

Compliance and Enforcement in Environmental Management: A Case of Mining in Ghana

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Environmental regulatory agencies are an important element in regulatory policy design and its implementation. In this regard, it is incumbent on them to enforce and monitor environmental regulations, as increased monitoring and inspections can increase compliance. The research presented here has identified a number of factors that impede effective monitoring and enforcement by environmental regulatory institutions in Ghana. I also propose that direct external control and the threat of punishment by regulatory agencies are not the sole mechanisms that motivate regulated organizations to work toward the attainment of environmental goals and objectives. In some instances, regulated organizations implement a policy of voluntary compliance in the service of their committed objectives. Furthermore, the watchdog behavior of local communities plays a crucial role in sensitizing mining firms about the impact of their activities on the environment. In this study, in addition to voluntary compliance, traditional authorities and other informal organizations have been effective in controlling and ensuring environmental compliance by mining organizations.

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Ghana has a long history of mining. Long before the arrival of the Europeans in 1471, the country was noted for its gold production, which continues to dominate the mining scene. Gold production increased steadily over the years and reached a peak of 960,000 ounces in 1960, after which a consistent decline was experienced until 1984, when only 282,299 ounces were produced (Adadey, 1997).

In an effort to reverse the steep deterioration in the national economy, an Economic Recovery Program was launched,

with the assistance of the World Bank and the International Monetary Fund, in the early 1980s. Because of the strategic contribution of the mining sector and its enormous potential, it was singled out for special attention under the Economic Recovery Program. To achieve the long-term objective of attracting new investment into the mining industry, new minerals and mining laws were enacted, which provided for the streamlining of mineral licensing procedures and a favorable fiscal and financial regime (Government of Ghana, 1986). As a result of the attractive investment climate, mineral production and contribution to gross foreign earnings of the economy have been significant. Between 1995 and 1997, more than \$2 billion (US) was invested in the mining sector by about 127 local and 98 foreign mining companies, which were issued prospecting and mining licenses during the period (Abugre and Akabzaa, 1997).

The economic and financial gains of the mining industry could easily be offset by ecological costs, due to mining's adverse effects on the environment. The deleterious impacts of mining include land use conflicts, social dislocation, land degradation, visual intrusion, loss of water quality, reduction in air quality, noise nuisance, and blast-induced vibrations.

Research Problem

With the launching of the Economic Recovery Program in 1983 to reverse the deterioration of the national economy through macro-economic reforms, the mining sector attracted a massive inflow of foreign investment, which had declined by 80% between 1972 and 1982 (Iddrisu, 1992; Institute of Statistical, Social and Economic Research, 1997). This investment was due to the attractive incentives in the sector, which included tax holidays on machinery and equipment, tax rebates, and liberal profit-repatriation schemes.

The increased investment and interest in mining have correspondingly affected the environmental problems associated

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with the industry (Government of Ghana, 1995). It is estimated that the environmental degradation associated with mining costs about 4% of the Gross Domestic Product of Ghana, which is almost equivalent to the annual economic growth rate (Government of Ghana, 1995).

The environmental problems associated with mining had become so intense that in 1997, the chiefs and people of the Wassa Fiase Traditional Area in the Western Region of Ghana went on a street demonstration to register their protest against the “wanton and consistent” environmental abuse by mining companies in the area (Daily Graphic, 1997b).

In the face of the glaring and serious environmental damage caused by mining operations, there is also evidence that some mining companies are zealously adhering to their environmental plans and approved national standards. Their positive performance is hardly influenced by the apparent lack of effective monitoring and enforcement capacity of regulatory agencies.

This article therefore attempts to answer the following question: What accounts for the satisfactory environmental performance of those mining companies in Ghana that operate without effective monitoring of their activities by regulatory agencies? The article uses Teberebie Goldfields Limited (“Teberebie”) as a case study for an in-depth and thorough investigation. It is anticipated that the findings can serve as a basis for recommendations and suggestions to improve administrative control over the environmental practices of mining companies, and for further studies in related fields.

Methodology

The study employed a mix of types of primary and secondary sources of data. Open-ended interviews were held with officials selected from each of the following organizations: Ghana’s Environmental Protection Agency, the Mines Department, the Minerals Commission, the Ghana Chamber of Mines, Teberebie Goldfields Limited, and SGS Environmental Management Limited (environmental audit consultants). The open-ended interviews sought to obtain an overview of how regulatory institutions conducted their monitoring activities. Open-ended questions normally force people to reflect and speak at length on issues, as they cannot answer with a simple “yes” or “no.” The choice of this category of respondents was influenced by the scope of their work, which covered the subject under investigation, as well as the study area (Tarkwa). In all, 30 respondents were interviewed from this category.

In addition to the 30 respondents identified above, 25 other selected opinion leaders were interviewed. They included a chief, an assemblyman (somebody elected to represent a local electoral area), and a youth leader. The remaining 22 respondents were made up of a cross-section of the local community, including environmental activists and journalists, teachers, and other local citizens who were randomly selected. A further 13 employees of Teberebie were selected for interview.

Three personal visits were made to the mine site of Teberebie for first-hand observation of the environmental situation. Specific activities undertaken during the visits included the observation of the effectiveness of Teberebie in performing the following functions:

- Air and water quality monitoring;
- Regarding blast disturbances, the use of InstanTel DS-477 Blastmine II Seismology to record peak velocity, frequency at peak velocity, ground acceleration, and ground displacement in the vertical and longitudinal planes;
- Land reclamation;
- Sediment control; and
- Fuel spillage control.

Samples of potable water from the distribution system were taken for residual chlorine analysis, and inspections consisting of visual and olfactory assessments of the quality of discharges from the sewage treatment plant were undertaken.

Other sources of data were official records, files, and documents, which included monthly and annual environmental reports, environmental audit reports, newspaper articles, and other sources.

Monitoring Performance

The nature of monitoring and enforcement activities performed by environmental regulators no doubt determines the extent of pollution control undertaken by individuals, organizations, and plants, and their level of compliance with environmental regulations. Russell (1990) defines monitoring as “checking up on whether those covered by the law and regulations are doing (or not doing) what is required of (or forbidden to) them.” Enforcement is also defined as “taking actions that force violators to mend their ways and to provide visible examples to encourage others in the regulated population to maintain desired behavior to avoid a similar fate” (Russell, 1990).

Dion, Lanoie, and Laplante (1996) explain that if compliance with the terms of regulations imposes any net cost on a com-

pany, its behavior is likely to diverge from the desired one unless the cost of compliance is smaller than the expected cost of noncompliance. Penalties for noncompliance may take various forms including legal fines, loss of reputation, and so on (Deweese, 1990; Hamilton, 1995; Lanoie and Laplante, 1994).

It has been increasingly recognized that resources devoted to the monitoring of organizations and the enforcement of environmental standards may be insufficient (Russell, 1990). Russell writes, "What is missing is a commitment of resources to checking up on whether those covered by the law and regulations are doing (or not doing) what is required of (or forbidden) them." The regulator, therefore, has to allocate limited resources to perform a small number of compliance activities. Silverman (1990) explains that because of limited resources and the resulting need to establish priorities, environmental regulatory agencies have to develop compliance monitoring plans and enforcement response policies. These strategies "generally direct the most intensive efforts to those segments of the regulated community most likely to be in non-compliance" (Silverman, 1990).

In the above context, the use of the word "generally" takes on a special importance since it represents an implicit recognition that universal compliance may not be the objective of the regulator (Dion, Lanoie, and Laplante, 1996). In other words, not all regulations require the same level of compliance verification, and thus a "target-oriented approach" may be adopted (Republic of Canada, 1992).

The consequences of ignoring monitoring and enforcement can be disastrous for environmental quality and for social welfare. If a regulatory agency imposes a strict regulation but noncompliance is rampant, it is possible that the ultimate result will be more pollution (Cohen, 1998). Alternatively, ignoring monitoring and enforcement costs might lead the government to implement a policy that is ultimately more costly (once monitoring and enforcement costs are considered) than one currently in existence (Cohen, 1998). As McKean (1980) points out, high enforcement costs and imperfect compliance make regulations less effective than desired. Thus, monitoring and enforcement concerns should influence choices about how to regulate and, in some instances, about whether to regulate at all (McKean, 1980).

Why Firms Comply

Cohen (1998) has conducted a comprehensive literature review on monitoring and enforcement of environmental policy. According to him, any study of government monitoring

and enforcement policy must examine the basic understanding of firm behavior. He explains further that an obvious economic reason for compliance is that firms respond to both positive and negative incentives. If expected penalties are sufficiently high, the threat of being punished for noncompliance may be an adequate reason (Cohen, 1998). However, as Harrington (1988) and Russell, Harrington, and Vaughn (1986) note, government's monitoring activities are often quite limited. Moreover, even if discovered to be in noncompliance, fines are often low. For example, Cohen (1998), using data from Lear (1998), notes that the median administrative fine imposed by the United States Environmental Protection Agency (USEPA) in 1995 was \$4,000, the average fine was \$10,181, and the maximum fine was \$125,000.

Although it is possible that firms comply with environmental laws because of the threat of being placed on the enforcement agency's target list, this is unlikely to be the sole reason for compliance (Cohen, 1998). Downing and Kimball (1982) argue that industry might want stringent regulation as an entry barrier to new firms. Although this is possible, it is not clear how this explains compliance (Cohen, 1998). Downing and Kimball note that risk aversion might help explain compliance.

Finally, Downing and Kimball (1982) raise the possibility that managers care about their corporate image, a hypothesis they claim is supported by survey evidence. Recent surveys that provide some evidence consistent with this claim can be found in Zerbe (1996) and Doonam, Lanoie, and Laplante (1998).

The role of community pressure and other forms of informal sanctions are explored in Arora and Cason (1996), Brooks and Sethi (1997), Konar and Cohen (1998), and Pargal and Wheeler (1996). These papers generally find support for informal community pressure and social norms playing important roles in emissions and/or compliance. As Pargal and Wheeler (1996) note, however, the ability of communities to play this role appears to correlate with an increase in community income and educational levels.

Cohen (1998) credits Burby and Paterson (1993) with providing a good introduction to the non-economic environmental compliance literature. They (Burby and Paterson) note that successful enforcement depends on the "capacity" and "commitment" of the regulated parties. "Capacity" refers to having knowledge of the rules and technologies; this is analogous to ensuring that the potential violator has adequate information and the financial ability to comply. The "commitment" to comply is determined by factors such as deterrence, remuneration, moral reasoning, and group identifica-

tion. The first two factors are the incentives (punishments or rewards) facing the decision maker, whereas the second two factors are a reliance on social norms (Cohen, 1998).

Enforcement is an important element of regulatory policy design. Increased monitoring and inspections can increase compliance. However, compliance does not occur in a vacuum, and understanding the motivations and incentives of both polluters and enforcement agencies should be an important component of any study of enforcement (Cohen, 1998).

Mining and Environmental Guidelines

To address the potential environmental problems associated with mining, the Minerals Commission, in collaboration with Ghana's Environmental Protection Agency (GEPA), prepared the Mining and Environmental Guidelines in 1994. The primary objective of the Mining and Environmental Guidelines is to preempt permanent environmental damage by mining companies, in order to promote sound environmental stewardship (Ghana Environmental Protection Agency and Minerals Commission, 1994). In order to achieve this objective, mining companies have to demonstrate that their activities have been planned in an environmentally sensitive manner and that appropriate preemptive or mitigating measures and safeguards have been integrated into the project design. In addition, mining companies are to identify environmental problems caused by past and present mining operations and nominate environmental objectives for future mining operations and to mitigate the effects of past operations. Finally, they are required to identify works, costs, and schedules to achieve those objectives.

An underlying conviction of this policy statement is that the most successful and cost-effective environmental controls are those that are integrated into project planning from its inception. Accordingly, new mines are expected to conduct environmental impact assessments to ensure that modern, preemptive environmental controls are built into the design of new mining projects during the planning phase. However, in the case of mines existing before the introduction of the Mining and Environmental Guidelines, mines are to prepare Environmental Action Plans to be implemented alongside production. One unique feature of the Guidelines is their avoidance of setting environmental standards, which is a task deferred to GEPA.

The Mining and Environmental Guidelines outlines requirements for mining, mineral processing, and decommissioning. Consequently, all new mining companies that cover at

least ten hectares of land surface are required to submit Environmental Impact Statements to GEPA, with copies to the Minerals Commission and the Mines Department of the Ministry of Mines. All commitments made in the Environmental Impact Statement are to be honored, except where the GEPA gives exemptions.

With regard to social dimensions of the guidelines, mining firms are obligated to pay compensation of not less than the rates set by the Land Valuation Board for damage to land, land use, and structure. In addition, the firms are expected to prepare decommissioning plans as part of the impact assessment and/or Environmental Action Plan, at least two years before the planned abandonment of the project. The plans should indicate the end use of all land and buildings/infrastructure, and describe the fate of all fixed equipment.

The Mining and Environmental Guidelines, together with other legislation, is the product of intense collaborative work between regulatory agencies, mining companies, and research institutions, for the common purpose of protecting the environment alongside mineral exploration and exploitation.

Environmental Action Plan of Teberebie Goldfields Limited

Teberebie Goldfields Limited ("Teberebie") was formed in 1986 to explore a concession near Tarkwa in the Western Region of Ghana (see Figure 1). Following a successful exploration program, a mining license was granted in 1988. In 1990, an environmental impact assessment was prepared (and updated in 1993) to support the initial construction and expansion activities, as required by regulations at the time. In 1995, an Environmental Impact Statement was prepared for the third expansion (Phase III) project, which stimulated the preparation of the Environmental Action Plan of 1998.

To demonstrate its commitment to maintain environmentally sound mining operations and the health and safety of its workers and the local people within and outside its concession, Teberebie has proposed to conduct its operations in compliance with "all Ghanaian laws, including environmental, health and safety regulations" (Teberebie Goldfields Limited, 1998). In instances where these laws do not fully address situations specific to heap leaching,¹ Teberebie proposes "to follow World Bank guidelines and accepted North American practices" (Teberebie Goldfields Limited, 1998). This may, however, have the potential of being culturally insensitive and could likely be a source of abuse.

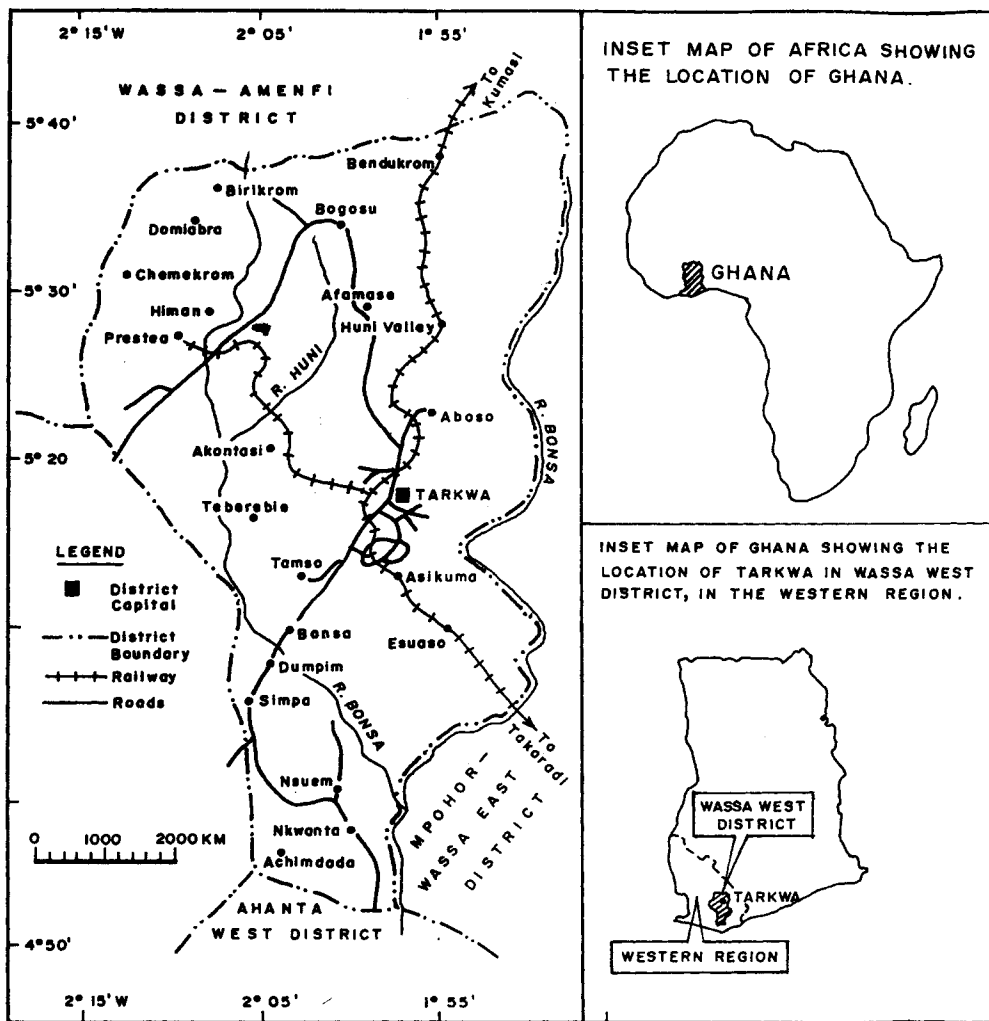


Figure 1. Wassai West District: the hub of mining activities in Ghana. (Source: Survey Department of Ghana—Accra.)

It is the policy of Teberbie to incorporate environmental issues and factors into planning and management operations to minimize adverse impacts on land, air, water, and human settlements. According to Teberbie, facilities will be designed and operated in a manner that will minimize environmental accidents as well as maintain response procedures and equipment in a ready state, should an emergency situation arise. Upon conclusion of mining activities, the site will be decommissioned in a manner consistent with all permits and laws, and left in a safe condition that will support long-term productive use. Performance in achieving these and other environmental goals is measured by monitoring and through both internal and external audits.

For proposing to adopt World Bank and North American standards in some instances, the company recognizes implicitly the possibility of “gaps” in the existing guidelines and laws, and “voluntarily” adopts the “self-reporting approach.”

Self-reporting is a substitute for government monitoring efforts that reduces enforcement costs without compromising deterrence. Although many environmental regulations involve self-reporting, the extent to which this mechanism is used varies considerably by program (Malik, 1993). Many environmental laws have self-reporting requirements, but Teberbie, in this case, is not directly responding to any such laws.

The company’s Environmental Action Plan seeks to protect both the health of mine workers and of residents in and around the concession, through the monitoring and comparison of ambient air quality against GEPA and World Bank/North American standards. As part of its policy, the company proposes that particulate matter be monitored at points of public access, to assess whether sensitive receptors are being exposed to significant concentrations of dust generated as a result of mine operations.

Teberbie will handle water quality issues by monitoring compliance with GEPA standards. Furthermore, Teberbie proposes that existing heap leach pads and ponds be expanded in line with increasing volumes of ore processing. The company says it is fully committed to monitoring the level and effects of blasting and sedimentation, and adhering to reclamation activities.

By outlining these and other activities in the Environmental Action Plan, Teberbie has satisfied at least one of the criteria for good management of the environment. The Environmental Action Plan captures all major concerns raised in the Mining and Environmental Guidelines prepared by the Minerals Commission, the GEPA, and other partners in the mining industry. It is left to the regulatory agencies to monitor Teberbie for compliance.

Institutional Control

For purposes of monitoring and the enforcement of environmental legislation and policy, a number of regulatory agencies have been established in Ghana. The GEPA plays a pivotal role in this endeavor. Other equally important regulatory institutions in the mining sector include the Mines Department, Minerals Commission, and to a limited extent, the Ghana Chamber of Mines. The goal of these agencies, like their counterparts in other parts of the world, as explained by Garvie and Keeler, is to achieve enforcement levels of compliance within their given enforcement budgets (Garvie and Keeler, 1994).

Ghana's Environmental Protection Agency

The study observed a complex interplay of factors that militated against the enforcement and monitoring efforts of the regulatory agencies. In the case of GEPA, the major causative factor was inadequate personnel.

The GEPA advises the Minister for Environment on the formulation of policies on *all* aspects of the environment, and in particular makes recommendations for the protection of the environment. It also coordinates the activities of bodies concerned with the technical or practical aspects of the environment, and serves as a channel of communication between such bodies and the Ministry of Environment. In fact, the GEPA is the foremost environmental regulatory agency in Ghana that has the power and authority to appoint inspectors who can enter *any premises* for the purpose of ensuring the protection of the environment, hence GEPA's role in mon-

itoring mining operations in Tarkwa and other parts of Ghana.

With 18 mining companies in the Tarkwa area, most of which were engaged in surface mining, it was impossible (for the one mining engineer stationed at Tarkwa) to enforce regulations and monitor mining operations with any degree of completeness. Significantly, the GEPA conducted only one inspection on the activities of Teberbie within a period of two years (1999–2000). Even then, the thoroughness and effectiveness of the inspection exercise was perhaps seriously compromised. As explained by the National Academy of Public Administration (1994), local regulatory officials are more subject to the influence of economically important local constituents (such as major local employers), and are generally less open to sharing information, than central government officials. Burby and Paterson (1993) also assert that there is less stringent enforcement and compliance with local government monitoring. However, “local enforcement” has the advantage of being familiar with facilities (and individuals within), and is more likely to gain the cooperation of local managers (Cohen, 1998).

The study also observed that the GEPA has only one major laboratory for the analysis of data received from more than 200 mining companies in Ghana. This situation itself imposes limitations on the number of sample analyses that can be done in a year.

Furthermore, in the area of reclamation and revegetation of disturbed lands, GEPA has not set targets in terms of acreage to be reclaimed or revegetated by Teberbie (and other mining companies). The rate and quality of reclamation and rehabilitation of mined-out land is at the discretion of the company. The same situation exists for recycling and disposal of waste materials. For effective monitoring of performance, GEPA should be able to at least measure in quantitative terms the amount of waste generated against the amount being disposed of.

The Mines Department

The Mines Department, for its part, was set up to monitor the operations of mining companies in order to reduce the incidence of death, injuries, illness, and hazards in mining areas. The major orientation of the Department is toward safeguarding the health and safety of the mine workforce and the general public against environmental pollution from the operations of mining companies. The Tarkwa inspectorate of the Mines Department has inspection responsibility over

Teberebie. In 1999 and 2000, 19 and 21 inspections, respectively, were conducted on the company.

Quantitatively, these inspections look quite impressive. However, the study identified some constraints that render the operations of the Department ineffective. First, the laws from which it derives its mandate have been found to be inadequate. The Minerals and Mining Law of 1986 (Government of Ghana, 1986) gives a narrow scope of function to the Department: health and safety concerns. Environmental issues are not explicitly stated. Besides, the Department relies on Legislative Instrument 665 (Government of Ghana, 1970b) and Legislative Instrument 666 (Government of Ghana, 1970a) to carry out some of its duties. These instruments, which were passed in 1970, do not address specific surface mining concerns (a recent development in the mining sector).

A second major problem confronting the Department is logistical. Mine inspectors do not have the necessary equipment and accessories to undertake proper scientific measurements and do calculations during inspections. Consequently, inspection comments are not authoritative enough, as they lack the necessary objective basis. The Mines Department has only one laboratory, which is used mainly to test hoisting ropes for underground mines. The capacity of the laboratory is generally overstretched.

Apart from constraints of personnel and logistics, the Mines Department suffers from inadequate financial resources. It depends on both government subvention and (more importantly) on the Minerals Development Fund. Revenue from the Minerals Development Fund has been unreliable in recent times, due to the effect of the fall in world commodity prices of minerals. For instance, in 1999 the Mines Department operated on a budget shortfall of more than 40% of its approved estimates (Mines Department, 2000).

The Minerals Commission

The Minerals Commission has the primary function of regulating and managing the utilization of mineral resources of Ghana by formulating and coordinating policies on mineral exploration and exploitation. Establishing a firm national database on mineral resources and technologies for their utilization is part of the Commission's responsibilities. Additionally, it is expected to monitor the operations of bodies established in the minerals sector.

The Commission, however, has not been effective in its operations. Until it created the Environmental Audit Department in 1998, the Commission had conducted virtually no monitoring activities since it was re-established in 1986. The

Environmental Audit Department operates with only one substantive environmental officer, which obviously retards its operational apparatus in checking the compliance levels of mining companies.

The Ghana Chamber of Mines

The Ghana Chamber of Mines, a voluntary private-sector employers' association representing companies and organizations engaged in the minerals and mining industry in Ghana, caters to the interests of its members. The Ghana Chamber of Mines does not play any direct role in the enforcement and monitoring of mining operations; however, it follows the activities of miners with keen interest. The Chamber attaches great importance to environmental excellence, and therefore encourages "self-regulation in environmental management within the framework of legislation established by the government" (Ghana Chamber of Mines, 1999). It is not directly interested in policing miners, but rather encourages self-regulation among all member companies in line with the slogan "responsible care."

The Chamber's 1998 Annual Report singles out Teberebie, and commends it for its environmental performance. The report also states: "In particular, one company, Teberebie Goldfields Limited, has acquired a high-tech seeder, which is in use to accelerate revegetation of mined-out areas" (Ghana Chamber of Mines, 1999).

The Ghana Chamber of Mines, like the GEPA and the Mines Department, plays a very small role in monitoring and enforcing mining regulations. The performance of Teberebie and many other mining companies, regarding environmental management, depends mostly on goodwill, and not on the direct control of and enforcement by regulatory agencies.

Teberebie Goldfields' Achievements

The environmental performance of Teberebie has been satisfactory since it formulated its Environmental Action Plan in 1998, as indicated by official reports and documents. Examples of these reports are examined in this section.

Teberebie commissioned SGS Environmental Management Limited in 1999 and 2000 to perform what was described as an "unrestricted audit of the site, emphasizing compliance with existing mining laws, evaluating permit and contract compliance" (Teberebie News, 2000). The audit covered two essential aspects of the company's operations. The first section was purely administrative in nature and covered the exami-

nation of the validity of the company's operating permits, licenses, and environmental reporting system. The audit report revealed that the company was operating with all the necessary permits and had not defaulted in submitting its monthly and annual reports to the GEPA and the relevant mining sector institutions.

The second aspect dealt with the substantive environmental performance auditing under the relevant themes. The general view of the auditors was that Teberebie was in compliance with the environmental requirements of Ghana. The report stated that the auditing firm "is of the unreserved opinion that Teberebie is operating in full compliance with all appropriate environmental legislation, regulations, and guidelines pertaining to the mining industry in Ghana" (SGS Environmental Management Limited, 2000). The report was very particular about the hydroseeding technique of revegetation. It reveals that "many of the 2000 hydroseeded areas have shown considerable improvement in growth and plant cover since the previous audits" (SGS Environmental Management Limited, 2000).

The issue of water quality, a highly contentious parameter, was also audited. It was evident that the various pollution control measures in place have succeeded, to some reasonable extent, in improving water quality in the Ahumabru and Bediebewu river basins. The diversion of the river Agonaben was expected to reduce sediment levels of the river basins.

For Teberebie's heap leach pond facilities, auditing was conducted on two dimensions: construction and maintenance. Teberebie was lauded for adopting its construction design. The report states:

Teberebie's expansion in 1999 and 2000 was the only project in Ghana we know of that was performed on schedule and without major problems. Based on our experience in Ghana, Teberebie has put together the best design, earth work construction, and liner installation teams in the country. (SGS Environmental Management Limited, 2000)

SGS Environmental Management Limited expressed equal satisfaction with the maintenance of Teberebie's heap leach pond facilities.

As stated before, the Ghana Chamber of Mines, in its 1998 Annual Report, also commended Teberebie, together with other companies. The report specifically states:

Companies have achieved some outstanding progress in recent years to improve the standard of environmental management. At most mine sites, environmental management teams undertake detailed studies on re-vegetation, reclamation and re-forestation programs. In particular, one company, Teberebie Goldfields Limited, has acquired a high-tech seeder, which is in

use to accelerate re-vegetation of mined-out areas. (Ghana Chamber of Mines, 1999)

This commendation from the Ghana Chamber of Mines is perhaps one indication of the environmental consciousness and achievement of Teberebie. In view of the apparent lack of monitoring and enforcement by regulatory agencies, however, what accounts for the satisfactory environmental performance of Teberebie?

The GEPA and the other mining sector institutions have, in practical terms, done little to make Teberebie adhere to its Environmental Action Plan and other statutory obligations to protect the environment. The mining strategies of GEPA are mainly "office-bound analyses" of data presented by the very company it is supposed to regulate.

In the case of the Minerals Commission, the commission undertook no effective environmental monitoring of the company's activities, as a result of its limited scope of operations prescribed by law. Direct external control and the threat of punishment by the regulatory agencies are apparently not among the mechanisms that motivate Teberebie to work toward the attainment of environmental goals and objectives.

An analysis of official and audit reports on Teberebie indicates that the company is in compliance with environmental requirements in Ghana. Direct personal observation by the author generally confirms the audit reports and other official records on the performance of Teberebie.

The author observed the use of dust control equipment (PM₁₀), which functioned effectively at four key points at the mine site: Teberebie Village, Maintraim Hill, Portkamp, and Efo Village. The disposal of industrial waste through recycling, reuse, and off-site sales was highly effective.

Reclamation of disturbed lands through revegetation of and back-filling of mined pits with waste materials was judiciously being undertaken. An encouraging phenomenon that enhanced the integrity of data provided by Teberebie was the effective control of dust in the crusher area and the roads along conveyors. Considering the intensity of blasting and the company's fleet of vehicles, dust levels found in and around the concession were seen as satisfactory, especially as the study was conducted during the dry season (November–April). Teberebie's record-keeping system, in terms of procedures, description, calculation, and interpretation of results, was quite commendable. The author and his party were, however, not enthusiastic about the paucity of information on the impact of noise and vibration on buildings and structures around the concession.

Significantly, the chief, the assemblyman, the youth leader, and the other local respondents interviewed in this study were quite satisfied with the environmental performance of Teberebie. They were, however, in total disagreement with the view held by Teberebie that sensitive receptors (human settlements) were sufficiently isolated from the impact of their activities.

Analysis

On the surface, the company seems to be implementing a policy of voluntary compliance. Voluntary compliance, however, depends on the level of motivation of an entity for its success. The credible performance of Teberebie could be attributed to such motivational measures as community pressure and corporate image.²

In the interviews, both the management and workers of Teberebie, as well as the other respondents, indicated the crucial influence of the watchdog behavior of the local community on environmental compliance. The unprecedented street protest by the chiefs and people of the Wassa Fiase Traditional Area in 1997 against environmental damage has created awareness among mining companies, especially in the Western Region.

In Ghana, the traditional chieftaincy structure operates alongside a modern local government system. The local government system revolves around district assemblies that serve as the central link for administrative and developmental decision making and also as the basic unit of government administration in the districts (counties). Among the many functions of a district assembly are the formulation and execution of plans, programs, and strategies for the effective mobilization of resources necessary for the overall development of the district, and the development, improvement, and management of human settlements and the environment.

Even though chiefs in Ghana do not have any prescribed role under the local government system, they serve to protect community interests, and have been very effective in this regard. Their influence will continue to be felt, as their behavior patterns are steeped in tradition and myths, which in turn serve to validate the exercise of their authority. Compliance with any such traditional authority is mainly through myths and tradition, and owing to the religious–secular nature of that office, the incumbent is seen as more than human (Assimeng, 1981).

In some communities, chiefs are scarcely seen in public. To literally discard their royal apparel and take to the streets in

midday tropical heat in the name of safeguarding the environment would encourage the awakening of environmental responsibility of the most recalcitrant. The edicts and injunctions of chiefs have always been treated with respect and urgency in the Ghanaian society.

The influence of the local community is captured in the 1998 Annual Report of the Ghana Chamber of Mines, which states that the “community tends to judge the industry on its environmental performance” (Ghana Chamber of Mines, 1999). The chamber therefore calls on its members “to strive for high environmental standards in order to coexist peacefully with the local community” (Ghana Chamber of Mines, 1999). The chamber encourages mining companies to adopt practices in accordance with the law, and to also strive for harmonious interaction with local people.

The study confirms the role of community pressure and social norms as important elements in compliance, as indicated by Arora and Cason (1996) and Pargal and Wheeler (1996). In particular, it reaffirms Pargal and Wheeler’s assertion that the social status of local community plays a significant role in sensitizing organizations to respond to environmental compliance.

In addition to the image and influence of chiefs, the contribution of informal social groups cannot be easily discounted. These social groups, which include youth associations, have a tendency to react spontaneously in response to the activities of miners.

For instance, the *Daily Graphic* (2001) reported that “the youth of Abekoase and Huniso, two communities [in the Tarkwa area] affected by the effects of cyanide spillage into their only source of drinking water, and other adjoining communities spearheaded by Wassa Communities Affected by Mining Activities (WACAM), a mining watchdog group, have demonstrated and called for investigation and compensation.” Following the action of WACAM and the communities, the Minister for Mines ordered an independent assessment of the impact of the spillage.

The *Ghanaian Chronicle* (1997) also reported that:

The youth association and other groups of a number of towns in Eastern Nzima [in the Western Region] have protested vehemently against the destructive activities of surface miners . . . What appears to have incensed the farmers is the fact that the miners are destroying their cocoa, coconut, maize and other food crop farms without paying the owners any compensation. The youths have threatened to defend their lands and farm produce at any cost if the authorities will not intervene to stop the marauding miners.

The latest of such reports appeared in the *Daily Graphic* (2002), with the headline “Pandemonium at Bogoso” (see also *Daily Graphic*, 1997a, and *Ghanaian Times*, 1997). Parts of the report read:

Pandemonium broke out after a public hearing on the environment and social viability of a mining project by the Bogoso Goldfields Limited at Prestea yesterday . . . The placards of some of the mob, who wore red bands, summed up their demand, which is to forestall the beginning of operations of surface mining at Prestea and to begin work on the underground mine immediately . . .

The influence of youth and other social groups, in addition to that of chiefs, on environmental compliance by Teberebie and other mining companies in Tarkwa is beyond doubt.

Examples from Other Countries

The role of community and other forms of informal sanctions as contributory factors for compliance are not limited to Ghana. Many African nations and other developing countries have over the decades relied on informal groups, traditional leaders, and other prominent local citizens to enhance compliance by companies in the exploration and exploitation of mineral resources.

The case of Nigeria has, perhaps, received the most publicity and documentation. The Ogoni people’s struggle against Shell burst into headlines on November 10, 1995, when nine local activists were executed by the Nigerian military government for demanding that Shell clean up spilled oil in Ogoniland (Robinson, 1996). Among the executed was Ken Saro-Wiwa, an environmental activist and community leader, well known in his homeland (and internationally) as a poet and essayist.

Working under the Ogoni umbrella body, the Movement for the Survival of Ogoni People, the chiefs and people have successfully fought against corporate recklessness. *IPS World News* (1998a) quoted a local leader in these words:

Before Ogoni crisis, the companies carried on, as if, the communities were inhabited by animals . . . Things are changing. They now know that we can prevent them from working and that translates into loss of revenue for them. We have nothing to lose if there is work stoppage.

Other communities in Nigeria, including Ijaw, from whose land most of the country’s oil comes, have been protesting against Shell’s activities (*IPS World News*, 1998a).

Protests similar to those in Ghana and Nigeria have also been recorded outside the African continent. In Colombia, the U’wa Amerindians have threatened to commit mass suicide if Shell and its partner Occidental Petroleum “pursue plans to

drill for oil on land the U’wa hold sacred” (*IPS World News*, 1998b). *IPS World News* (1998b) also quotes Danny Kennedy, director of the California-based Project Underground, a mining watchdog: “We know today that Ogoni are not alone. The U’wa of Columbia, the Nahua of Peru, and to some extent all of us are victims of corporate power.”

Summary and Conclusions

The study examined the factors that account for the environmental performance of Teberebie Goldfields Limited, even in the face of an apparent lack of monitoring by environmental regulatory agencies.

A number of factors have impinged on the effective monitoring and the enforcement of compliance by regulatory institutions such as the GEPA, Minerals Commission, and Mines Department. The most outstanding of these problems included inadequate personnel and logistics and budgetary constraints. Teberebie has, however, performed relatively well by effectively managing its environmental problems to the satisfaction of the local community, auditors, and the Ghana Chamber of Mines. The role of community and other forms of informal sanctions were identified as the major contributory factors for compliance. The company is also guided by its corporate image, as demonstrated by its policy statement and corporate objectives. If regulatory agencies are well resourced to collaborate and cooperate with local leaders and other informal groups, most environmental problems created in the name of development and progress could perhaps be effectively and efficiently managed.

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Notes

1. Heap leaching is a technique for separating gold from extremely low-grade ores. Crushed ore is piled in huge heaps and sprayed with a dilute alkaline-cyanide solution, which percolates through the pile to extract the gold, which is separated from the effluent in a processing plant. This process has a high potential for water pollution.
2. It ought to be added, however, that Teberebie is also guided by a policy that insists on self-direction and self-control (voluntary compliance) in the service of its committed objectives. To the company, commitment to its objectives “is a function of the reward associated with its achievement,” to borrow the words of McGregor (1957).

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