter purposes. In order to address the menace, it is important to engage the youth in meaningful and productive ventures including alternative livelihood programs which are well structured and not just an event. In Ghana, there have been some "alternative livelihood projects" introduced to diversify the economy for populations who rely on economic gains from gold mining (Hilson & Banchirigah, 2009). Programs of this nature need to be encouraged and the necessary forward linkages and resources for startups need to be provided to help those youth who go through these training programs otherwise the process becomes just an event and people will revert to their old lifestyle. These programs need to be evaluated to see the number of youths who went through those training programs and how well they have been supported to put into practice what they learned.

Licensing regime and resource allocation

Many local illegal ASM do complain of the bureaucratic bottlenecks they go through in their attempt to register and engage in legal ASM. Some of these procedural challenges coupled with the unnecessary delays and sometimes extortion compel them to engage in galamsey or illegal ASM which is the type with no permit or authorization. Most mining operators (both licensed and unlicensed miners) in a study by Eduful (2020) pointed out that the process of acquiring a license (mineral rights, environmental permits, and operating permits) usually takes a long time and requires having to chase after one's application which goes through a chain of bureaucratic channels in Accra. These long bureaucratic processes make it difficult for local entrepreneurs who typically may have low levels of education and at times the English Language is a problem for them. This hurdle coupled with other accompanying expenses, including making reparation payments to landholders, and informal payments made to various actors along the chain, provides a disincentive for prospective miners to follow the legal route. There are also cases where foreign investors with enough capital use locals (who lack such capital) to acquire formal licenses, which these foreigners use to operate illegally. In the study by Eduful et al (2020), a field officer from the local government in a mining district averred:

> *"If I had any advice to give to the government after working with ASM in this district, it would be that they should not delay the process of making the mining certificate available for miners, because they (miners) usually go straight to digging after requesting mining certificates, and, realizing it will take a long time…someone else can take the land and mine it" – (quoted from Eduful et al, 2020)*

This also resonates with a submission made by a chief (quoted in Osei-Kojo et al 2016) in

Tarkwa regarding the cumbersome nature of the licensing regime and how its decentralization will help ease some of the burdens. He averred:

> *"Let us take, for example, I am in Prestea and I want to start small-scale mining. Even though the process starts at Tarkwa, it ends up in Accra. If you ask me to go to Accra to finish the process–you know I do not know there, I do not know where the Minerals Commission is, I do not have money to pay for a hotel so I can pass the night there while waiting for approval. So, if there is one stop office at Tarkwa where everything will be done it will help instead of having to travel back and forth to Accra".*

Some of these bureaucratic bottlenecks can be taken off the necks of people by streamlining the registration and permitting process. If some of the requirements can be waived off to encourage many of them to come forward to be effectively regulated, this will provide a win-win gain. This also has implications for the need for cross-sectoral collaboration such that if the EPA, Minerals Commission, Forestry Commission, and those relevant state agencies whose mandate have relevance for ASM, their registration, control, and natural resource governance.

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