

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

KUMASI, GHANA



**ASSESSMENT OF INSTITUTIONAL ARRANGEMENTS FOR
SAFEGUARDING THE ENVIRONMENT AGAINST THE
IMPACT OF MINING OPERATIONS IN GHANA.
CASE STUDY: OBUASI**

**M.SC THESIS
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CASE STUDY: OBUASI**

By

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**A thesis submitted to the School of Graduate Studies of Kwame
Nkrumah University of Science and Technology, Kumasi, in partial
fulfilment of the requirements for the degree of MASTER OF
SCIENCE (Water Supply and Environmental Sanitation)**

**Department of Civil Engineering
College of Engineering**

September, 2013

CERTIFICATION

I hereby declare that this submission is my own thesis towards the M.Sc. and that, to the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the University, except where due acknowledgement has been made in the text.

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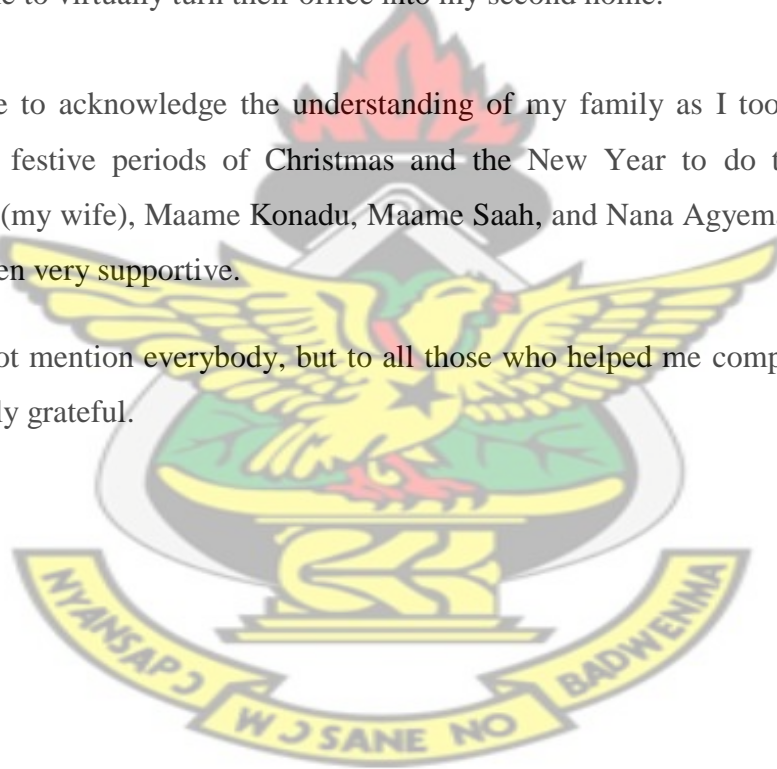
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ABSTRACT

Complaints about the activities of mining operators (both small scale and large scale) in the mining town of Obuasi, the largest mining town in Ghana, have intensified in recent times. In some cases, such discontent has found expression in physical violence.

The study examined the institutional measures in place to safeguard the environment against the effects of mining operations in the Ghana, using Obuasi as the study case.

The study revealed that literature on potential pollution in Obuasi and laboratory analysis of samples taken from some drinking water sources in some affected areas suggested that there has been some pollution of drinking water sources in the Obuasi area.

The study revealed pollution of drinking water sources in the Obuasi area based on available literature and laboratory analysis of samples taken from some drinking water sources in Obuasi. The study also revealed that the environmental policies, legislations and procedures (as institutional arrangements) are adequate for safeguarding the environment against the effects of mining, but the performance of implementation agencies for the same purpose has fallen below expectation.

Furthermore, even though the national Environmental Action Plan of 1991 had a ten year implementation period and therefore expired in the year 2000, with regard to the implementation of the strategies for safeguarding the environment against the effects of mining, implementation of the plan has been a problem.

The problem has not been the inability to formulate the right policies, rules and the relevant laws for the purpose, but instead, the problem has been the inability to implement plans made.

It is to help address these lapses that recommendations have been made for some things to be done in respect of the Environmental Protection Agency, District Environmental Management Committee of the Obuasi Municipality, the Small Scale Mining Centre in Dunkwa, and the Water Research Institute.

22nd September 2013

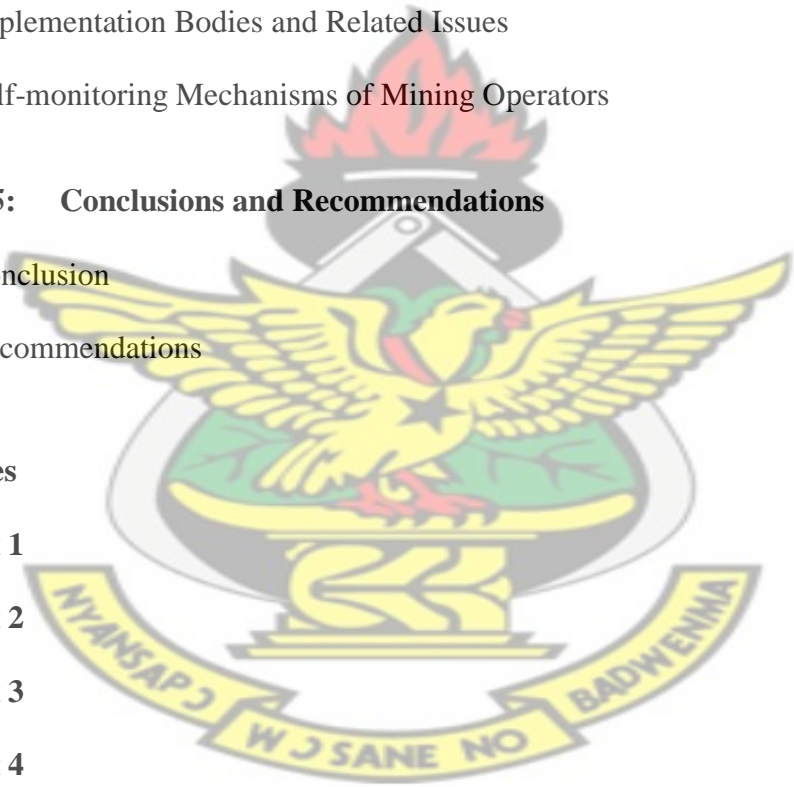
ABBREVIATIONS

AGA	ANGLOGOLD ASHANTI
CEC	COMMUNITY ENVIRONMENTAL COMMITTEE
CSIR	COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH
DACF	DISTRICT ASSEMBLY COMMON FUND
DEMC	DISTRICT ENVIRONMENTAL MANAGEMENT COMMITTEE
DSSMC	DISTRICT SMALL SCALE MINING CENTRE
EAP	ENVIRONMENTAL ACTION PLAN
ECOWAS	ECONOMIC COMMUNITY OF WEST AFRICAN STATES
EIA	ENVIRONMENTAL IMPACT ASSESSMENT
EIAP	ENVIRONMENTAL IMPACT ASSESSMENT PROCEDURES
EIS	ENVIRONMENTAL IMPACT STATEMENT
EPA	ENVIRONMENTAL PROTECTION AGENCY
EPC	ENVIRONMENTAL PROTECTION COUNCIL
EPD	ENVIRONMENTAL PERMITTING DECISIONS
ERP	ECONOMIC RECOVERY PROGRAMME
IAB	INSTITUTE OF AQUATIC BIOLOGY
LI	LEGISLATIVE INSTRUMENT
MC	MINERALS COMMISSION
MDA	MINISTRIES, DEPARTMENTS & AGENCIES
MEST	MINISTRY OF ENVIRONMENT SCIENCE & TECHNOLOGY
MMDA	METROPOLITAN, MUNICIPAL & DISTRICT ASSEMBLIES
OMA	OBUASI MUNICIPAL ASSEMBLY
PER	PRELIMINARY ENVIRONMENTAL REPORT
PNDCL	PROVISIONAL NATIONAL DEFENCE COUNCIL LAW
WACAF	WEST AFRICAN SUB-WEST AND CENTRAL AFRICA
WRC	WATER RESOURCES COMMISSION
WRI	WATER RESOURCE INSTITUTE
WRRI	WATER RESOURCES RESEARCH INSTITUTE

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CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND

Obuasi is a mining town located 61 km south of Kumasi. With a municipal status, its population is about 216,444 (taking the results of the 2000 population census and applying an annual growth of 3%). It is home to AngloGold Ashanti Limited (AGA), the largest mining company in Ghana, and witnesses substantial small-scale (galamsey) mining.

Loosely, the town can be said to be made up of two components: the "AGA Community" (made up of the industrial sites of the company and its residential areas for its workers) and settlements in and around Obuasi inhabited mostly by indigenous inhabitants.

The effect of mining activities on the environment in Obuasi is an issue of concern. In January 2011, AngloGold Ashanti was nominated for the infamous Public Eye Award in Davos, Switzerland. The Public Eye Award seeks to name and shame corporate organisation whose conduct abuses the environment or human rights. The press release¹ that announced the award cited AGA's mismanagement of mining waste that contaminates rivers and wells from which entire villages in Obuasi obtain their drinking water supplies.

A month later, the Member of Parliament for Obuasi, Hon Edward Ennin, organised a press conference and issued a statement² defending AngloGold Ashanti's environmental management practices and condemning the facilitators of the award.

These claims and counterclaims re-ignited public discussions about environmental management practices of mining operators in the country. On 24th August 2011, samples of water from the Kwabrafo stream and Nankasu stream were taken for laboratory analysis. The results show contamination with Arsenic (soluble) and Cyanide

¹ Appendix 1 (Press Release announcing the Public Eye Award)

² Appendix 2. (GNA Report of the MP's defence of AngloGold Ashanti)

(free) compared with Environmental Protection Agency (of Ghana) guideline values for surface water.

The issue of poor environmental management in Obuasi is not new. According to the Environmental Action Plan (of Ghana) volume 2 published in 1991, a previous study in Obuasi revealed pollution due to arsenic. The EPC [now EPA] in collaboration with the Chemistry Department of UST [now KNUST], Kumasi, and in consultation with AGC [now AGA], embarked on a joint project to monitor the concentration of arsenic in air, water and soil over a period of two years. The initial results obtained indicate that the arsenic concentration levels range from 0.04 mg/l to 2.14 mg/l. The soil analyses also show quite high arsenic levels. Even though the study was a preliminary assessment, the results obtained indicate very high levels for both soil and water samples, and these are consistent with results obtained by earlier researchers. The water bodies in the area are all grossly polluted with arsenic. The mines discharge an effluent of about 2 mg/l into nearby Kwabrafo stream (EPC, 1991)

It is evident from the sample test in August 2011 that there are still significant levels of cyanide pollution, and to a far greater degree, arsenic pollution in Obuasi. It is also evident from the observation in the 1991 Environmental Action Plan of Ghana that arsenic pollution in Obuasi has been a historical problem.

1.2 STATEMENT OF PROBLEM

The problem is the significant levels of pollution (cyanide and arsenic) in Obuasi.

1.3 OBJECTIVES OF RESEARCH

The main objective of the research is to determine the mechanism in place to address environmental management including pollution control using Obuasi as a case study. The specific objectives are therefore:

- i. to identify the institutional measures for safeguarding the environment in Ghana;
- ii. to examine the adequacy and effectiveness of these measures;
- iii. to identify shortcomings of these institutional measures, and
- iv. to propose strategies for improvement.

1.4 SCOPE OF STUDY

The scope of the research covers the totality of policies, policy actions, laws, regulations, and their associated implementing bodies and mechanisms directly related to the monitoring of the effects of mining activities on the environment.

Secondly, the research case-studied the mining area of Obuasi, but in the identification of the relevant institutional measures, the focus has been national. The explanation for this is that Obuasi has not got its own peculiar institutional measures for the purpose under discussion. All the monitoring and regulation of the impact of mining operations in the town is done in accordance with, and within the framework of the national institutional arrangements. The focus on Obuasi, however, comes out in the assessment of how these measures work in practice; here, the case of Obuasi is studied.

The expression “Obuasi” wherever it occurs in this report, refers to the geographical stretch from the boundaries Amansie Central District to the west, Adansi South District to the south, and Adansi North District to the north-east.³

Thirdly, even though some attempt has been made to assess the internal institutional arrangements of the mining operators, this has not been the thrust of the study. This is considered as falling outside the scope of this research. The institutional measures in mind are those external to, and constituting a check on the activities of the mining operators.

1.5 JUSTIFICATION OF STUDY

Section 36(9) of Ghana’s Constitution states, under the Directive Principles of State Policy that:

“The State shall take appropriate measures needed to protect and safeguard the national environment for posterity; and shall seek cooperation with other states and bodies for purposes of protecting the wider international environment for mankind.”

But the results of the laboratory analysis and the observation in the Environmental Action Plan of Ghana about environmental pollution in Obuasi create doubt about our compliance, as a nation, with this principle of state policy. So the question that needs to

³ Appendix 3 (Geographical Map of Obuasi Municipality)

be asked is: Are there any institutional measures to ensure compliance with this national policy, and if there are, how adequate and effective are they?

The need to find an answer to this question provides the justification for this study.

1.6 LIMITATIONS

The main limitation of the study was that some officers were reluctant to discuss aspects of their functions or operations that had political implications. Discussions with such officers could not be fully trusted, and therefore more verification had to be done, increasing the workload involved.



CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter reviews studies already done in respect of institutional arrangements for safeguarding the environment against the effects of mining. To appreciate the place of, and need for effective institutional arrangements in governance, this chapter first examines relevant aspects of institutional theory. It then proceeds to look at the background to existing institutional arrangements for protecting the environment in Ghana, and also, environment-related issues in mining operations for which institutional measures are required to monitor and manage.

2.2 THEORY OF INSTITUTIONAL ARRANGEMENTS

What are institutional arrangements? And why do we need them in governance at all? How should institutional performance be assessed, and what institutional assessment models are available?

2.2.1 What are institutional arrangements?

According to Scott (2001), "Institutions are social structures that have attained a high degree of resilience, [they] are composed of cultural-cognitive, normative, and regulative elements that, together with associated activities and resources, provide stability and meaning to social life. Institutions are transmitted by various types of carriers, including symbolic systems, relational systems, routines, and artefacts. Institutions operate at different levels of jurisdiction, from the world system to localized interpersonal relationships. Institutions by definition connote stability but are subject to change processes, both incremental and discontinuous."

Essentially, Scott (2001) argued that institutions are systems and sub-cultures formed and developed over a period, that provide stability in the way certain social objectives are achieved. In this sense, institutions go far beyond "organisations" or "governmental agencies" set up to perform some function for the common good. Those governmental agencies will only be sub-set or part of the broad institutional arrangements for

delivering the needed services. More importantly, those social structures or agencies must operate within certain time-tested procedures and norms. And at the same time, they must be organic and human enough to anticipate and respond to new realities.

This understanding of institutions or institutional arrangements had earlier been espoused by Spon (1997). To Spon (1997), institutions are the "rules" in any kind of social structure; that is, the laws, regulations and their enforcement, agreements and procedures. Writing on water-related institutions, Spon (1997) proceeds to explain the social structure or organisation in the following words, "Organisations are a particular type of institution and are composed of groups of people with a common objective. Organisations can be formalised, such as "official" sector organisations with operational objectives, their own budget and professional staff (such as water departments in Government Ministries, Water Boards, Environmental Protection Agencies, laboratories, consultant companies) or they can be informal and less well described (such as "the public", the "customers" who pay for a water service, the socio-economic distinct groups in a village or town community)."

Thomson & Freudenberg (1997), writing on community forestry, do not depart from Scott (2001) and Spon (1997), but go further to place emphasis on institutional arrangements as a dynamic phenomenon: "From the earliest human communities, people throughout the world have had to decide who could use what resources, when, where and how. These rules, created by people to manage their resources, are defined here as institutional arrangements. Under this definition, national forestry agencies can be considered institutional arrangements as well as organizations. Local cooperatives that sell baskets made from palm fronds are organizations, but institutional arrangements as well. Land and tree tenure regulations and various procedures that communities develop to deal with conflict are clearly institutional arrangements. People in all communities manipulate their rules. Institutional arrangements evolve over time. This happens because society needs change or because people come into conflict or contact with other groups. As institutional arrangements change, people change their behaviour toward natural resources and this can often have an impact (which may be positive or negative) on the resource base."

For the practical purpose of this study, and drawing from the above perspectives, the institutional arrangements to be assessed in this study will include the following:

(i) public policies, (ii) laws, regulations and procedures, and (iii) the agencies required to implement and enforce compliance. For the avoidance of doubt, central government and local government entities are considered as agencies, and therefore part of institutional arrangements for safeguarding the environment.

2.2.2 The need for Public Policies and Laws

Public policies and laws are important parts of institutional arrangements, and their meanings and roles in governance or in delivering social service, or (in this specific case) in safeguarding the environment against the negative impact of mining operations deserve attention.

Public policy is defined as a set of ideas and values within which decisions are taken, and action, or inaction, is pursued by governments (Brooks 1989: p16). Or, according to Wayne (2009), “public policy is a purposive and consistent course of action produced as a response to a perceived problem of a constituency, formulated by a specific political process, and adopted, implemented, and enforced by a public agency.”

It is obvious that, without clear policies, there will be little or no guidelines for the actions of state actors. The direction of government conduct could change haphazardly, and outcomes of public investments are likely to be unfavourable. Public policy failure exposes decision makers to public criticism and demands for more effective action; failure to act on such demands may weaken public confidence in decision makers and weaken the latter's influence (Walsh 2006: p492). And to the extent that public policies are designed to provide social service, failure of policy would invariably work against public interest, at least, in the short term.

Similarly, a law is a binding custom or practice of a community, a rule of conduct or action prescribed or formally recognized as binding or enforced by a controlling authority (Merriam-Webster Dictionary). In this definition, a law is being thought of as single compulsive or prohibitive do-or-don't, and is close in meaning to a statute or a specific legislation passed by a law-making body. It is important to recognise however that “the law” (as opposed to a *law* defined above) has a much broader and deeper meaning. The same dictionary defines the law as the whole body or system of such customs, practices, or rules.

From these perspectives, laws, as used in this study, will include relevant provisions of Ghana's constitution, relevant statutes and regulations passed by parliament, as well as relevant rules and procedures set by authorised agencies of state.

Now, if one thing is clear from all the expositions about laws, it is the fact that they are guiding commands that regulate social behaviour and ensure that every member of society acts in accordance with collectively agreed dos and don'ts.

This explains why the preamble of Ghana's 1992 constitution commits each and every citizen or resident to the "The Rule of Law". Therefore, the need to develop appropriate laws and ensure that they are enforced flows out of the constitutional order. When laws and customs governing an aspect of society are inadequate or are not enforced, that part of society suffers. In particular, if an important part of our existence, such as our natural environment suffers because institutional measures are inadequate, or are not being implemented, we endanger our own existence and that of unborn generations.

2.2.3 The critical role of Implementing Agencies

Public policies and laws are guiding tools for delivering public good or service. They are not public good or service in themselves. They are means to an end, not ends in themselves. They should translate into deliverables on the ground to improve society and the lives of people. "Once the government has legitimized some form of public policy such as a law, statute, edict, rule, or regulation, the stipulations of that policy must be put into action, administered, and enforced to bring about the desired change sought by the policy-makers (Pennsylvania State University, 2012)."

Implementation is the process of turning policy into practice (Steinbach, 2009). To the extent that law is actually a special kind of policy, this definition covers laws as well; except that, in ordinary English, we speak of the enforcement (rather than the implementation) of law. So, law enforcement can be said to be the process of translating law into practical behaviour.

Therefore, implementing (or enforcement) agencies, as part of any institutional arrangement, are all those agencies of state that must act singularly or jointly to give practical expression to the goals and intentions carried in policies and laws.

To appreciate the role of modern policy implementers, it is useful to interrogate some classical understanding of implementation in the policy process.

Theodoulou and Kofinis (2004) have suggested that:

- (i) Policy implementation is the stage in the policy process where policy action occurs to address a recognized policy problem.
- (ii) At this stage, the design of a policy proposal is put into effect.
- (iii) Policies are executed by respective administrative agencies.
- (iv) Selected instruments are applied reflective of the legislative mandate, bureaucratic interpretation, and capacity.
- (v) Specified target populations, and the society, experience the first tangible effects of the policy once implemented.

These views about policy implementation reflect the distinctions in the three-stage policy process, namely, (1) policy design, (2) policy implementation and (3) policy evaluation. They also represent the classical understanding of the place of implementation agencies in the policy cycle.

But alongside this classical departmentalisation of the policy process, there has been an alternative thinking. Bonvin and Farvaque (2003) argue persuasively that the strict functional and temporal separation and allocation of responsibilities in the previous period (i.e. parliament and central government in charge of designing appropriate policy and legislation, and local authorities confined to its strict implementation with very little margin for initiative), considerably reduced the capacity to adjust policies quickly.

Therefore, Bonvin and Farvaque argue that “the classical distinction between the three stages of this process (i.e. the *normative* step or the policy design, the *pragmatic* one coinciding with policy implementation, the *evaluative* one or policy assessment), useful to describe a clear-cut policy process where the stages were neatly distinguished, does not hold any more... By contrast, the new pattern of social policy relies on the permanent interconnection and interdependence between the three stages, which allows a much quicker adjustment when necessary.”

This new view of the interconnectedness of the policy processes is convincing, and defines better the current role of implementation agencies in the management of public policy and the formulation of laws.

Policy implementers and law enforcement agencies must pay attention to and make input into the formulation of policies and laws. That should, of course, not detract from their traditional role as custodians of policy implementation or law enforcement, but they must move with the times, and give meaning to modern understanding of the policy environment.

Policy implementers' association with policy design right from the outset gives them a more sensitive appreciation of policy objectives and guides them in their implementation functions. Also, implementation and enforcement agencies normally have superior ability to anticipate implementation challenges that may not be obvious in the formulation stages. Hence they can, from experience, advise policy designers on the likely fall outs of intended policies or laws.

Policy implementers on the ground must be seen to have the support of the highest levels of government. Civil and public servants in charge of the field implementation or law enforcement officers must be seen to command support from political leadership. It is also important that policy implementation is allocated the necessary resource and logistics to see the policy to its final execution. This calls for a proper costing of policies implementation right from the outset. Equally importantly, contingency funding must be available to meet unplanned but critical expenditures.

Finally, it is worthy of note that effective institutional arrangement can, in turn, affect the policy space positively, and create room for the creation of better institutional elements in the future (Haas, Keohane and Levy, 1993). Haas and his colleagues argue of effective institutions that:

“(1) They can contribute to more appropriate agendas, reflecting the convergence of political and technical consensus about the nature of environmental threats; (2) they can contribute to more comprehensive and specific international policies, agreed upon through a political process whose core is intergovernmental bargaining; and (3) they can contribute to national policy responses which directly control sources of environmental degradation. Effectiveness in agenda setting and international policy formulation are

facilitating conditions. National policy responses, because they directly affect the behaviour of actors relevant to the environment, constitute a necessary condition for improvement in environmental quality. None of these conditions are logically sufficient, however; the best laid plans may prove inadequate. In the absence of good data on environmental effects, understanding how institutions affected these phases of policy activity enables us at least to undertake a preliminary analysis of whether international environmental institutions may be helping to protect an endangered earth.”

2.2.4 Assessing Institutional performance

There are several ways in which institutional performance can be assessed. Mitchell (2008) examines adequately the *actual-versus-aspiration* approach that assesses the performance of institutional arrangements by comparing existing state of the phenomenon being assessed (in this case, the environment or any selected aspect of it) with predefined ideal or predefined aspiration. This approach focuses on the end-impact of implementing the institutional arrangements in question. Strictly speaking, the approach does not concern itself with factors that might have hindered the performance of the institutional arrangements. It is a comparison of where we are with where we want to go.

Those predefined ideals may be those set by designers of the institutions in question or they can be ideals (or expectations) of actors outside the agencies within those institutional arrangements. As Mitchell explains in relation to environment, “Institutions can be evaluated against either the primary or the subsidiary goals for which they were designed, but they can also be evaluated against the goals of actors outside an institution in question. Thus, nongovernmental advocates, scholars, or students may be as interested in evaluating an institution in terms of equity, social justice, or broad notions of sustainability as in terms of the environmental quality or environmentally related behaviours that motivated its creators.”

Whatever it is, the assessor ought to indicate clearly which objectives or ideals are being used.

Another approach is *actual-versus-counterfactual* assessment or what some writers (Cummings, 2006 for example) have called the “What if” assessment. Here, the current state of the phenomenon the institutional arrangements are to impact on is assessed and

compared with what the state of that phenomenon would have been without the interventions of the institutional arrangements in question. In this case, a performance reference point to which observed changes can be compared is first defined. The reference point would represent (or will help determine) the counterfactual state of affairs. Estimating the counterfactual situation is necessary because claims of causality underpin performance evaluation.

Cummings (2006) states that counterfactual evaluation has three aims:

- i. to establish evidence of a causal relationship between a program and the outcomes the program seeks to influence;
- ii. to account for confounding factors, additional to the influence of the program, that might lead to measured change in outcomes;
- iii. to provide estimates of the impact of the program.

Cummings further points out, and rightly so, that the fundamental difficulty in using the counterfactual in impact evaluation is that whereas the outcomes of the interventions being evaluated are observable, the outcomes in the absence of those institutional interventions, at least in principle, are counterfactual and not observable. This situation requires that the evaluation design provides some basis for constructing a credible estimate of the outcomes for the counterfactual conditions.

It also has to be stated that a, actual-versus-counterfactual assessment should consider not just progress but also deterioration of the state of affairs, in which case it would mean that the institutional arrangements have been counterproductive.

Be it an *actual-versus-aspiration* or *actual-versus-counterfactual* assessment, it is also important to look at the variable being evaluated. For an assessment of the institutional arrangements for safeguarding the environment, the variable to be measured could be the behavioural change occasioned by the implementation of the institutional arrangements. The variable could also be improvement in the quality of the environment the institutional arrangements are intended to protect and improve.

Though behavioural changes in the way stakeholders relate to the environment will most likely lead to improvement in the quality of the environment, the correlation

between the two is more complicated, admittedly. But it is still reasonable to assume that behavioural change will contribute to, even if it cannot be equated with, favourable changes in environment quality (Mitchell, 2008).

The institutional analyst therefore has to decide which variable is most suitable for the case in point, or to what degree to use both variables. Below is a summary of the two approaches and their main advantages and disadvantages.

Approach	Question	Advantages	Disadvantages
<i>Actual-versus-aspiration</i>	Have predefined ideals been realised?	<ol style="list-style-type: none"> 1. It is directly interested in the aspirations of policy makers or policy targets. 2. It is objective and less abstract. 3. It helps evaluate the achievement of performance targets set for implementing agents. 	<ol style="list-style-type: none"> 1. It is not directly interested in the original state of affairs. 2. It may overlook small changes or improvements. 3. Does not assess the feasibility of aspirations.
<i>Actual-versus-counterfactual</i>	What would have happened without those institutional measures?	<ol style="list-style-type: none"> 1. It captures small improvements or changes even if those changes are below expectation. 2. Establishes causal relationships between measures and outcomes. 	<ol style="list-style-type: none"> 1. Determining what would have happened without the measures can be speculative. 2. Analysis can be abstract. 3. It is not directly interested in the aspirations of policy makers or policy targets.

Table 1: Summary of the *Actual-vrs-Aspiration* and *Actual-vrs-Counterfactual* Approaches.

2.3 BACKGROUND OF INSTITUTIONAL MEASURES FOR ENVIRONMENTAL PROTECTION IN GHANA⁴

As early as 1900, there existed in Ghana several legal enactments aimed at conserving the environment. These enactments empowered various official bodies to formulate and enforce regulations to protect that aspect of the environment related to their sphere of operation.

The Lands and Forestry Department, for instance, was (exclusively) equipped with, among others, the Beaches Obstruction Ordinance (1897) – an ordinance which sought to prevent obstructions in the use of ports, rivers and beaches. This same Department was similarly equipped with the Forests Ordinance (1927) for the protection of forests and the constitution of forest reserves. Then there was the Rivers Ordinance (1903) which regulated the use of rivers in the then Gold Coast. The Concessions Ordinance of (1939) was also passed to regulate the granting of rights with respect to land for the purpose of winning minerals, timber and rubber.

Invariably, these enactments, and issues of the environment generally, were sector specific, and powers were so widely scattered among the various sectors that no one of them had overall mandate to oversee the whole of the environment or even significant portions of it. The second weakness in this system was that many of the sectors were unable to exercise these powers properly and were generally ineffective in their performance as policemen of the environment. And thirdly, even where some efforts were really made, such efforts were independent and uncoordinated, and therefore, limited in scope (EAP Vol 1, 1991: p20).

This lack of a systematic approach to environment conservation was, in fact, not peculiar to Ghana. In several countries, particularly of the third world, the need for environmentally sustainable industrialisation was a hazy concept. It was the global acknowledgement of this that culminated in the Stockholm Conference on the Human Environment in 1972. This international forum was organised to sensitise nations on the need to ensure *environmentally sound development* as a definite policy and to put this firmly on the priority agenda of countries.

⁴ Most of the information here was obtained from the introductory statements in the Environmental Action Plan of Ghana, 1991.

Ghana was an active participant of this conference, and in 1974, created its own Environmental Protection Council (EPC) to co-ordinate and oversee all environmental conservation efforts in the country.

Public concern about the environmental degradation, thenceforth, slowly but gradually grew and climaxed during the long dry season of 1983/84 when bushfires became so rampant and ravaging, and brought with it fatal consequences. This appeared to have been the single environmental event that set the stage for a concerted national effort to control environmental degradation. Several environmentally concerned groups emerged. And matters of environment became public discussion topics particularly in areas such as mining communities where physical degradation of the environment was visible.

Some amount of governmental response to this new public awareness was seen, and between 1984 and 1987, the following activities took place:

The preparation of a *National Oil Spill Contingency Plan (1985)*, preparation of a *National Plan of Action to Combat Desertification (1986)*, the holding of a *National Conference on Resource Conservation for Ghana's Resource Development (1987)*, and the preparation of a *Draft National Environment Protection Programme (1987)*.

In March 1988, the government initiated a major effort to put the issue of environmental conservation on the priority agenda. The exercise culminated in the preparation of a strategy to address the key issues relating to the protection of the environment and better management of renewable resources. The product of this effort is what has become known as the Environmental Action Plan (EAP) which defines a set of policy actions, related investments, and institutional strengthening actions to make Ghana's development strategy more environmentally sustainable.

By 1994, it had become evident that a stronger body than the Environmental Protection Council (EPC) was needed to co-ordinate these pro-active efforts and to stand as a custodian of the environment. Though the EPC was established by a decree, (NRC Decree 239 of January 23, 1974) the council was primarily an advisory and research organisation that was expected to merely co-ordinate activities of other bodies. It was without the power to directly enforce any measures in the performance of its responsibilities or to pursue punitive actions against environmental offenders.

To correct this weakness of the EPC, the council was restructured into the Environment Protection Agency (EPA) in December, 1994. At the moment, it is this body that has a lead responsibility for protecting the environment.

2.4 ENVIRONMENT-RELATED ISSUES IN MINING OPERATIONS

Mining is the extraction of valuable minerals or other geological materials from the earth, from an ore body, lode, vein, (coal) seam or reef, which forms the mineralized horizon and package of economic interest to the miner (Wikipedia, 2012). Or more simply, it is an excavation in the earth for extracting minerals (Concise Oxford Dictionary, 10th edition).

In Ghana, the mining industry is a major source of foreign exchange contributing 5.5% of the country's gross domestic product between 2000 and 2008 (Mining Journal, March 2010). This has resulted partly from the Economic Recovery Programme launched by government from 1983. The mining sector received a lot of governmental attention within the framework of the ERP. There has since been an unprecedented increase in the mineral workings in areas not traditionally known for mining. In this new spirit, workable deposits have been discovered in agricultural lands, forest estates, areas of natural beauty, and in the neighbourhood of water sources. The resulting mining activities have been of three kinds, namely, open pit (surface) mining, underground mining and mineral processing.

2.4.1 Surface Mining and likely Environmental Effects

Surface mining basically involves the acquisition of surface soil with the aim of winning ores rich in some mineral. It is a broad category of mining in which soil and rocks overlying the mineral deposit (the overburden) are removed. It is the opposite of underground mining, in which the overlying rock is left in place, and the mineral removed through shafts or tunnels. It therefore results in the clearing of vegetation, intensive stripping of topsoil, and the creation of pits, waste dumps, ore stockpiles and the construction of haulage roads (Wikipedia, 2012). Environmental effects include among others:

- Deforestation
- Changes in topography causing visual intrusion

- Dust emissions from excavations and ore/waste in transit
- Blast vibrations and noise
- Changes in the drainage patterns of the areas concerned, with associated flooding problems
- Accelerated erosion leading to siltation and increased sediment loads in rivers, and
- Direct contamination of surface water bodies.

2.4.2 Underground Mining and likely Environmental Effects

Underground mining is carried out when the rocks, minerals, or precious stones are located at a distance far beneath the ground to be extracted with surface mining. The depth of the mining may go several hundreds of feet, and involves the construction of underground rooms to work in. Environmental effects include:

- Dust pollution during conveyance of ore to processing plants
- Mine waste water pollution resulting from unrecycled mine water pumped to the surface, and
- Where underground mining occurs in water-bearing rocks, pollution of such water bodies.

2.4.3 Mineral Processing and likely Environmental Effects

In mineral processing, the mineralogy of the ore determines the method employed. In general, however, it involves pulverisation (grinding) of the ore, extraction of precious metals (which may or may not involve chemical addition) and deposition of waste (example, in tailing dams). Mineral processing could result in both air and water pollution (EAP Ghana, 1991). Problems resulting from the processing may include:

- Airborne dust from the pulverisation,
- Dust and waste blown off from tailings dams,

- Emission of particulate and gaseous atmospheric pollutants from chimneys of roasting plants,
- Liquid effluent from processing plants consisting of rainfall runoff, spillage from production processes and overflow from water storage tanks,
- The roasting process, where it is employed, results in the discharge of large quantities of pollutants (especially arsenic) into the atmosphere,
- Overflow of liquid pollutant from tailings impoundment into local water courses,
- Seepage from tailings dams into both surface streams and groundwater, and
- The use of cyanide, where it is the main chemical for processing, eventually leads to the pollution of rivers and other water bodies.

2.4.4 Artisanal Mining (“Galamsey”) and likely Environmental Effects

There is simply no precise definition for artisanal mining (otherwise known as galamsey). It is often categorised with small-scale mining to mean any kind of mineral winning other than large scale corporate mining. Artisanal mining in Obuasi, for the purposes of this report, refers to any mining operation which employs simple and exclusively manual methods in the winning of precious minerals.

Small scale mining involves, first, the winning of soil material suspected to contain precious mineral. This is then washed of all clay and silt in sufficient quantities of water, preferably, a flowing stream. The resulting material is then ground and treated with mercury or some chemical to extract the mineral. It is important to mention that all these processes, most of the time, takes place at a single spot near a stream, or sometimes, right in the middle of the stream with serious implications for the environment.

In artisanal gold mining, gold is extracted mainly from alluvial deposits along rivers, waterways and terrestrial soils. Gold is then processed by crushing and grinding of the gold-bearing ore. The gold is extracted from the concentrate by adding mercury (Hg) to form gold-amalgam which is normally roasted in open air to obtain “raw gold”. The elemental Hg evaporates into the air and is subsequently deposited onto land and

surface waters, after undergoing oxidation to ionic Hg (Hg²⁺) through reactions mediated by ozone, solar energy and water vapour (Lacerda & Salomons, 1998).

Environmental effects of artisanal mining (Donkor, Nartey, Bonzongo & Adotey, 2006) may include:

- dust production,
- Land degradation, pollution of soils and agricultural sites
- exposure of large areas to erosion and subsequent release of poisonous metals into waterways
- deforestation and loss of biota, and
- destruction of aquatic organisms in affected water bodies

2.4.5 Summary of Mining Activities and their likely Environmental Effects

Mining Activity	Likely Environmental Effect
Surface Mining	<ul style="list-style-type: none"> • Deforestation. • Changes in topography causing visual intrusion • Dust emissions from excavations and ore/waste in transit. • Blast vibrations and noise. • Changes in the drainage patterns of the areas concerned, with associated flooding problems. • Accelerated erosion leading to siltation and increased sediment loads in rivers, and. • Direct contamination of surface water bodies.
Underground Mining	<ul style="list-style-type: none"> • Dust pollution during conveyance of ore to processing plants. • Mine waste water pollution resulting from unrecycled mine water pumped to the surface. • Where underground mining occurs in water-bearing rocks, pollution of such water bodies.

Mineral Processing	<ul style="list-style-type: none"> • Airborne dust from the pulverisation. • Dust and waste blown off from tailings dams. • Emission of particulate and gaseous atmospheric pollutants from chimneys of roasting plants. • Liquid effluent from processing plants consisting of rainfall runoff, spillage from production processes and overflow from water storage tanks. • The roasting process, where it is employed, results in the discharge of large quantities of arsenic into the atmosphere. • Overflow of liquid pollutant from tailings impoundment into local water courses. • Seepage from tailings dams into both surface streams and groundwater. • The use of cyanide, where it is the main chemical for processing, eventually leads to the pollution of rivers and other water bodies.
Artisanal Mining (“Galamsey”)	<ul style="list-style-type: none"> • Dust production. • Land degradation, pollution of soils and agricultural sites. • Exposure of large areas to erosion and subsequent release of poisonous metals into waterways. • Deforestation and loss of biota. • Destruction of aquatic organisms in affected water bodies.

Table 2: Mining Activities and their likely Environmental Effects

2.5 MANAGEMENT OF MINING WASTE⁵

Management of mine waste involves the study of the production and characteristics of the waste, its proper disposal, and the restoration/reclamation of affected natural resources.

It is generally accepted that good management of mine waste involves careful planning of the eventual land-use even before active mining commences. Mining is only a temporary use of the land since even the largest and longest will eventually be worked out. It is therefore improper if the final use of the land is overlooked during the early mine planning stages.

⁵ The information here was taken from vol. II of the Environmental Action Plan (1991), chapter 2.

Once the mining and milling details are established, a complete appraisal of the situation – the climate, the surrounding land uses and the chemistry of rock and soil – should take place. Predictions of the physical and chemical nature of the tailings that will be produced should indicate the degree of difficulty involved in their reclamation.

Careful siting and design of overburden, tailings and waste rock dump are essential in order to reduce water pollution; very toxic material can be buried under less harmful wastes and construction of gently sloping dump and dam walls assists with later re-vegetation. Provision should be made for separate storage of topsoil, subsoil and “non-mineralised” overburden in an uncontaminated area of the site.

Pollution of water courses by chemical pollutants can be considerably reduced by judicious design of the mine site and installation of water treatment facilities, coupled with stabilisation of the wastes. The methods could include:

(a) Minimising the volume of water released. This can be achieved by recycling as much of the wastewater as possible and by collecting run-off by means of intercepting ditches which channel the water to a treatment plant or to ponds. The use of the latter enables volume reduction by evaporation and reduction of suspended solids by sedimentation.

(b) Careful handling and disposal of solid waste. It must be emphasised that tailings pond design should be done so as to reduce seepage. Materials, example bentonite clay, to seal tailings dams to stop or reduce seepage.

(c) Planting stabilisation vegetation. This action will minimise wind blown and water erosion and increase evapo-transpiration.

(d) Treatment of water: The treatment of mine waste water is commonly done by neutralisation and aeration. Aeration oxidises ferrous iron to ferric iron, which precipitates. With respect to arsenic containing effluents it has been shown that dissolved arsenic is best removed through its conversion to more stable compounds such as barium arsenate, titanium (iv) arsenate, and arsenic sulphide. It has also been shown that the use of lime to stabilise aqueous as either calcium arsenate or calcium arsenite is inadequate for long term disposal of dissolved arsenic. Cyanide can be removed from effluents through natural degradation in a holding pond.

(e) Predictive plans: A watershed map identifying each drainage zone should be produced, and water impoundment and sediment control basins planned. The potential of the ore for acid production should be estimated and compared with its neutralising capacity (the calcium carbonate equivalence). If the former is higher than the latter, then acid mine drainage may result, and therefore, control measures should be planned.

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CHAPTER THREE

METHODOLOGY

This chapter presents the methodology used to achieve the objectives of the study. The literature review, the verbal interviews with key informants, visits to various sites to confirm things learnt during the interviews, and the framework for the discussion and analysis are all explained.

3.1 LITERATURE REVIEW

This study began with a literature review on institutional theory, and also, on the history and background of institutional measures for preserving the environment against the undesirable effects of industrialisation in Ghana. The essence of this was to help build a good understanding of the country's philosophy on environmental protection and to find where the emphasis has historically been.

The literature review was also to identify the environment-related issues in mining operations so that a good assessment can be made of those institutional measures that are in place to manage, monitor and manage them.

Since this research involved, in part, the assessment of such institutional 'software' as policies, policy actions, laws, regulations etc, several visits were made to various libraries to search for the policies, laws, and regulations that had been formulated as part of measures to protect the environment against the effects of mining. Some of the literature reviewed was also collected from the offices of relevant public bodies like the Environment Protection Agency, the Minerals Commission, the Mines Department, and also from the Obuasi office of the AngloGold Ashanti Company.

Below is a table of the different pieces of literature (the major ones) reviewed and the specific intention behind the review:

Literature	Justification for review
1. 1992 Constitution of Ghana	The supreme document that directs the conduct of state actors. It was reviewed to understand the constitutional

	provisions on the management of the environment.
2. Environmental Action Plan (1991)	To understand the broad framework of Ghana's efforts at environmental preservations.
3. National Oil Spill Contingency Plan (1985)	Though this literature was not directly related to the topic of this study, it was one of the environment-related plans that were precursor to the Environmental Action Plan of 1991. It was reviewed to gain deeper insight into the EAP and to see the institutions involved.
4. National Plan of Action to Combat Desertification (1986)	Like the oil spill plan, this was one of the environment-related plans that were precursor to the Environmental Action Plan of 1991. It was reviewed to gain deeper insight into the EAP and to see the institutions involved.
5. Draft National Environment Protection Programme (1987)	This literature was a direct forerunner of the Environmental Action Plan of 1991. It was reviewed to understand the foundation of the EAP.
6. NRC Decree 239 (1974)	This decree established the Environmental Protection Council which was later transformed into the EPA. It was reviewed to gain a good background appreciation of the mandate of the EPA.
7. EPA Act 490 (1994)	This literature is the law that set up the Environmental Protection Agency and provides for related matters. It was reviewed to appreciate the scope of the EPA's mandate and related issues.
8. Environmental Assessment Regulation (1999)	These are the regulation that spell out the environment-related obligations of prospective and existing project owners and managers. It was reviewed to capture the nature and scope of regulations governing mining activities in Ghana.
9. Minerals and Mining Act, 2006 (Act 703)	This is the lead law governing activities within the mining industry in Ghana. It was reviewed to understand the environment-related obligations of mining operators.
10. Minerals and Mining Law 1986 (PNDCL 153)	This law was repealed by the coming into force of the Mining and Minerals Act 2006 (Act 703). It was necessary to review it to appreciate the origins of some of the provisions in Act 703 and to get insight into those aspects of the earlier law which had been removed.
11. Minerals and Mining (Amendment) Act 1994	Like the Mineral and Mining Law 1986, this law was also repealed by the coming into force of Act 703. It was reviewed for the same reasons.

12. Small Scale Gold Mining Law 1989 (PNDCL 218)	This law was also repealed by the coming into force of the Mining and Minerals Act 2006 (Act 703). It was reviewed to understand the policy shift between it and the relevant provisions in the new Act 703.
13. Local Government Act, 1993 (Act 462)	This law spells out the roles of local government in the protections and preservation of the environment. It was reviewed to appreciate what that role is.
14. Guidelines on Environmental Management for District Assemblies	These guidelines were published in furtherance of the environment-related role of the district assembly or local government. It was reviewed to appreciate this role.
15. Procedures for Environmental Impact Assessment, 1995	These procedures prescribe the steps a prospective investor must go through to obtain environmental clearance for the new projects.
16. Book, Articles and Reports by various authorities on various aspects of the topic (Please refer to "References").	These pieces of literature from authorities were reviewed for setting the theoretical framework and for establishing the basis for some of the assumptions and analysis of the various issues captured in the study.

Table 3: Pieces of literature (the major ones) reviewed in this study.

3.2 KEY INFORMANT INTERVIEWS

Verbal interviews were conducted with relevant officers to gain insights into how these 'paper intentions' were being implemented on the ground. And in this, officers of both the relevant public institutions and those of the mining operators were interviewed. Where more than one official of an organisation was interviewed, the views expressed by one official was bounced off the other officials of the organisation in order to get the predominant perspectives of those in the organisation. Questionnaires were not given, but an interview guide (appendix 5) was designed to guide the interviews of the study. Appointments were booked and fluid interviews conducted. This approach was adopted to ensure that answers were not calculated, and also, to read the body language of key informants. The key informants interviewed are shown in Table 3 below:

Organisation	Number of Respondents	Key Informants	Main Focus of Interview
Ministry of Environment, Science &	2	Senior Officials	National policy on the environment, and why the expired EAP (1991) has not

Technology			been replaced.
EPA	6	Head Office Official. Top Management. Middle Management.	Operational, logistical, financial, and political issues; and also adequacy or inadequacy of existing legislation.
Obuasi Municipality	3	Top Management. Middle Management. Assembly member.	Role of Municipality in Environment management.
Minerals Commission	2	Top Management. Middle Management.	Nature of their role in environment management; and their presence around the country.
Small Scale Mining Centre, Dunkwa	1	Top Management.	Small scale mining; operational issues; logistical issues; financial issues; adequacy or inadequacy of existing legislation.
Water Resource Institute	1	Top Management.	Nature of their role in environment management; operational issues; logistical issues; and financial issues.
AngloGold Ashanti Ltd	2	Top Management. Middle Management.	Self-monitoring mechanism; relationship with the EPA and other state institutions.
Small Scale Chinese Miners	2	Middle Management	Legality or otherwise of their operations.
Police	2	Senior Officers at the Obuasi Municipal Command	Their knowledge or otherwise of illegal small scale mining activities in Obuasi and their perspectives on related matters.
Ministry of Finance	1	Budget Officer	To get responses to claims of inadequate allocation from government.

Table 4: Interviews with key informants

3.3 FRAMEWORK FOR ANALYSIS:

The framework for the analysis and assessment of the implementing agencies considered were the *Actual-vrs-Aspiration* approach (Please refer to chapter 2, section 2.2.4).

First, the policies, laws and regulations were examined to identify the targets and objectives set for Ghana’s environmental management efforts. These targets and objectives formed the “aspirations”. The performance of the implementation structures and mechanisms, and the realities on the ground were then examined against the targets and objectives. These assessments then formed the basis for the recommendation of the research report.

This framework for analysis was chosen because it enables the assessment of actual institutional performance against the targets and objectives for which those institutions were set up.

The *Actual-vrs-Counterfactual* was not adopted because of the nature of the study questions being answered. This study is seeking to assess whether institutional measures established to safeguard Ghana’s environment against the impact of mining operations are working satisfactorily or are achieving the objectives and targets for which they were set up. A counterfactual investigation of what would have happened if these measures were not in place will not answer the study questions adequately.

This reinforced the choice of the *Actual-vrs-Aspiration* approach in the analysis.

3.4 PERFORMANCE SCORING

In instances where it became necessary to get key informants to score or rank any aspect of the performance of institutions or the adequacy of measures, the following scale was used:

Performance	Poor	Fair	Good	Very Good	Excellent
Score	1	2	3	4	5

Table 5: Performance scoring of Institutions

3.5 PRESENTATION OF FINDINGS AND ANALYSIS

The findings and analysis of the study are presented together in chapter 4. On each institutional arrangement or structure, the information provided by the relevant key informants and the assessment made by them are presented. The presentation of

information by key informants on each institutional arrangement is then followed by the study analysis of same.

Also analysed is the self-monitoring mechanisms of mining operators within the study area, that is, the Obuasi area. Here, both the corporate miners and small scale artisanal or galamsey miners are examined.

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CHAPTER FOUR

FINDINGS AND ANALYSIS

4.1 INTRODUCTION

This chapter presents findings on the relevant institutional measures revealed during the study. Thus, it covers the policies that were identified, their associated policy actions, the relevant laws and regulations, the implementation bodies, and mechanisms designed to ensure enforcement of the measures. Also presented under this chapter are findings on the actual implementation of policies and enforcements of legislation in the study area. Alongside, a discussion of these findings is also presented.

4.2 ENVIRONMENTAL ACTION PLAN (EAP)

According to the Ministry of Environment Science & Technology of Ghana, there is an on-going exercise to update the national policy on the protection of the environment. In 1988, the government tasked a group of experts to prepare a plan to put in place a comprehensive and integrated national strategy to deal with the identified environmental issues of the country. The product of this was a 10-year *Environmental Action Plan* (EAP) of Ghana, published in 1991 by the then Environmental Protection Council. It contains the current operative policies on the environment.

During the search through the document, it was found that the main bulk and essentials of Ghana's policy on environment protection is spelt out in the four-volume Action Plan. The document defines a set of policy actions, related investments, and institutional strengthening actions designed to make Ghana's development strategy more environmentally sustainable.

The actionable and relevant aspects of the EAP are:

4.2.1 Policy Statement and Policy Actions of the EAP (1991)

The policy statement is in the following words: *Environmental protection in Ghana should be guided by the preventive approach, that is, with the recognition that socio-*

economic development must be undertaken in such a way as to avoid the creation of environmental problems (page 13).

The following policy actions (relevant to the study) have been prescribed by the action plan to achieve the policy's objectives:

i. Development of Appropriate Instruments

For the successful implementation of the National Environment Policy, necessary steps will be taken to develop appropriate instruments geared towards:

- a, improving the scientific base of environmental policy, among other things, through appropriate research programmes,*
- b, the assessment of the potential impacts of certain public and private projects on the environment, and the integration of the environmental dimensions in national policies,*
- c, establishment and implementation of appropriate standards and guidelines so as to ensure an acceptable level of public health and environmental protection,*
- d, harmonisation of appropriate legislative instruments, and*
- e, improved access to information on the environment.*

Legislation will also be enacted to prescribe the necessary environmental standards and guidelines for mining and manufacturing industries. To this end, Environmental Impact Assessment will be required for all new investments that would be deemed to affect the quality of the environment.

Positive and negative incentives will be instituted to encourage the adoption of environmentally sound production technologies and to discourage pollution. Programmes will be developed to ensure the availability and wise application of cost-effective technologies in the exploitation of resources (page 18).

ii. Managing the Atmospheric

The following actions to control atmospheric pollution were to be pursued (page 16):

- a, *identify the atmospheric pollutants which are currently and potentially of greatest concern for the protection of human health and the environment;*
- b, *determine the most appropriate means (substances and/or source oriented) for handling the pollution problems identified, without transferring air pollution to water or soil;*
- c, *set and implement national standards for specific sources discharged into the air;*
- d, *reduce, in the longer term the ambient air concentrations of the most crucial pollutants to levels considered acceptable for the protection of sensitive ecosystems;*
- e, *define and implement preventive measures against indoor pollution;*
- f, *develop relevant instruments which can assist in achieving these objectives, including:*
- *an inventory of emissions and major source categories;*
 - *an inventory of best available pollution abatement technologies and costs,*
 - *new non-polluting technologies;*
 - *monitoring networks;*
 - *economic instruments to prevent pollution.*

iii. Water Management

The following specific actions have been prescribed in the environmental management of our water resources (page xii):

- a, *establish the proposed Water Resources Commission;*
- b, *adopt proposed Water Law;*
- c, *adopt policy framework for the extraction of water for the different uses, integrated planning for river basins, and the control of waste discharge into water bodies;*
- d, *establish watershed protection areas.*

iv. Land Management

Policy actions in the area of land management were as follows (page xii):

- a, establish a body to be responsible for policy, planning, co-ordination and monitoring of land-based development programmes and projects in Ghana;*
- b, institute land use planning to ensure harmony in the allocation and use of land for different purposes;*
- c, adopt land tenure/ land management policy and establish appropriate institutional framework;*
- d, strengthen the legal and administrative machinery for land acquisition and tenure, including proper maintenance of land title and transaction records;*
- e, review, enforce, update, and approve a stronger anti-bushfire law;*

v. Environmental Education

Public awareness about environmental issues and about government strategies towards managing the environment have been accounted for by the EAP as follows:

The success of an environmental policy presupposes that all sections of the population understand the functioning of the environment and the problems thereof, and contribute to the protection and improvement of the environment. To this end, continuous and detailed educational programmes will be implemented at all levels so that every Ghanaian becomes aware of the problems and fully assumes his responsibility in safeguarding the environment (page xii).

vi. Environmental Monitoring

Close and scientific observation of the environment with the view to responding to changes is also given emphasis:

Monitoring constitutes an essential activity in the solution of environmental problems. Human activities and the environment in which they occur are in a constant state of flux, therefore the process of environmental monitoring must necessarily include the

need to describe change. Monitoring must be designed to provide a sound knowledge about the resources (page 18).

vi. Strengthening the Environmental Protection Council

The need to institutionally strengthen the Environmental Protect Council and make it the custodian of the national environment was spelt out as follows (page xiii):

To enhance the effectiveness of the EPC -- as the custodian of the national environment, the co-ordinator of all activities relating to the environment, and the lead agency for the implementation of the Action Plan -- Government will review the status of the Council, including its placement within the administrative machinery of the country. The EPC will be entrusted with the responsibility for setting environmental quality standards as well as for ensuring the enforcement of these standards. In addition other agencies to be involved in the implementation of the EAP will be strengthened to ensure the efficient performance of their assigned roles.

viii. Prevention and Control of Pollution

General strategies for preventing pollution and dealing with occurrences of pollutions were captured as follows (page xiii):

- a, Prepare and adopt regulations for environmental control of mining operations;*
- b, prepare and adopt regulations for environmental control of industrial operations;*
- c, adopt proposed legislation to control the import and use of pesticides and other hazardous chemicals;*
- d, adopt revised Factories, Offices and Shops Act;*
- e, adopt revised incentive system for citing of small scale industries.*
- f, adopt incentive system for greater energy efficiency in industry.*

The EAP further recommends (page 15) that:

When a problem has been identified and investigated, an appropriate control strategy can be decided upon. The control strategy may include the use of biological standards, exposure limits, environmental quality objectives or standards, emission standards, process or operating standards, product standards, limits on total emissions or a range

of preventive controls, for example, the application of Environmental Impact Assessment (EIA) procedures, or some combination of these.

Control action may be directed towards any one or more of the following:

- *the pollutant;*
- *pollutant sources;*
- *receiving and/or transporting media;*
- *target organism or environment.*

ix. International Cooperation

Ghana is also to cooperate with its neighbours and the international community in the protection of the environment (page 18):

Ghana will maintain and where necessary, increase her participation in the activities of the United Nations agencies, other multilateral organisations and non-governmental organisations, and observe the numerous international agreements to which Ghana is a party.

At the regional and continental levels, Ghana's environmental policy will operate in the context of an increased effective participation in (including where appropriate, financial contribution to) the protocols of the Organisation of African Unity (OAU), Economic Community of West African States (ECOWAS) and sub-regional groupings such as West African Sub-West and Central Africa (WACAF) Regional Seas Programme of UNEP.

4.2.2 Findings and Analysis of the Environmental Action Plan

Senior officials at the Ministry of Environment, Science and Technology were of the view that the Environmental Action Plan of 1991 had served the purpose for which it was prepared. According to them, the plan set the framework for all the policy actions pursued over the last two decades. Both officials interviewed were of the view that it provided the policy basis for most of the activities conducted by the various state institutions (including the police) in respect of the environment. According to them, one of the critical policy interventions informed by the EAP was the upgrading of the Environmental Protection Council into Environmental Protection Agency with enlarged

mandate and superior powers. This had provided the nation a true custodian of the environment.

Asked why a new action plan had not been drawn since the EAP expired more than a decade ago, there was no clear reason why this had been so.

The same question was put to the principal programme officer of the EPA, and his suspicion was that there were so many outstanding policy actions of the EAP that (it appeared to him that) nobody was in hurry to draw a new one. In this regard, examples sighted included unresolved issues in concerted international actions in environmental protection, outstanding policy actions in environmental education, the absence of many of the land management strategies proposed in the plan, outstanding issues in water management, etc.

The EPA officials were however of the view that, overall, the EAP had streamlined Ghana's environmental efforts and served the nation very well. To them, most of the objectives for which the EAP was drawn had been achieved. They cited the passage of most of the legislations proposed by the plan, and the setting up of most of the implementing agencies as examples. They said they were looking forward to the conclusion of the new national environmental action plan being drawn and expected it to address the outstanding issues of the expired plan.

At the Minerals Commission (MC), officials interviewed said that the EAP had been very useful in many ways. They said the promulgation of the Minerals and Mining Act and other regulations governing the environmental aspects of mining were all products of the EAP. More importantly, they assessed that most of the EAP provisions on mining had been implemented. The officials said they had been told that the plan was being reviewed and that a new plan would be published in due course. They said they were looking forward to the publication of the successor to the EAP. They scored the 1991 plan highly.

Officials of AngloGold Ashanti gave a positive assessment of the EAP. As a multinational, they said, Ghana's environmental action plan was quite detailed and informed compared with the broad environmental policies of other countries. They also expressed the view that Ghana had been quite faithful to the plan by implementing most of the major policy actions, including the establishment of the Environmental Protection

Agency. On the question of the expiry of the EAP of 1991, a senior official at the environmental department of the company was of the view that the expired plan was still a good reference for national efforts in environmental preservation because the principles underlining many of the policy strategies were time-insensitive.

On a scale of 1 to 5, the officials scored the EAP (in terms of achieving the broad objectives for which it was drawn up) as follows:

Officials	MEST	EPA	MC	AGA
Average Score	4	3	5	5

Table 6: Performance Scoring of the EAP

There is little doubt that the EAP has, to a large extent, served its purpose. The views expressed by key informants are similar to observations made during literature review. The plan is very detailed and comprehensive, and there was no reason to doubt the views by the officials of the multinational AngloGold Ashanti that it was more detailed than that of many countries. The underlining principles of the plan are clear; the objectives are unambiguous; and the accompanying strategies and policy actions have been well articulated, with the different parts of the plan well integrated. Also, the targets are realistic and the implementation results are measurable. These are all important ingredients of a good plan (Litman, 2012).

But the real strong point of the plan is that most of the prescribed interventions have been carried out. Even officials of the EPA who were quick to suggest that some important prescriptions are still outstanding also admitted that overall, the plan has achieved most of its targets and objectives.

It is precisely because of this good assessment of the plan that it is regrettable that since it expired in 2000, twelve years have passed without a new plan to replace it. The point is that many of the objectives of the plan were long term. While most of the short term objectives and targets appear to have been largely achieved, there is the need to know how long term cultures regarding environmental preservation are being developed. The ultimate aim of the EAP was to instil behavioural changes both at the level of private players and also state actors. There is the need for a new plan that would have reviewed

the outcomes of intervention in the 1991 plan, and propose new ideas and interventions going forward.

It was also observed that some of the key informants had only heard the Environmental Action Plan in name and were unaware of its contents. This is disturbing, especially since some of these informants were public officers.

It is obvious that environmental education is one of the failings of the implementation of the EAP. Environmental education was one of the interventions prescribed by the plan. Of course, it is true that there is generally greater level of environmental consciousness among Ghanaians, but public officials such as the police who have a role to play in the institutional arrangements for safeguarding the environment must necessarily be familiar with the provisions of the EAP.

Overall, it can be said that the EAP has served its broad purpose by providing a framework that guides Ghana's environmental management practices and by providing for the establishment of specific structures and legislations to make our development efforts environmentally sustainable.

4.3 LEGISLATION

Section 36, subsection 9 of the 1992 Constitution of Ghana states that, "The State shall take appropriate measures needed to protect and safeguard the national environment for posterity; and shall seek cooperation with other states and bodies for purposes of protecting the wider international environment for mankind."

These appropriate measures include the enforcement of sound environmental practices and the enactment of further legislation for the purpose. At present, there are five pieces of legislation that directly provide the legal framework for safeguarding the environment against the effect of mining operations. These are the Minerals and Mining Act, 2006 (Act 703), the *Water Resources Commission Act, 1996 (Act 522)*, the *Local Government Act, 1993 (Act 462)*, the *Environmental Protection Agency Act, 1994 (Act 490)*, and the *Environmental Assessment Regulations, 1999 (LI 1652)*.

4.3.1 Minerals and Mining Act, 2006 (Act 703)

The Minerals and Mining Act of 2006 repealed, among other laws, the Minerals and Mining Law 1986 (PNDCL 153), Minerals and Mining (Amendment) Act 1994 (Act 475), and the Small Scale Gold Mining Law 1989 (PNDCL 218). These three laws had provisions to regulate mining activities in respect of their impact on the environment.

Act 703 was given assent on the 22nd March 2006 “to revise and consolidate the law relating to minerals and mining and to provide for connected purposes”.

Section 18 requires the holder of a mineral right to (before undertaking an activity or operation under the right) obtain the necessary approvals and permits required by the Forestry Commission and the Environmental Protection Agency for the protection of natural resources, public health and the environment.

Section 49 empowers the Minister in charge of mining to enter into a development agreement with a prospective mining operator, which agreement may contain environmental management obligations on the operator.

Section 93 provides that a person licensed under the law may win, mine and produce minerals by an effective and efficient method and shall observe good mining practices, health and safety rules and pay due regard to the protection of the environment during mining operations.

Finally, section 110 empowers the Minister in charge of mining to make regulations to provide for matters concerning environmental protection. Such regulations made under the act may impose a penalty not exceeding the cedi equivalent of ten thousand US dollars.

4.3.2 Water Resources Commission Act, 1996 (Act 522)

This act sets up a Water Resources Commission (WRC) to regulate and manage the utilisation and protection of water re-sources in Ghana, and provide for related matters.

Specifically, section 2 of the act requires the WRC to advise the Government on any matter likely to have an adverse effect on the water resources of Ghana; and also advise pollution control agencies in Ghana on matters concerning the management and control of pollution of water resources.

4.3.3 Local Government Act, 1993 (Act 462)

This law repealed and replaced an earlier legislation, the District Assemblies Law of 1988 (PNDCL 207), which mandated the District Assemblies to take charge of environmental preservation within their respective districts.

Section 10(3)(e) of the act states that, “The District Assembly shall be responsible for the development, improvement and management of human settlements and the environment in the district”.

It is from this Act 462 that the *Guidelines on Environmental Management for District Assemblies* derive their authority.

Section 54 of the act provides that where substantial injury to the environment, amenity, public health or the economy is caused by any nuisance or is likely to result from the action or inaction of any person, a District Planning Authority may serve notice on the person requiring him to abate the nuisance within such time as may be specified in the notice.

4.3.4 Environmental Protection Agency Act, 1994

The Environmental Protection Agency Act, 1994 provides for the establishment of an Environmental Protection Agency in place of the Environmental Protection Council that had been in existence since 1974. Broadly, the Agency is the statutory custodian of the 'Ghanaian environment' with a responsibility to ensure compliance and enforcement of environmental regulations.

4.3.5 Environmental Assessment Regulations, 1999 (LI 1652)

This was passed on 18th February, 1999. It basically seeks to make it a legal requirement for a prospective project undertaker to go through a process of environmental impact assessment and also environmental management planning with the EPA and to seek the agency's environmental clearance before undertaking projects.

4.3.6 Assessment by Key Informants and Analysis of Legislation

The Ministry of Environment, Science & Technology is the MDA responsible for sponsoring legislation in Parliament on environment-related matters. Both senior

officials interviewed in this study were of the view that there is enough legislation to check unsound environmental management practices. They also said that various implementing agencies have been given sufficient powers to act in situations that the law could not anticipate. They hinted that the on-going stakeholder consultation towards the preparation of a new environmental plan may throw up the need for new legislation.

All officials at the Environmental Protection Agency who were interviewed about the adequacy of legislation expressed confidence in existing legislation but expressed some concerns. First, they decried the lack of inter-departmental coordination within the law enforcement agencies of state in the fight against environmental degradation. There appears to be no inter-departmental strategy against some of the unlawful threats to the environment. EPA officials also expressed the view that though they have powers to regulate the environmental impact of all economic activities, the regulation of small scale mining has been assigned to the District Small Scale Mining Centre (DSSMC). There is therefore some obligation on the DSSMC for the area concerned to ensure that the small scale mining operation is environmentally acceptable. This makes it difficult for the EPA to get in there to enforce environmental sanity though, in theory, they are required to do so for all activity. For the avoidance of doubt, they called for the necessary legislative changes in the Mining and Minerals Act to clarify the environmental obligations of small scale mining operators.

Officers at the Obuasi Municipal Assembly thought that there was enough legislation to address environmental challenges at the local level. But the more senior officer of the two officers interviewed expressed the view that the *Guidelines on Environmental Management for District Assemblies*, strictly speaking, did not have legislative backing. He suggested that each MMDA should be prompted to pass these guidelines as local by-laws in order that they would have the force of law.

The Minerals Commission officials interviewed said that as far as their roles in mining-related environmental matters were concerned, the laws were adequate. They admitted they were not in a position to know how adequate the laws were for Ghana's overall environmental management strategies and advised that interviews be conducted with officials of the EPA for the purpose. They however indicated that, in their interactions with other state agencies, their impression is that, over all, the laws were adequate.

At the District Small Scale Mining Centre in Dunkwa, the senior officer interviewed said that there were adequate laws and regulations for managing the environment. He indicated that he had been examining the laws he works with, but could not identify any serious shortcomings. Asked about the clarity of regulations on the environmental management obligations of small scale miners, he replied that he did not think there was ambiguity at all. He explained that one of the preconditions for getting a permit to do small scale mining was clearance from the Environmental Protection Agency. Without it, there was no way an applicant would be granted a permit. To him, the problem was that most small scale miners operated without permit from even the DSSMC. So what was needed was enforcement of the laws and regulations rather than more laws or regulations.

Officials of AngloGold Ashanti shared the views of the DSSMC officer. They thought that the laws and regulations were enough. They also felt that the regulations were too strict, in a way that imposes extra overhead cost on mining operators. While they felt that the strict legal and regulatory regime was good for the country's environment, they advised that any further tightening of laws or regulations could make Ghana unattractive for mining investments.

It was hard to get Ghanaian small scale miners to interview in Obuasi for the purpose of the study. Those approached declined to talk except to remark that any attempt to stop galamsey will be met with fierce resistance, even to the last drop of their blood. In Domeabra, some Chinese small scale mining operators granted an interview. Asked first about the laws under which they were operating, they could not provide any straight answer but said that they have "papers" that allow them to work in Ghana, and that they are not breaking any laws. Asked if they were aware that there is a law that forbids non-Ghanaian nationals from doing small scale mining in Ghana, they insisted that they were doing genuine business in Ghana and creating jobs for people.

In interviews with senior officers in the municipal police command in Obuasi, they disclosed that there were enough laws to prosecute offenders who violate the environment. Asked then about why there is so much environmental degradation going on while offenders go unpunished, the two officers, in independent interviews, blamed the problem on interference in police work. Asked what they meant by interference, they declined to say, but the more senior office pointed out that on several occasions,

they have arrested illegal miners (including foreign national) but within hours of the arrest, the regional police command had directed them to transfer the people to Kumasi. Subsequently, they had seen the same offenders going back to do their work. "When that happens, you don't feel like arresting anybody again," he lamented.

Officials	MEST	EPA	OMA	MC
Average Score	5	4	4	5

Officials	DSSMC	AGA	POLICE
Average Score	5	5	5

Table 7: Performance Scoring of Environment-related Legislation

The verdict of the people working with our environment-related legislation is that existing legislation is more than very good. On a scale of 1 to 5, they rated the adequacy of environment-related laws at 4.7. Except officials at the EPA who raised issues about the legislative clarity of the laws on the environmental management burden on small scale miners, and the Obuasi Municipal Assembly that raised some issues about the their environmental guidelines lacking the force of law, all key informants said the legislation is adequate.

The literature review and the reading of the laws seem to confirm this conclusion. All the enactments and legislative changes prescribed by the Environmental Action Plan of 1991 have been actualised. Going through the EAP, it was difficult to pin-point any legislation that had been prescribed by the plan but had not been passed. This, coupled with the views of our implementation and enforcement agencies that legislation is adequate, should lead to the conclusion that, in respect of legislation, the objectives and aspirations set by the EAP have largely been achieved.

It is however necessary to examine the two issues that came up in the interviews with officials of the EPA and those of the Obuasi Municipal Assembly. The officials at the EPA believe that the permit for small scale mining operation by the DSSMC is mistaken to mean that the DSSMC has examined the likely environmental effects of the

projects and cleared it. This, according to them, provides excuse for many small scale miners to escape the environmental impact assessment procedures set down in LI 1652.

It is hard to appreciate the concern the officials of the EPA are raising. LI 1652 lists in Schedule 1 undertakings that required compliance with the environmental impact assessment procedures. Mining is one of the undertakings. So, there is no legal ambiguity about the environmental management obligations of small scale mining operators. And then, the DSSMC that finally gives the permit for the commencement of mining operations requires the prospective operator to show his or environmental permit as a precondition for obtaining the mining license. What this means is that without the environmental clearance from the EPA, the DSSMC does not grant mining license or permit.

If this arrangement works, then there should be no problem. If this arrangement does not work, then it is an implementation challenge rather than a legislative inadequacy. The conclusion is that there is no legislative shortcoming in respect of this issue.

The matter raised by officials of the Obuasi Municipal Assembly to the effect that the *Guidelines on Environmental Management for District Assemblies* needs some legislative backing seems to be a better grounded concern. These guidelines were issued by the Ministry of Local Government as a policy guide for the environmental management mandate of the district assemblies. It has not got the force of law behind it. While it contains clear and detailed policy actions of how the district assemblies should carry out their environmental protection mandate, actions taken on the basis of these guidelines can be challenge in court. This situation is unhelpful. There is the need for these guidelines to be clothed with legal force so that their implementation would not be impeded by court room litigation.

4.4 ENVIRONMENTAL IMPACT ASSESSMENT PROCEDURES (EIAP)

The procedures for assessing the environmental impact of development projects and other undertakings are contained in a document called "ENVIRONMENTAL IMPACT ASSESSMENT PROCEDURES" published by the Environmental Protection Agency in June 1995. This document contains documented procedures which had evolved since environmental impact assessment became a requirement for screening and evaluating development projects and programmes from 1989.

These procedures establish a process to provide sufficient information to enable the Environmental Protection Agency set an appropriate level of assessment for any proposed undertaking, investment or programme. This exercise makes possible the necessary scrutiny of these projects and facilitates the decision-making for EIA approval. The information may be gathered through an environmental impact assessment study published in an Environment Impact Statement (EIS), Preliminary Environmental Report (PER) or by completing an Environment Assessment Preliminary Registration Form depending on the complexity, nature and location of the proposed undertaking.

The purpose of Environmental Impact Assessment is mentioned as follows:

- Support the goals of environmental management and sustainable development.
- Integrate environmental management and economic decisions at the earliest stages of planning any development project.
- Predict the consequences of a proposed undertaking from the environmental, social, economic and cultural perspectives, and to develop plans to mitigate any adverse impact.
- Provide avenues for the involvement of the public, proponents, private and government agencies in the assessment and review of proposed undertakings.

4.4.1 "EIA Procedures"

The following procedures have been outlined in the said document:

1. REGISTRATION

Every undertaking or development that may have an impact on the environment is required to be registered with the EPA. Special forms for this purpose, Environmental Assessment Registration Form are available at EPA offices, the District, Municipal and Metropolitan Assemblies.

The responsibility for registering an undertaken or development project lies with the proponent. The responsibility for determining what constitutes an impact on the environment with respect to the project lies with EPA.

2. SCREENING

Within 25 days from the time a registration form is received, the EPA with the assistance of a cross-sectoral technical committee, including the Ministry of Environment Science & Technology, will make a decision by placing the undertaking at the appropriate level of assessment.

In making the decision at this stage, consideration will be given to the following:

- i. The location, size and output of proposed undertaking.
- ii. The technology to be used.
- iii. Concerns of the general public.
- iv. Land use considerations.
- v. Any other factors relevant to the particular undertaking.

A screening report will be prepared summarising the decision reached which could be one of the following four decisions:

- i. Objection to the undertaking.
- ii. No objection to the undertaking.
- iii. Preliminary Environmental assessment would be required.
- iv. Environmental Impact Assessment required.

3. SCOPING

Whenever the screening result of the initial registration of the proposal or a subsequent Preliminary Environmental Report (PER) indicates that significant adverse environmental impact may result from the undertaking, the proponent will be required to submit an Environmental Impact Statement (EIS).

The first step for the proponent is to commission a thorough fact finding evaluation of the proposed (alternative) site(s), and to consult with interested and affected parties such as government officials (relevant ministries, departments, local authorities etc.),

traditional authorities and members of the public. The objective is to determine how their concerns will be addressed in the terms of reference for the EIA. Furthermore, the scoping process identifies all the key issues of concern to be addressed in the EIA.

4. TERMS OF REFERENCE (SCOPING REPORT)

The proponent prepares a scoping report which would include draft 'Terms of reference' (TOR) for the EIA study, and submit ten (10) copies to the EPA. The draft TOR must indicate that the EIS will include:

- i. a description of the proposed undertaking and an analysis of the need or reason for the undertaking;
- ii. the objective of the undertaking;
- iii. other options for carrying out the undertaking;
- iv. alternatives to the undertaking;
- v. a description of the present environment likely to be affected directly or indirectly;
- vi. a description of the future environment, predicting its condition if the undertaking did not take place;
- vii. the impacts that may be caused to the environment by the undertaking;
- viii. proposed measures to prevent or mitigate all adverse impacts;
- ix. an evaluation of opportunities and constraints to the environment of the undertaking;
- x. a proposal for an environment management programme to cover constructional, operational and decommissioning stages of the undertaking, and
- xi. proposal for a programme of public information.

The TOR will be studied by EPA and the cross-sectoral technical committee. Where necessary, a visit to the site(s) will be made. The outcome of the study on the TOR which could be a rejection or a revision /modification or acceptance/approval, will be communicated to the proponent within 15 days of the receipt of the Scoping Report/TOR.

On approval of the TOR, the proponent may start work immediately on the Environment Impact Assessment.

5. ENVIRONMENTAL IMPACT STATEMENT PREPARATION

The proponent commissions detailed EIA study involving baseline survey and inventory, development proposal options, potential impact identification, prediction and evaluation, mitigation considerations and commitments as well as a relevant environmental management programme and other contents of the TOR.

In the course of gathering data for the EIS preparation, the proponent is required to initiate public information programme for the area likely to be affected by the undertaking. Through such a programme, local residents will be fully informed of the nature of the undertaking and its effect on the environment. Copies of all reports on original studies conducted in relation to the EIA will be made available to EPA. The concerns of the public shall be recorded and must be addressed in the EIS. Public notice of the assessment process for the undertaking will be issued by the proponent through newspaper advertisements and/or by announcements posted in appropriate public places.

6. ENVIRONMENTAL IMPACT STATEMENT REVIEW

Once the final draft of the Environmental Impact Statement is completed, the proponent shall submit twelve (12) copies to EPA. A cross-sectoral technical committee including the Ministry of Environment Science & Technology and other agencies shall assist EPA in the review of the EIS.

Copies shall be made available to appropriate district assemblies. A 21-day public notice of the EIS publication shall be served by EPA for the public information and reaction through newspaper advertisement or posting at appropriate places as part of the review process. EPA will collate public views and shall undertake a field/site verification exercise if considered necessary.

7. PUBLIC HEARING

If a strong public concern over the undertaken is indicated and impacts are extensive and far reaching, EPA shall hold public hearing relating to the assessment. The EPA

shall appoint a panel who will organise the public hearing on the proposed undertaking. This panel will consist of three to five persons. The chairman will not be a resident of the area affected by the undertaking, but at least, a third of the panel's membership must be residents of the geographic area where the undertaking is located. The information received at these hearings, together with the final report and any recommendation of the panel, may be made public. In the event where public hearing is held on an undertaking, the processing of the application may extend beyond the normal 90-day period for processing an application.

8. ENVIRONMENTAL PERMITTING DECISIONS (EPD)

8a. Environmental Impact Statement (EIS)

Where the draft EIS is found to be acceptable, the proponent shall be notified to finalise the EIS. Following submission of eight (8) hard copies of the final EIS and a copy 3.5 floppy diskette (ASCII format) to EPA, the proponent shall be issued a Provisional Environment Permit for the proposed undertaken.

If the EIS is not acceptable, the proponent may be required to re-submit a revised statement at a later date or conduct further studies to modify the statement as necessary.

8b. Preliminary Environmental Report (PER)

The requirement for a PER is to provide sufficient information on the undertaking as a basis for a decision on whether an EIS is required for the undertaking or not. If the decision indicates that EIS is required, then a Provisional Environmental Permit cannot be issued on the basis of the PER, and the proponent will accordingly be advised to re-route through 'scoping'.

If the PER is accepted then a Provisional Environmental Permit will be issued to the proponent.

8c. Registration

If the decision indicates that no further information is required beyond the registration stage, then the proponent will be issued with a Provisional Environmental permit for the undertaking.

8d. Validity of the Provisional Environmental Permit

The Provisional Environmental Permit is the initial environmental approval that allows any proposed development to commence on environmental grounds.

There is a time limit on the validity of the environmental decision by EPA. The decision is effective for a period of eighteen (18) months from the date that the proponent is advised of the decision. If the work has not commenced on the undertaking within that period, the original decision becomes void, and the undertaking must be re-registered.

8e. Environmental Permit

The Provisional Environmental Permit is regularised within a time-span of up to 24 months of its issuance and project commissioning.

The basic requirements for the regularisation, the granting of the Environmental Permit are:

- Satisfactory commencement of development, operation and performance
- Observance of relevant permitting/approval conditions
- Compliance with proposed mitigation and other management undertaking outlined in the EIS.
- Submissions of the first annual Environmental Report.

Failure to satisfy these conditions shall render the provisional environmental permit invalid.

4.4.2 Fees

Where the undertaking is approved, the proponent shall pay a fee prior to collection of the Provisional and Environmental Permit. The consideration fee shall be determined by EPA.

A fee would be paid on the issuance of an Environment Permit.

4.4.3 Post-Audit

To ensure enforcement and compliance of these procedures, and to learn lessons from the past, it is required that EPA undertakes evaluation of positive and negative impacts of the development during the implementation of the project activities. This also makes it possible to manage unanticipated impacts and to ensure improvement of the EIA process and practice.

In keeping with this, all undertakings in Ghana are supposed to be covered by Environmental Management Plans. And after one year of operation, the proponent is expected to submit an Environmental Management plan every three years.

4.4.4 Penalties

Provisions in the Environmental Protection Agency Act 1994 provide the necessary framework within which proponents who fail to comply with the requirement of the Environmental Impact Assessment Procedures are sanctioned.

4.4.5 Determination of an application

The cumulative period for the determination of an applicant at all stages by EPA is at least ninety (90) days. This period applies to the time EPA would take to make a decision and does not include the period a proponent takes to fill a registration form, prepare Preliminary Environmental Report or Environmental Impact Statement and when an application goes to Public Hearing.

4.4.6 Appeal

In the event that a proponent is dissatisfied with an adverse decision by EPA at any stage of the process, or failure to determine an application within the 90 days the proponent has the right of appeal to the Minister responsible for Environment. The Minister would appoint a Board who will hear the appeal and take decision on the undertaking.

4.4.7 Public Notices

The proponent shall give notice of his proposal to certain bodies as well as advertise them in the national press and make them available for public inspection. For the

avoidance of doubt, the public notice by the proponent shall be made after the screening stage whenever an EIA is deemed to be necessary and/or wherever required.

4.4.8 Technical Review Committee

A nine-member cross-sectoral Technical Review Committee, including a representative from Ministry of Environment, Science & Technology, two representatives from the Environment Protection Agency, and six other representatives from other government institutions and organisations, shall assist the EPA in the entire review process whenever required.

4.4.9 Assessment by Key Informants and Analysis of the EIA Procedures

Officials of the EPA indicated in the interviews that they found the *EIA Procedures* helpful and sufficient for monitoring, evaluating and ensuring that projects pass the environmental test before being permitted to commence. They point out that over the eight years they had been implementing the procedures, they had no reason to suggest a review. On a scale of 1 to 5, they score the procedures 5.

To find out how mining project managers viewed the procedures, the question was put to a senior official at the Environmental Department of AngloGold Ashanti. His response was that the procedures were very strict, and to make matters worse for mining operators, the EPA were too strict sometimes in enforcing the procedures. The official was asked to reconcile what he was saying with the damage by mining operators (especially small scale miners) seen all over the place. His answer was that given the strictness with which the EPA dealt with AGA, he found it strange that some small scale miners could do what they are doing to the environment and get away with it. “It looks like the EPA is only interested in environmental damage caused by big companies,” he concluded.

It can be inferred from the interviews with officials of the EPA and AGA that the procedures are sufficient for their purpose. And reading through the procedures, it can be seen clearly that they are comprehensive and detailed. The promulgation of these environmental impact assessment procedures was a policy action stated in the EAP in the following words: “*Legislation will also be enacted to prescribe the necessary environmental standards and guidelines for mining and manufacturing industries. To*

this end, Environmental Impact Assessment will be required for all new investments that would be deemed to affect the quality of the environment.” (EAP, 1991: p18).

The promulgation of these Environment Impact Assessment Regulations in LI 1652, and the use of these regulations in the last eight years are evidence that those policy actions have been actualised and fulfilled. The score of 5 on a scale of 1 to 5 is acceptable.

4.5 IMPLEMENTATION BODIES AND RELATED ISSUES

This subchapter presents the assessment by key informants of the bodies that are expected to implement or facilitate the implementation of the policies and to enforce the associated laws and regulations. Also presented are analyses of the implementation issues key informants raised in their assessments. The scope will however be limited to those aspects of the implementation that are relevant to the monitoring and protection of the environment against the effects of both small scale and corporate mining operations.

4.5.1 Assessment by key informants and Analysis of MEST

According to information on its website, the Ministry of Environment Science & Technology (MEST) is the executive outfit ultimately responsible for environmental policy formulation. It is stated that their mandate is to plan, control and ensure the harmonious, sustainable and cost effective development of human settlement in accordance with sound environmental and planning principles.

The officials at the MEST grade their ministry quite favourably in terms of its achievement of the objectives for which it was created. They point to the formulation of the EAP of 1991 and the many policy actions (such as the passage of various laws and regulations, and the setup of the needed implementation bodies such as the EPA) that have materialised from the plan as evidence that the MEST has been performing its supervisory mandate satisfactorily.

One of the main responsibilities of the ministry is policy formulation that sets the pace for implementation. The EAP expired in 2000 but 12 years on, it has still not been replaced. Did this not suggest that the ministry has been sleeping on the job? In answer to this question, the officials denied sleeping on the job and indicated that they are in the

process of drawing a fresh plan, and that, in the meantime, they are still being guided by the provisions of the old plan in their supervisory functions.

Asked about their personnel and logistical challenges in respect of safeguarding the environment against the effects of mining, they indicated that they have no direct functions in that regard, and that, those checks are exercised by statutory institutions such as the EPA.

Asked about their financial challenges, the officials further disclosed that in 2011, the ministry was allocated GH¢177,443,578 for their activities, which amount was woefully inadequate, and that, the amount of GH¢123,247,875 (which is actually lower than the 2011 figure) allocated in 2012 was also likely to be inadequate.

In an interview with the budget director at the Ministry of Finance, he confirmed that the ministry was unable to give to the MEST all the funds they requested. But he further explained that this was not peculiar to the MEST, but that, all ministries, departments and agencies (MDAs) bring their needs to the Ministry of Finance, and then, depending on the total projected inflows for the financial year, each MDA is given a budget ceiling which means that the allocated money would be smaller than the requested budget. However, the Finance Ministry always ensured that it is capital expenses that are slashed. “There is nothing the minister for finance can do about that. When the money is not there, it is not there”, he added.

The question of the performance of the ministry was bounced off officials of the Environmental Protection Agency for their assessment. Apart from the absence of an operative national environmental action plan, they also faulted the ministry for not bringing about sufficient coordination among the various ministries in the fight against environmental degradation. They indicated that coordination among the Ministry for Lands and Natural Resources (that is responsible for mining), the Ministry of Interior (that oversees the security agencies) and the Ministry of Environment Science & Technology could be improved.

Officials of AngloGold Ashanti were reluctant to assess the MEST, simply because, in their normal cause of work, they had little interactions with the ministry. They however pointed out that the security agencies were not helping with the control of illegal mining which invariably impacted negatively on the environment, and that it was the

responsibility of the ministry to take this up at the governmental level, but somehow, illegal mining activities that denigrate the environment go on unabated. They hoped that the minister will take the matter up as soon as possible. Compelled to score the performance of the ministry on a scale of 1 to 5, they gave the MEST a score of 3.

While the officials of MEST gave their own performance a score 4 on a scale of 1 to 5, the EPA officials scored the ministry a score of 3.

Officials	MEST	EPA	AGA
Average Score	4	3	3

Table 8: Performance Scoring of the MEST

To appreciate the responsibilities and performance of the Ministry of Environment & Science and Technology, it is important to cite Section 36(9) of Ghana’s Constitution which provides that: *“The State shall take appropriate measures needed to protect and safeguard the national environment for posterity; and shall seek cooperation with other states and bodies for purposes of protecting the wider international environment for mankind.”*

This is a mandate assigned government by the country’s supreme law. In response to this mandate, the government has set up the Ministry of Environment Science & Technology as the lead government ministry charged to carry out this duty on behalf of the state. Out of this constitutional mandate, the ministry has stated the following on its website as its mission: *“To plan, control and ensure the harmonious, sustainable and cost effective development of human settlement in accordance with sound environmental and planning principles.”*

It is obvious from all these that the ministry’s role has to do with the broad policy environment. In this sense, the ministry’s failure to replace the EAP of 1991 after its expiry in 2000 (twelve clear years thereafter) is unpardonable. No clear persuasive reason was given for this inaction. It would appear that there is some lack of appreciation of the need for an overall national policy on the environment. The officials of the EPA were right to suspect (please refer to 4.2.3) that the ministry just did not find

the need for a new plan because of the existence of outstanding issues in the expired plan.

Has the ministry's inability to get all the money they require from the Ministry of Finance weakened its institutional ability to safeguard the environment against the undesirable effects of mining? It does not appear so. In respect of checking mining activities, the ministry itself does play any direct role. What MEST needs to do is to administratively ensure that the relevant institutions are doing their work well. There was no evidence that the ministry's administrative supervision of the relevant institutions had suffered. The budget director at the Ministry of Finance explained that when budgets are cut, it is capital expenditure that are cut. Salaries and other basic administrative expenditures are left intact. It is therefore fair to infer that the institutional functions of MEST (with regard to mining effects on the environment) cannot be said to have been affected by the imposition of budget ceilings.

Now, it is fair to fault the MEST for the absence of a new national environmental plan, but the same MEST also has to be given credit for the implementation of the expired plan. While some policy actions are outstanding, most of the major interventions prescribed in the EAP have been carried out. This was revealed in the interviews with the relevant key informants. But that can also be inferred from the review of laws and regulations. And since MEST is the ministry that sponsors all environment-related legislation in parliament, they can be given credit for these interventions.

Overall, the average score of about 3.3 on a scale of 1 to 5 by the relevant key informants reflects accurately the extent to which the MEST has lived up to the aspirations that necessitated its establishment.

4.5.2 Assessment by key informants and Analysis of the EPA

Your agency has been in existence since 1994. Has your performance been adequate in protecting the environment against the effects of mining activities? Each of the key informants at the EPA hesitated when this question was asked, but later answered that they had been doing their best.

According to the officials, the EPA generally operates through its regional offices. It has a 'Mining Department' at its head-office in Accra that is supposed to address major environmental issues directly related to mining. This was confirmed from the

organogram of the EPA (please refer to Appendix 4). They further disclosed that there is no such 'mining department' or even 'mining officer' at the regional offices of the Agency.

When it comes to the routine monitoring and checking of the impact of mining in Obuasi, the Ashanti Regional office of the EPA is directly responsible. The office has technical staff strength of eight (8).

The main chemical analysis equipment with which the office performs its routine mining-related environmental quality monitoring is an average-size laboratory at its regional office and a portable mobile laboratory that can be used to perform minor on-site tests.

The regional office has only two operational vehicles. The office has no properly functioning computer, and officers use their own laptop computers to do office work. There is also no internet connection in the office. The officials further disclosed that another challenge faced by the EPA in the region was weak inter-institutional collaboration in the protection of the environment.

They confirmed that any undertaking must first get environmental clearance from the EPA. Thus a proposal of any such undertaking, together with its *environmental impact assessment* and *impact management plan*, should be submitted to the Environmental Protection Agency and copied to the Mines Department and the Minerals Commission. The EPA is supposed to study these documents, visit the proposed site of the project, and convince itself that the assessment is accurate, and that the impact management plan is acceptable, before giving its approval. All these are supposed to be done in about 90 days.

According to the officials, AGA and other mining operators, except the informal artisanal ones all go through this procedure, and a thorough scrutiny of these proposals and environmental management plans are done before clearance is given. Periodic tests of water and soil samples are done to monitor water and soil quality in some areas of heavy industrial activity in the region. Also, when environment-related complaints are made, the EPA conducts tests to investigate the veracity or otherwise of the complaint.

Then how come that artisanal or galamsey miners are doing irregular and indiscriminate mining all over the place? Do they go through these processes? The response from all

the EPA officers interviewed was that the galamsey operators were very difficult to monitor because they don't stay at one place. The officers put the blame on the chiefs who give their lands to these illegal miners, some of whom are foreigners. They all believed that the aggression and mode operation of the galamsey miners make the problems a major security matter rather than just environmental. Some of the officials expressed their strong suspicion that senior state officials were behind many galamsey operation in the country.

Asked about their challenges, the officials complained that the operational funds the regional office receives from head office is adequate. Funding for the work of the EPA is from the National Environment Fund. Inflows into the fund are: (a) grants in aid from the Government for the protection or improvement of the environment, (b) levies, permit and processing fees collected by the Agency in the performance of its functions, and (c) donations and gifts to the Agency. Though they got some money from fees, penalties and levies, this was too small to fill the gap.

Further, the officers complain about lack of staff, particularly for specialised areas such as air quality, soil quality and others.

According to the public affairs director at the EPA head office in Accra, the statutory governing body of the EPA is a Board responsible for the discharge of the functions of the Agency. The members of this Board are appointed by the President and are accountable to the minister in charge of the environment.

How do the EPA officials score their own performance in terms of their mandate? On average, they gave EPA as an institution a performance score of 3 on a scale of 1 to 5.

However, at the MEST, the officials were hesitant in scoring the performance of the EPA except to say that the EPA people have been doing their best under difficult circumstances. Their reason for refusing to score the performance of the EPA was that, the MEST was the mother ministry of the Agency, that is to say the agency is their daughter, and they should be helping the Agency to address its shortcomings rather than standing in judgement over them.

The MEST officials were not clear as to what they meant by "difficult circumstances" of the EPA, but they maintained that every organisation has challenges, and the EPA was no exception. Overall, however, they thought the EPA was doing "quite well".

Officials of AngloGold Ashanti had a somewhat unfavourable view of EPA's performance. They actually gave the EPA a score of 2 on a scale of 1 to 5. Both officials of AGA were of the view that while the EPA seems to be very aggressive when it comes to checking the established mining companies, the same EPA stands by while small scale miners destroy the environment with impunity. They complained that their own mining concessions have been invaded illegally by small scale mining operators and informal artisanal miners who observe no environmental preservation rules whatsoever. But nobody seems to be concerned about their activities.

They however admitted that when it comes to checking corporate mining, the EPA is very proactive, which they said was good, but wished the same proactivity would be extended to other mining operations.

The senior police officers interviewed said they did not really feel the presence of the EPA when it comes to environmental matters. They said almost all the environmental offenders who have been arrested by the police have been arrested upon complaints by concession owners (mostly AGA) whose concessions have been encroached by the offenders. The reasons for the arrests have not been so much about the environment as they have been about the encroachment. In all the cases, however, it is clear even to the environmentally untrained police that the environment has been polluted or damaged in some way. But the EPA never complains to us, even though we know they receive complaints from the communities. Asked to score the performance of the EPA on a scale of 1 to 5 they gave them a score of 2. The following are the scoring by the relevant key informants:

Officials	MEST	EPA	AGA	POLICE
Average Score	Evasive	3	2	2

Table 9: Performance Scoring of the EPA

Until 1994, there was an Environmental Protection Council established by a decree, (NRC Decree 239 of January 23, 1974). The EPC was primarily an advisory and research organisation that was expected to merely co-ordinate activities of other bodies. It was without the power to directly enforce any measures in the performance of its responsibilities or to pursue punitive actions against environmental offenders. It was to

cure these weaknesses that the Environmental Action Plan prescribed the strengthening of the council and an expansion of its mandate and authority. In accordance with the action plan, the Environmental Protection Agency was created in 1994.

The EPA is therefore the lead agency directly responsible for evaluating new large-scale mining projects and granting 'environmental permits' for the commencement of those projects. This is a function assigned by the *Environmental Assessment Regulations, 1999* (LI 1652). By this function, the Agency is to ensure that the potential impacts of mining projects are manageable, and that, the project proposals are accompanied by the necessary environmental management plans.

Broadly, the statutory functions of the EPA as set out in the EPA Act include among others the following:

- i. To advise the Minister responsible for the environment on the formulation of policies on all aspects of the environment and, in particular, make recommendations for the protection of the environment.
- ii. To prescribe standards and guidelines relating to the pollution of the air, water, land and other forms of environmental pollution.
- iii. To co-ordinate the activities of and facilitate collaboration between all bodies (such as government agencies, district Assemblies, research institutions, etc.) concerned directly or indirectly with the protection or preservation of any aspect of the environment.
- iv. To ensure compliance with any laid down environmental impact assessment procedures in the planning and execution of development projects, and to enforce regulations and laws relating to the protection of the environment.
- v. To advise and encourage effective planning in the use and management of the environment.
- vi. The EPA is also responsible for managing the environmental impact assessment process for new development undertakings, and also for doing compliance monitoring for on-going projects. Thus, it is expected that by this monitoring,

incidents of environmental pollution or other undesirable effects on the environment resulting from mining operations would be detected and addressed.

- vii. The EPA is also expected to collate the results of environmental quality monitoring performed by other recognised bodies and collaborate with the relevant stakeholders in the correction of any observed anomalies.
- viii. Further, it is the responsibility of the Agency to commission specific investigations either singularly or jointly with other bodies into suspected cases of environmental pollution.

These functions, indeed, do impose a basic necessity: The institutional framework within which EPA has to do this has to be sufficiently strong and responsive to the demands of the functions. First, the Agency has to have enough and properly trained personnel with the requisite technical expertise. Second, the political environment must be co-operative of the Agency in the performance of its work. Now, how equipped is the EPA for this purpose? And what kind of political co-operation does the Agency enjoy in the performance of its functions?

As a national body, the Agency principally operates through its regional offices though it has a 'Mining Department' at its head-office in Accra that is supposed to address serious environmental issues directly related to mining. There is nothing like 'mining department' or even 'mining officer' at the regional offices of the EPA.

As the EPA officials disclosed, with regard to the routine monitoring and checking of the environmental impact of mining in Obuasi, the Ashanti regional office of the EPA is directly responsible. This is because Obuasi, unlike Tarkwa, has no district office of the EPA. The regional office of the Agency, as was learnt from the key informant interviews, has technical staff strength of eight (8).

The main chemical analysis equipment with which the regional office performs its routine mining-related environmental quality monitoring is an average-size laboratory at its office and a portable mobile laboratory that can be used to perform minor on-site tests.

They have only two operational vehicles. The office has no properly functioning computer, and officers use their own laptop computers to do office work. There is also

no internet connection in the office. Yet, another challenge faced by the EPA in the region was weak inter-institutional collaboration in the protection of the environment.

Now, with this level of logistics (personnel & equipment) at the disposal of the Office, how much attention can Obuasi, just one of the towns in the Ashanti Region, receive?

In accordance with the 'environmental permission' requirement, all new projects of AGA and other mining operators, such as the construction of a tailing dam, water treatment plants, etc., are subject to 'environmental clearance'. Thus a proposal of any such project the operators intend to undertake, together with its *environmental impact assessment* and *impact management plan*, should be submitted to the Environmental Protection Agency and copied to the Mines Department and the Minerals Commission. The EPA is supposed to study these documents, visit the proposed site of the particular project, and convince itself that the assessment is accurate, and that, the impact management plan is acceptable, before giving its approval. All these are supposed to be done in about 90 days.

Nothing was gathered in the study that suggests that this procedure is not enforced, or that, AGA for example, has at any point failed to comply. The concern is whether the environmental impact assessment and the impact management plan are properly scrutinised before the issuance of the approval. The Ashanti regional EPA officers insist they do, but this claim is not supported by the logistics available to the Office.

Secondly, even though the Office claims that periodic monitoring of environmental quality is done by taking water samples from the area and analysing, no consistent data could be made available for this study. Neither could the periodicity or the spread of the sampling locations be shown. In the town itself, neither the personnel of the Environmental Department of AGA or the Environmental Management Committee of the Obuasi Municipality were aware of any such serious, continuous or widespread testing by the EPA.

It is obvious from these that no proper routine environmental quality monitoring is done in Obuasi. It may well be, as was disclosed by one of the officials at the EPA, that once a case is made by the inhabitants, the EPA might be very responsive in conducting some form of investigation into the complaint. But the hitch here is that many people in Obuasi have come to consider AGA and government as the same, and therefore, any

complaint made to any government agency as an exercise in futility. In fact, this explains why it has become quite common for discontent of some residents to find expression in violence.

But this inability of the Agency to properly conduct tests and research in Obuasi to see the effect mining in the area is having on the environment is not surprising. The EPA is primarily not a research institution in the true sense of the expression. The Agency is “to promote studies, research, surveys and analyses for the improvement and protection of the environment and the maintenance of sound ecological systems in Ghana.” The EPA Act which assigned this function, however, did not say how the Agency was to “promote” such research.

One would however assume that, perhaps, the Agency is expected to do this by engaging private consultants on contract basis. But this guess is rendered ridiculous by the fact that, as a public agency, the financial budget of the EPA simply cannot support the contracting of consultants for this purpose. And to get government or donor agencies to fund such ‘special projects’ would mean that the Agency should, as part of its operations, have done some preliminary assessment of the Obuasi environment to establish sufficient grounds to justify such external assistance.

It does not appear that the EPA is in a position to do any such ‘preliminary assessment of the Obuasi environment’, and this was conceded by the EPA officials. The Office, at present, complains about the inadequacy of the operational funds it receives from its head office. Again, the Office complains about lack of staff, particularly for specialised areas such as air quality, soil quality, etc.

The conclusion that can be drawn from these observations is that the EPA, as the ‘Custodian of the Ghanaian environment’ has not been sufficiently equipped, in terms of, staff, equipment and operational logistics to effectively monitor and check the effects of mining activities on drinking water sources in Obuasi.

It does not appear that the role for EPA envisaged in the EAP and stated in the law establishing the Agency is being satisfactorily played by the Agency.

Another observation made by the study is in relation to the political will with which the Agency can check a corporate giant such as AGA. Article 3 of the EPA Act empowers the Minister responsible for environment “to give to the Agency such directives of a

general nature as to the policy to be followed by the Agency in the performance of its functions as appear to the Minister to be necessary in the public interest.” It may appear from the wording of this provision that ministerial control of the Agency is only of a general nature, and that, considerable amount of freedom has been given to the Agency in the usual performance of its functions. Between the EPA and AGA, how true is this in practice?

As has been mentioned already, AGA, for the Ghanaian economy, is a hen that lays golden eggs. In the last twenty (20) years, the company has undergone such a dramatic expansion, coming with it increased output. The major shareholder of the company is AngloGold, which has its head office in South Africa. Thus AGA has emerged as the single largest and most successful privately owned company in Ghana, employing a work force of about five (5) thousand people. Emerging at a time when the country is enticing the investment of foreign capital into the Ghanaian economy, AGA is not just a hen that lays golden eggs, it is also a symbol of the country’s ability to sustain a vibrant private sector. This tall stature of the company has made it the darling company of the “powers that be”. Further, government has minority shares in AGA and has representatives on the governing board of the company.

The statutory governing body of the EPA, as was revealed by senior officers of the Agency, is a Board responsible for the discharge of the Agency’s functions. The members of this Board are appointed by the President.

Now, with the Board accountable to the Minister for Environment, and the technical staff of the Agency accountable to the Board, a situation is created within which AGA could enjoy considerable political protection. There is the tendency for the EPA to be unduly cautious to pursue seriously any environmental issue against the company.

With this in mind, the claims by AGA officials that they are over-checked by the EPA needs to be interpreted cautiously. In the everyday workings of the EPA, the AGA and other big corporate mines (because they have address and can easily be located) may see the environmental officials quite often. Their activities on these frequent visits may give the impression of strictness. However, the existence of Arsenic (soluble) and Cyanide (free) pollution in the Kwabrafo and Nankasu streams over and above EPA guidelines for surface water suggests that these frequent visits have not yielded much. At best, it is a case of barking loudly without biting.

It must also be appreciated that sound environmental practices are now a precondition for the granting of loans by international funding agencies to companies, especially multinationals. Hence pursuing pro-environmental actions against a multinational like AGA could have far-reaching consequences. Thus, this study finds the political environment within which EPA operates, particularly, with respect to the AGA as potentially unfavourable.

But the most obvious evidence that the EPA has a lot of ground to cover is in the area of galamsey operations. Here, the EPA, from its senior officials, seem to have given up that they could safeguard the environment against operations. That is a disturbing reality. The police are complaining that they hardly feel the presence of the EPA even though they (the police) always come across cases of concession encroachment that invariably involve environmental degradation. The AGA officials also decried the inactiveness of the EPA when it comes to checking galamsey operators. It is obvious that the EPA for reasons of inadequate logistics and lack of cooperation with security agencies, are just not checking galamsey activities against the environment.

In summary, it can be said that for lack of operational resources and logistics, and possibly, for political reasons, the Agency is lagging behind the expectations of the Environmental Action Plan. The average score of about 2.5 on a scale of 1 to 5 given by the relevant key informants is a fair assessment of the EPA.

4.5.3 Assessment by Key Informants and Analysis of the OMA

In the interviews with the two senior officers and assembly member of the OMA, they generally admitted that the Obuasi Municipal Assembly as an institution had a long way to go in protecting the environment. None of them had seen a copy of the Environmental Action Plan but they accepted that since they were in charge of the entire Obuasi, they had to be in charge of environmental matters as well. They however did not see the assembly as the institution with a lead responsibility in protecting the Obuasi environment.

Did they have the District Environmental Management Committee (DEMC)? Their answer was yes. Did the communities have the Community Environment Committee (CEC)? The two officials were not sure; the assembly member said there were none.

None of the key informants from the OMA remembered the last time the DEMC met. The senior officials indicated though that the DEMC meet once a while.

Asked whether the OMA had an environmental management plan, they said they had a list of dos-and-don'ts that people who wanted to build toilets and other activities were to observe but no well drafted plan. But the list of the dos-and-don'ts was not available. Were they aware of the directive by the Ashanti Regional EPA office that all DEMC should prepare an 'environmental management plan' for their districts, they OMA officials said they remembered something to that effect but did not remember whether the assembly complied.

Who are the members of the DEMC? They are assembly members who occupy that position through elections to give political representation to the people within their electoral areas. According to the OMA officials, these members of DEMC are not given any special training on environmental matters, nor are they given any allowances by virtue of their membership of the DEMC.

Asked whether the people of the municipality do not put pressure on the assembly and assembly members, their answer was that the general consciousness of the population about environmental matters was low, and that they were concerned only when there was a direct visible or perceptible nuisance to their immediate environs. How do they score the performance of the OMA on the management of the environment, they gave themselves a modest score of 2.5 on a scale of 1 to 5.

The senior police officers interviewed, like the officials of the OMA, thought that the role of the assembly in protecting the environment was more about political oversight. They were however, not clear on which institution the assembly was to exercise political oversight over. When shown, a copy of the *Guidelines on Environmental Management for District Assemblies*, they smiled and said that they had not been receiving any complaints from the assembly. They scored the assembly 1.5 on a scale of 1 to 5.

Officials of the EPA interviewed made a similar assessment of the OMA. They saw this as a general trend across all the assemblies, and put the blame of the political heads of the assemblies who have not been resourcing the environmental department to do their work well. Asked if they had been giving the members of the DEMC of the OMA any

training on the environment, they said they have not received any such invitation to train people in the assembly. If they got any such invitation, they will provide it; of course, at the expense of the assembly itself. On a scale of 1 to 5, they gave the OMA a score of 2.

Officials	OMA	EPA	POLICE
Average Score	2.5	2	1.5

Table 10: Performance Scoring of the Obuasi Municipal Assembly.

In line with the government's policy of decentralisation, district assemblies are required to play a central role in the implementation of the Environmental Action Plan. In the EAP of 1991, it is expected that ultimately District Assemblies will take full responsibility for the protection of their local environments with the EPA playing a parent role. The broad responsibility for monitoring and co-ordinating environmental protection and improvement activities in the districts assigned to the district assembly in the EAP (Vol 1; page 85) is broken down into specific functions in a document known as the *Guidelines on Environmental Management for District Assemblies*.

It is stated in the guidelines that Community Environmental Committees (CEC) be established to serve as the organs through which the environmental programmes of the District Assemblies will be carried out at the community level.

The organ supposed to lead the district's environmental management effort and advising the assembly on all issues on the environment is the District Environmental Management Committee (DEMC) with a responsibility to "Enforce standards and regulations on waste water discharges, emissions, and disposal of solid wastes, especially in the coastal zones" This DEMC is supposed to work with the more decentralised Community Environment Committee (CECs) which are based in the various localities.

It is obvious from these functions that, if the Obuasi Municipality was performing its environmental management role satisfactorily, the Environmental Protection Agency would have had only a facilitating role to perform in Obuasi. But what is happening?

As was disclosed by the officials interviewed, in the Obuasi municipality, the CECs were non-existent. It was further discovered that though a list of people supposed to constitute the District's DEMC existed, the officials could not remember exactly when the committee last met. They all however agreed that "the committee meets once a while".

In 1996, the Ashanti Regional EPA office required all DEMC to prepare an 'environmental management plan' for their districts. As became evident in the interviews, the chairman of the Obuasi Municipality DEMC remembers such a directive, but could not remember whether the Assembly actually complied with the directive.

The reality of the matter, as demonstrated by these observations, is that, the Obuasi Municipal Assembly is nowhere near the role the Environmental Action Plan expected it to play. What has accounted for this?

The general environmental consciousness in the municipality, both for the educated and the uneducated is low. People become worried only when a direct and visible pollution of say their drinking water source takes place. But even that, whether they recognise that the pollution is only a part of a wider issue of environmental degradation is another matter.

Secondly, we have observed that even the Ashanti Regional office of the EPA shares a single mobile laboratory with five other regions. What level of logistics can we expect the DEMC to have? Indeed, the DEMC has nothing! The members of the DEMC do not receive any allowances for serving on the committee. Neither have they received any systematic training in matters of the environment. The motivation and ability to function is simply non-existent.

The revelation by the police that they have not been receiving any complains by the Assembly in respect of environmental degradation is not surprising. In fact, the police saw the Assembly as being responsible for the environment only to the extent that, as leaders of the municipality, they should take interest in everything in the municipality including the environment. Both police officers interviewed thought the environment was the business of the EPA rather than the assembly. It was worthy of note that, when shown a copy of the *Guidelines on Environmental Management for District assemblies*,

they expressed surprise after reading a few sections of the document. This illustrates how little the OMA was performing in the eyes of the police who are supposed to help the assembly to enforce the laws on environment.

Thirdly, the environmental protection functions of the Assembly is supposed to be performed with funds from the already overburdened and beleaguered *District Assembly Common Fund (DACF)*. But traditionally, local authorities for the Obuasi Municipality have never seen themselves as having a lead and technical function in managing environment. The admission by the senior official that they do not see the assembly as the lead agency in protecting the environment is instructive. Thus, with other pressing and competing demands bearing on the *DACF*, environment is not considered a priority.

This point is underscored by the EPA officials interviewed. They agreed that the Obuasi Municipal Assembly, like all assemblies, were not “doing much” in protecting the environment. At the same time, the EPA officials were very sympathetic of the non-performance of the DEMC because, like the assembly, they the EPA were also cash-strapped. The EPA officials put the blame of the municipal chief executives who they said had not been resourcing the environmental department to carry out the environmental work of the assembly.

The conclusion that can be drawn from these observations is that even though very elaborate roles were assigned the District Assemblies by the National Environmental Action Plan, the Obuasi Municipality has not been equipped in any way to do this even though the implementation period is over. The result has been that, the municipality is simply not in a position to play this role, and they have not been playing this role. On a scale of 1 to 5, the key informants gave an average performance score of 2 to the Obuasi Municipal Assembly.

4.5.4 Assessment by Key Informants and Analysis of DSSMC

According to a senior officer of the District Small Scale Mining Centre in Dunkwa, until 1989, small-scale mining in Ghana was illegal. Nevertheless, the trade, popularly referred to as ‘galamsey’ flourished alarmingly in Obuasi and its surrounding villages. Youngsters of school going age from other places such Kumasi and the northern part of the country rushed to the town to join the lucrative trade. Obuasi became a ‘fast-town’

with a high incidence of prostitution, robbery, unemployment, truancy, delinquency, etc.

Many of the mining towns in Ghana witnessed similar developments. And this state of affairs appeared to have been worsened by the influx of “Agege returnees” in 1983 most of whom were jobless. It was obvious by the late eighties that the situation had gotten out of control. Another problem that fell out of this “galamsey” business, according to the officer, was that gold won from it had to be sold illegally in the under-market and smuggled outside the country.

It was to address these social-economic problems that the Small Scale Gold Mining Law was passed in 1989 to regularise the activities of these “galamsey” operators with the intention of bringing their activities under control. In 2006, this law was repealed and replaced with the Minerals and Mining Act, 2006 (Act 703), which provides for the establishment of the Small Scale Mining Centres (District Centres) by the Minerals Commission. The purpose of the District Centres is to regulate small scale mining in the designated ‘Districts’.

From this background, it is obvious that the motive for the regularisation of small scale mining was purely socio-economic. This is conspicuously reflected in both the earlier law and also the new Act 703 that replaced the earlier law, to the extent that the procedures laid down to regulate the establishment of small scale mining operations generally address socio-economic concerns. A question this study sought to answer was: Did the regularisation process take into account the environmental consequences of small scale and artisanal mining by individuals all over the country?

Any person or persons wishing to undertake any type of small scale mining is required to register with the District Small Scale Mining Centre (District Centre) of the designated area where he or she intends to operate. Such a prospective operator is required to submit, with the application to register, a map of the immediate area surrounding the location he intends to mine. It is upon inspection by the officer in charge of the District Centre that the officer may or may not register the undertaking. It is when an application for registration has been granted that the person(s) could be granted a licence to operate by the Mines Department.

It can be seen from this 'clearance' procedure that the office responsible for the technical appraisal of the applicant's proposal is the District Centre. Now, Obuasi is served, or is supposed to be served by the Dunkwa District Centre. The Centre has just one officer in charge. He is required, upon the submission of the application, to go to the proposed area to be mined and make a technical inspection of the place. The officer should study the proposal and the proposed area and convince himself that the undertaking does not pose any threat to any aspect of the environment.

The officer, in charge of the Dunkwa District Centre that also serves the Obuasi community, admitted that he did not have technical expertise about issues of the environment. The Dunkwa District office relied on environmental clearance by the EPA to satisfy itself that the project had satisfied the relevant environmental requirements.

So with the mass influx of Ghanaian and non-Ghanaian youth into small scale and artisanal mining, operating indiscriminately across the country, is the already under-resourced EPA in a position to monitor and regulate their activities? The answer is an obvious no. If the regularisation of small scale mining was to throw light on their activities and make it possible to regulate them, then that objective has not been achieved. The regularisation process did not make commensurate arrangements to address the environmental challenges associated with small scale and artisanal mining. But this is, in fact, an understatement of the real problem. The real problem is that the DSSMC has not been able to enforce (whether on its own or in collaboration with other agencies) the procedures that small scale and artisanal miners must satisfy before commencing operation. And the Dunkwa Office for instance is not sufficiently equipped and resourced to do this. The result is that small scale and artisanal miners do unregulated unlicensed mining all over the place with complete disregard for the environment.

The second observation was that, the composition of the Small Scale Mining Committee which is supposed to assist the District Centre is anomalous. The composition of the Committee specified in Act 703 is: (a) the District Chief Executive or the representative of the District Chief Executive who shall be the chairperson of the Committee; (b) the District Officer appointed under section 90(2); (c) one person nominated by the relevant District Assembly; (d) one person nominated by the relevant Traditional Council; (e) an officer from the Inspectorate Division of the Commission; and (f) an officer from the

Environmental Protection Agency. Unfortunately, Obuasi falls outside the District which has Dunkwa as its capital. The question is, which district provides these persons? Is it the Obuasi Municipality or the Lower Denkyira District which has Dunkwa as its capital?

Whatever this composition means in practice, the reality is that this Small Scale Gold Mining Committee for the District Centre at Dunkwa is for all practical purposes, non-existent. According to the officer in charge of the Centre, the Committee does not give the Centre any support. And so, with all the work falling on the one officer at the District Centre, his function to regulate small-scale mining in Obuasi has been (to put it bluntly) abandoned.

To the extent that the Small Scale District Centre is seen as the main regulator of small scale mining in Obuasi, the centre is not (even with theoretically stated support of the EPA) equipped sufficiently to deal with environment related matters satisfactorily. The officer in charge scored the centre 3 on a scale of 1 to 5. But for the purpose of safeguarding the environment, a performance score of 2 would be more appropriate.

4.5.5 Assessment by Key Informants and Analysis of the Minerals Commission

The Minerals Commission is a body established by the Mineral Commission Law (1986), to regulate and ensure the sound, effective and sustainable winning of the country's mineral resources, with a statutory function to monitor the operations of all entities that have the responsibility or franchise for minerals winning in the country.

By the law, the head of the Inspectorate Division of the Commission or an officer authorized by the head may at reasonable times enter a reconnaissance, prospecting, or mining area or premises in the area other than a dwelling house to: (a) break up the surface of land in the area for the purpose of ascertaining the rocks or minerals in or under the land, (b) take samples or specimen of rocks, ore or concentrates, tailings or minerals situated in an area under a mineral right for inspection or assay, (c) inspect explosives magazine on a mine and direct in what manner an explosive shall be stored, (d) inspect the area of mineral operations to ascertain whether a nuisance is created in the area by the mineral operations, (e) examine documents and records required to be kept under this Act, regulations made under the Act or the terms and conditions of a mineral right and take copies of the documents, (f) enter into or upon land through

which it may be necessary to pass for the purpose of a survey, or (g) give directions and effect acts that are incidental or conducive to the attainment .

According to a senior official of the commission interviewed, the Minerals Commission, in respect of the routine monitoring and checking of the environmental effects of mining, has an interventionist role as well. That is to say, if a polluter of the environment gets embroiled in controversy with any stakeholder, the commission could come in to ensure that the right thing is done. This role is in accordance with its responsibility to ensure that the mining industry performs in a manner that is sound and sustainable. Thus, the commission comes in only when a mining operator has polluted some aspect of the environment and the operator and the affected persons are in dispute over the matter.

The commission has offices distributed over its own designated “Districts” throughout the country that are responsible for implementing its decisions and programmes on the ground. The office under which the Obuasi area falls is at Dunkwa-on-Offin. It is the same office that represents the District Small Scale Mining Centre, the assessment of which has already been done.

It is however necessary to point out that the capacity of the Minerals Commission to intervene in environmental-related disputes has not been tested much. In Obuasi in particular, discontent on the part of residents about mining operations (both corporate and artisanal) in Obuasi have most of the time, been improperly expressed either violently or through uncoordinated media complaints. Such ‘disagreement’ have never been considered credible. Consequently, the Minerals Commission has really not had much intervention to do, and therefore, their ability or inability to perform their interventionist role satisfactorily has not been tested. The performance score of 3 on a scale of 1 to 5 given by the commission’s officials has to be given the benefit of doubt.

4.5.6 Assessment by Key Informants and Analysis of the Water Resource Institute

According to the senior official of the WRI interviewed, and from literature reviewed, the Council for Scientific Industrial Research Act (Act 521) was passed in 1996 to restructure the CSIR which was first set up in by the National Liberation Council Decree (NLCD) 293 of 1968. The law sought to promote the commercialisation of

research, and accordingly, a commercialisation policy was incorporated into the activities of the CSIR by the law (Appiah et al., 2010).

Section 9(4) of the new law mandated the CSIR to “create, reconstitute, merge or dissolve any sectorial research co-ordinating committee.” On the strength of this mandate, the Water Research Institute (WRI) was created out of a merger of the Institute of Aquatic Biology (IAB) and the Water Resources Research Institute (WRRI).

As disclosed by the WRI official, the grounds for the merger was also financial and in accordance with the requirement on the mother-body to generate 30 to 70% of its budgetary requirement internally. The policy consideration was that most research and development activities should lead to commercialisation.

The functions of the two institutes, WRRI and IAB, according to the 1996 annual report of the CSIR, had some similarities:

“The work programme of the Institute of Aquatic Biology (IAB) thus covers the relevant areas of the general environment with emphasis on water quality and pollution, health, fisheries and aquaculture, management of river basins, biodiversity and conservation of aquatic resources.”

“The Water Resources Research Institute (WRRI) is mandated to undertake research in the fields of hydrology and water resources to provide the scientific and technological information and services needed for socio-economic development in the water-related water-dependent sectors of the economy viz: agriculture, health, industry, energy transportation, environmental protection and enhancement.”

According to the official, it was therefore found expedient to merge the two institutes if they had to survive the new financial challenge. Consequently, the resulting institute, the Water Resources Institute, which is one of the 13 research institutes of the Council for Scientific and Industrial Research (CSIR), came to inherit the functions of the two defunct bodies.

Broadly, the institute is expected to conduct research into water related environmental issues including:

- water pollution,

- environmental impacts of water resource development projects, and
- siltation resulting from deforestation, soil degradation and erosion.

The most significant revelation about the WRI made during the study was that government subvention for the institute's work (as of 2nd June 2012) had completely disappeared. They finance their activities wholly from funds realized from private and commercial research undertakings.

Unfortunately, as this study found out, the very financial reason that necessitated the merger has also imposed new constraints on the WRI. The Environmental Action Plan mentions the former Institutes of Aquatic Biology as an institute with the responsibility to do health-related water quality monitoring, an arrangement which must have been made because the IAB had the traditional function of doing water quality and pollution analysis. The EPA (then EPC) was required to collate such research findings and to take the necessary measures to address revelations arising out of such research. This function of the IAB was to be carried out as a government-funded public research institute.

Unfortunately, in the circumstances, WRI does not see itself as having ownership of this role after the merger. In response to the new financial challenge, the WRI has come to assume the posture of a consultant. Any agencies wanting to benefit from the services of the institute therefore would have to contract it. The meaning of this is that a service that would have been rendered freely to the EPA will now be rendered at a fee. The difficulty the EPA would face in trying to employ this service has already been explained under section 4.5.2 where assessment by key informants and analysis of the EPA has been presented.

Hence, the complementing role of the IAB (in the monitoring of the quality of drinking water sources in the country) as envisaged by the framers of the EAP has been lost in the new circumstances of the WRI.

It cannot be doubted that this change in orientation of IAB and WRRI could have beneficial effects. But with regard to environmental protection, this change appears to have undermined some objectives of the Environmental Action Plan. And the WRI official was candid when he admitted that, in respect of protecting water bodies in

Obuasi from the effects of mining activities the WRI had done “very little”. This reflects a performance scoring of 1 on a scale of 1 to 5.

4.6 SELF-MONITORING MECHANISMS OF MINING OPERATORS

Under this section, self-monitoring mechanisms of mining operators as part of the general institutional arrangement for safeguarding the environment against the effects of mining activities.

4.6.1 Self-monitoring of mechanisms of AGA.

According to AGA’s Environmental Action Plan of 1989, the company has a corporate policy on environment as follows: “The management of AngloGold Ashanti Limited, conscious that mining and associated activities will affect the environment to a greater or lesser degree, undertakes:

- to ensure that within economic limits and the need to be internationally competitive, the Company’s activities are carried out with due regard to ecological and environmental factors through the implementation of international practice;
- to operate in compliance with the spirit and letter of the Government of Ghana environmental legislation;
- to employ the highest occupational health and safety standard; and
- to maintain good communication with persons and communities affected by Company operation.

In pursuance of this policy, the company, according to a senior official interviewed, established an Environmental Department in 1990. The Department has a laboratory with which periodic monitoring of drinking water and soil samples in Obuasi is said to be done. A visit to AngloGold Ashanti premises on 16th August 2012 revealed that the department is still functioning.

Where it is established that the water source of a community has been polluted by the activities of AGA, the Company has a policy to provide an alternative water source for the people.

In more recent times, AGA appears to have maintained its commitment to performing its operations in an environmentally sustainable way. The company states the following as one of its key values: “We respect the environment. We are committed to continually improving our processes in order to prevent pollution, minimise waste, increase our carbon efficiency and make efficient use of natural resources. We will develop innovative solutions to mitigate environmental and climate risks.” (AGA Sustainability Report, 2012: foreword)

In respect of safeguarding the water environment, the report further reveals the following: “Avoiding, or, where this is not possible, mitigating our impacts on the water environment remain significant priorities. Where feasible we operate a closed loop system, recycling the water used in our operations without discharging to the environment. This reduces our potential environmental impact, enabling us both to reduce water consumption and the potential for water contamination. At some operations – for example in Ghana – high levels of rainfall mean that a closed system is not feasible and that controlled releases must take place. In this situation, we ensure that we have the water treatment systems in place to manage effluents to meet applicable discharge standards.” (AGA Sustainability Report, 2012: page 50)

4.6.2 Self-monitoring of mechanisms of Small Scale Mining Operators.

As of the time of compiling this report, this study could not identify any legitimate small-scale mining operator within the study area. Nor could any self-monitoring mechanism by such operators identified. It was, however, very visible that widespread small scale mining still went on at several locations in the Obuasi area.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATION

5.1 CONCLUSION

The following table summarises the performance scoring on a scale of 1 to 5 by the relevant key informants of the various institutional arrangements.

Institutional Arrangement	EAP, 1991	Legislation	EIAP	MEST	EPA
Average Performance Score	4.25	4.70	5.00	3.33	2.33

Institutional Arrangement	OMA	DSSMC	MC	WRI
Average Performance Score	2	2	3	1

Table 11: Summary of performance scoring of institutional arrangement

From the analysis, the following conclusions can be drawn:

- i. While the policies, legislations and procedures (as institutional arrangements) are adequate for safeguarding the environment against the effects of mining, the performance of implementation agencies for the same purpose are fall below expectation.
- ii. Even though the national Environmental Action Plan of 1991 had a ten year implementation period and therefore expired in the year 2000, with regard to the implementation of the strategies for safeguarding the environment against the effects of mining, implementation of the plan has been a problem.
- iii. The problem has not been the nation's inability to formulate the right policies, rules and the relevant laws for the purpose, but instead, the problem has been the nation's inability to implement plans made.

- iv. As a consequence of (iii), many of the implementing agencies have been half-active; and in the process, implementation mechanisms have been ineffective and fall short of targets and objectives envisaged in the EAP (1991).

5.2 RECOMMENDATIONS

The study recommendations are:

5.2.1 Ashanti Regional Office of the EPA

- ❑ The staff of the Ashanti Regional office of the EPA could be improved by the inclusion of personnel who can handle specialised areas such as air quality and soil quality. Operational funds allocated to the Office should also be scaled up.
- ❑ The office needs a properly-equipped laboratory for its use at all times.
- ❑ The EPA as a national agency should be made more administratively autonomous.

5.2.2 Obuasi Municipality

- ❑ The District Environmental Management Committee of the Obuasi Municipality should be invigorated.
- ❑ Members of the DEMC should be trained by EPA in environment management practices.
- ❑ Community Environment Committees (CEC) in the Municipality should also be activated.
- ❑ The concept of the District Assemblies taking the protection of their local environment into their own hands should be pursued.
- ❑ *Guidelines on Environmental Management for District Assemblies* should be passed as a legislative instrument by parliament or local by-laws by the MMDAs.

5.2.3 The Small Scale Mining Centre

- ❑ The Obuasi Municipality, given the prevalence of mining activities there, must have its own Small Scale Mining Centre and Committee.

- ❑ Section 92 of the Minerals and Mining Act (Act 703) should be amended to make the composition of the Small Scale Mining Committee practicable.
- ❑ The Centre should have an officer with environmental expertise in-house to liaise with the EPA on environmental issues related to small scale mining.

5.2.4 Water Resources Institute

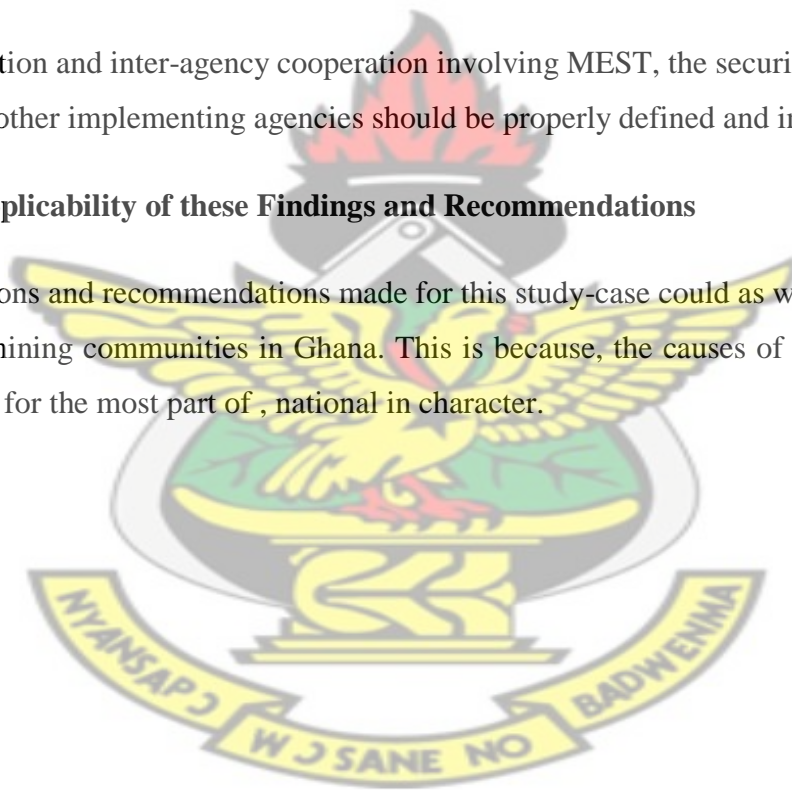
The current role of the WRI in the water quality preservation efforts of this country, and the institute's relationship with the EPA must be reviewed to make the WRI less commercially oriented when it comes to environmental protection and preservation.

5.2.5 Inter-Institutional Collaboration

Collaboration and inter-agency cooperation involving MEST, the security agencies, the EPA and other implementing agencies should be properly defined and instituted.

5.2.6 Applicability of these Findings and Recommendations

Observations and recommendations made for this study-case could as well be applicable to other mining communities in Ghana. This is because, the causes of the observations made are, for the most part of , national in character.



REFERENCES

Appiah N, Agyapong A and Asamoah K (2010): “*Effect of Commercialisation Policy on Performance of CSIR*”. Published in the *Ghana Journal (Forestry)*, Vol. 28.

Bonvin, J M and Farvaque, N (2003): “*Employability and Capability. The Role of Local Agencies in Implementing Social Policies*”, Paper presented at the 3rd conference on the Capability Approach: From Sustainable Development to Sustainable Freedom, University of Pavia, 7-9th September 2003.

Brooks, S (1989): “*Public Policy in Canada: An Introduction*”. McClelland and Stewart Inc., Toronto, Ontario.

Cummings, R (2006): “*‘What if’: the Counterfactual in Program Evaluation*”. Published in the Evaluation Journal of Australasia, Australia.

Donkor A K; Nartey V K; Bonzongo J C and Adotey D K (2006): “*Artisanal Mining of Gold with Mercury in Ghana*”. Published in the West African Journal of Applied Ecology (Volume 9).

Government of Ghana (1991): “*Environmental Action Plan*”. Published by Assembly Press, Ghana.

Haas, P M; Keohane, R O and Levy, M A (1993): “*Institutions for the Earth: Sources of Effective International Environmental Protection*”. MIT Press, Massachusetts Institute of Technology.

Lacerda L D and Salomons W (1998). “*Mercury from Gold and Silver Mining: A Chemical Time Bomb?*”. Springer-Verlag Berlin Heidelberg Publishers, New York.

Litman, Todd (2012): “*Planning Principles and Practices*”. Published by Victoria transport Policy Institute, Canada.

Mitchell, R B (2008): “*Institutions and Environmental Change: Principal Findings, Applications and Research Frontiers*”. MIT Press, Massachusetts Institute of Technology.

Pennsylvania State University, *Public Policy-Making: (Course Work PL SC 490)*, 2012

Scott, Richard W. (2001): “*Institutions and Organizations*”, 2nd ed. Thousand Oaks: Sage Publications.

Spon, E & F (1997): “*Water Pollution Control - A Guide to the Use of Water Quality Management Principles*”. Published on behalf of the United Nations Environment Programme, the Water Supply & Sanitation Collaborative Council and the World Health Organization.

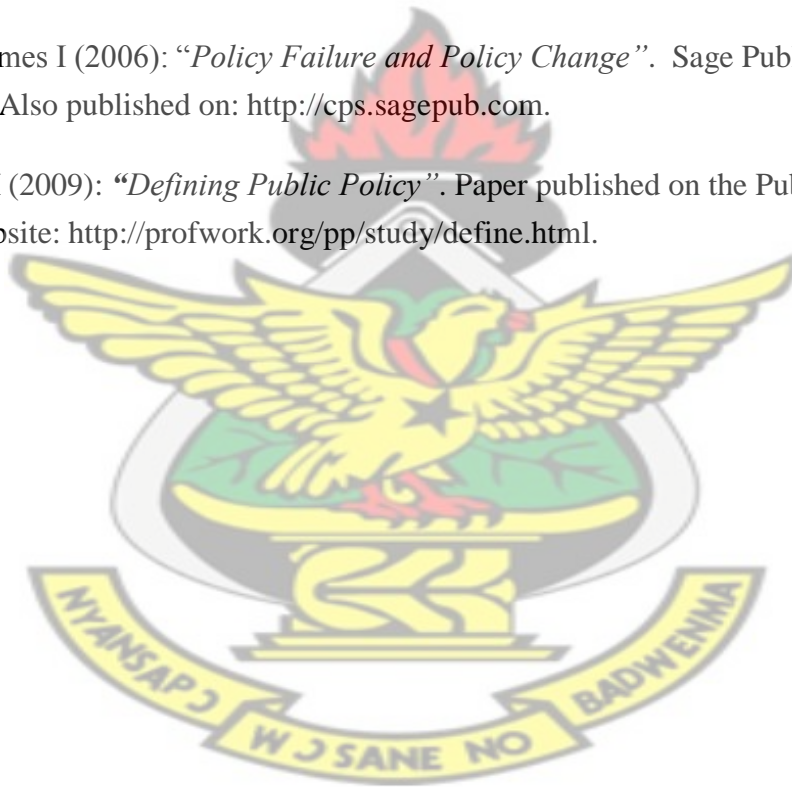
Steinbach, R (2009): “*Problems of Policy Implementation*”. Published by Public Health Action Support Team, Bucks, UK.

Theodoulou, S Z and Kofinis, C (2004): “*The Art of the Game: Understanding American Public Policy Making*”. Wadsworth/Thomson Learning, Belmont, CA.

Thomson J T and Freudenberger K S (1997): “*Crafting Institutional Arrangements for Community Forestry*”. Published on behalf of Food and Agriculture Organisation of the United Nations, Rome.

Walsh, James I (2006): “*Policy Failure and Policy Change*”. Sage Publications, North Carolina. Also published on: <http://cps.sagepub.com>.

Wayne, H (2009): “*Defining Public Policy*”. Paper published on the Public Policy Cycle website: <http://profwork.org/pp/study/define.html>.



APPENDIX 1

PRESS RELEASE

Davos, January 28, 2011

Neste Oil and AngloGold in the Public Eye Pillory in Davos

Within sight of the World Economic Forum (WEF), the Berne Declaration (BD) and Greenpeace today denounced the particularly flagrant human rights abuses and environmental sins committed by corporations. The jury-selected Global Award was presented to the South African mining company AngloGold/Ashanti. The People's Award, determined by Internet voting, went to the Finnish agrofuel concern Neste Oil. Over 50,000 people took part in the online voting. Also during the press conference, OpenLeaks co-founder Daniel Domscheit-Berg called for more transparency and ethics from the business world.

With the 2011 Public Eye Awards, BD and Greenpeace "reward" two corporations that exemplify those WEF members and enterprises whose social and environmental offenses expose the flip side of purely profit-oriented globalization. For the contamination of land and poisoning of people from gold mining in Ghana, the South African mining corporation AngloGold/Ashanti receives the jury-selected Public Eye Global Award. In his laudatory address in Davos, Daniel Owusu-Koranteng, President of the nominating organization WACAM, told of mining waste that contaminates rivers and wells, from which entire villages must drink. In addition, local residents were occasionally tortured in the company's guard house; some cases resulted in fatalities.

For the Web-based Public Eye People's Award, mobilizing more than twice as many voters this year as in 2010, Neste Oil cleaned up with 17'385 votes, thus relegating BP (13'000) and Philip Morris (8'052) to runners-up. The Finnish biofuel producer – and soon the world's largest palm oil purchaser – sells bio-diesel Europe-wide under the shameless name "Green Diesel." The huge jump in demand for palm oil fuels rain forest destruction in Indonesia and Malaysia, threatening the remaining refuges of the already endangered orangutan.

With the looming "shame award" on the horizon, Finnair has attempted to distance itself at the last minute from a planned major project with Neste kerosene.

The sponsoring and nominating organizations of the Public Eye Awards have long been calling on governments to implement legally-binding rules for more corporate responsibility. Therefore civil society welcomes the framework outlined by John Ruggie, U.N. Special Representative for Business and Human Rights, that calls for state protection, corporate respect, and legal help for victims, and which will be adopted by the Human Rights Council in mid-2011. According to Ruggie, only through systematic "knowing and showing" will corporations be able to avoid future cases of public "naming and shaming" like that meted out by the Public Eye.

The co-founder of the OpenLeaks project, Daniel Domscheit-Berg, would also like to see more transparency and ethics in corporations. "Both meet a fast-growing societal need," says the former WikiLeaks spokesperson. In the success of digital whistle-blowing, Domscheit-Berg sees "a powerful signal to the business world: Those who do not proactively establish transparency top-down, run an increased risk that it will be created, bottom-up, by whistle-blowers."

Further information at www.publiceye.ch or from: _

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APPENDIX 2

<http://www.ghananewsagency.org/details/Science/Obuasi-MP-Conde..>

Obuasi MP Condemns WACAM for instigating AGA's Award

Obuasi, February 21, 2011 GNA - The Member of Parliament (MP) for Obuasi, Mr. Edward M. Ennin has condemned WACAM, a local NGO, for facilitating the conferring of the 2011 Public Eye Award on AngloGold Ashanti (AGA) for its operations in Obuasi at a function in Switzerland.

The MP said the Company did not deserve that kind of award as the "most evil company in the world" against the background of a number of good things the company had done for Obuasi including the construction of Obuasi Government Hospital and the Len Clay stadium"

At a press conference at the Anyinam Lodge attended by chiefs, elected assembly members, NPP Party faithful and Adansi citizens, Mr. Ennin stressed "I disagree with the procedure which WACAM applied without consulting the 'Nananom' and other key stakeholders to know the current corporate image of the mine.

"The company has contributed meaningfully to the socio-economic development of the Obuasi Municipality of which we are all witnesses. WACAM seems to have ignored these contributions when they nominated AGA for such an undeserved award", he stressed.

"If anything at all, we should not wash our dirty linen in public", he added.

Mr. Ennin urged WACAM to partner the company and other stakeholders including the Government, Parliamentary committee on mines and Energy, the EPA and Nananom to address the socio-economic and environmental challenges associated with mining activities in Obuasi and the country as a whole.

WACAM nominated AGA for the award for its alleged environmental pollution and human rights abuses at Obuasi and Iduapriem Mines from 2004 to 2009.

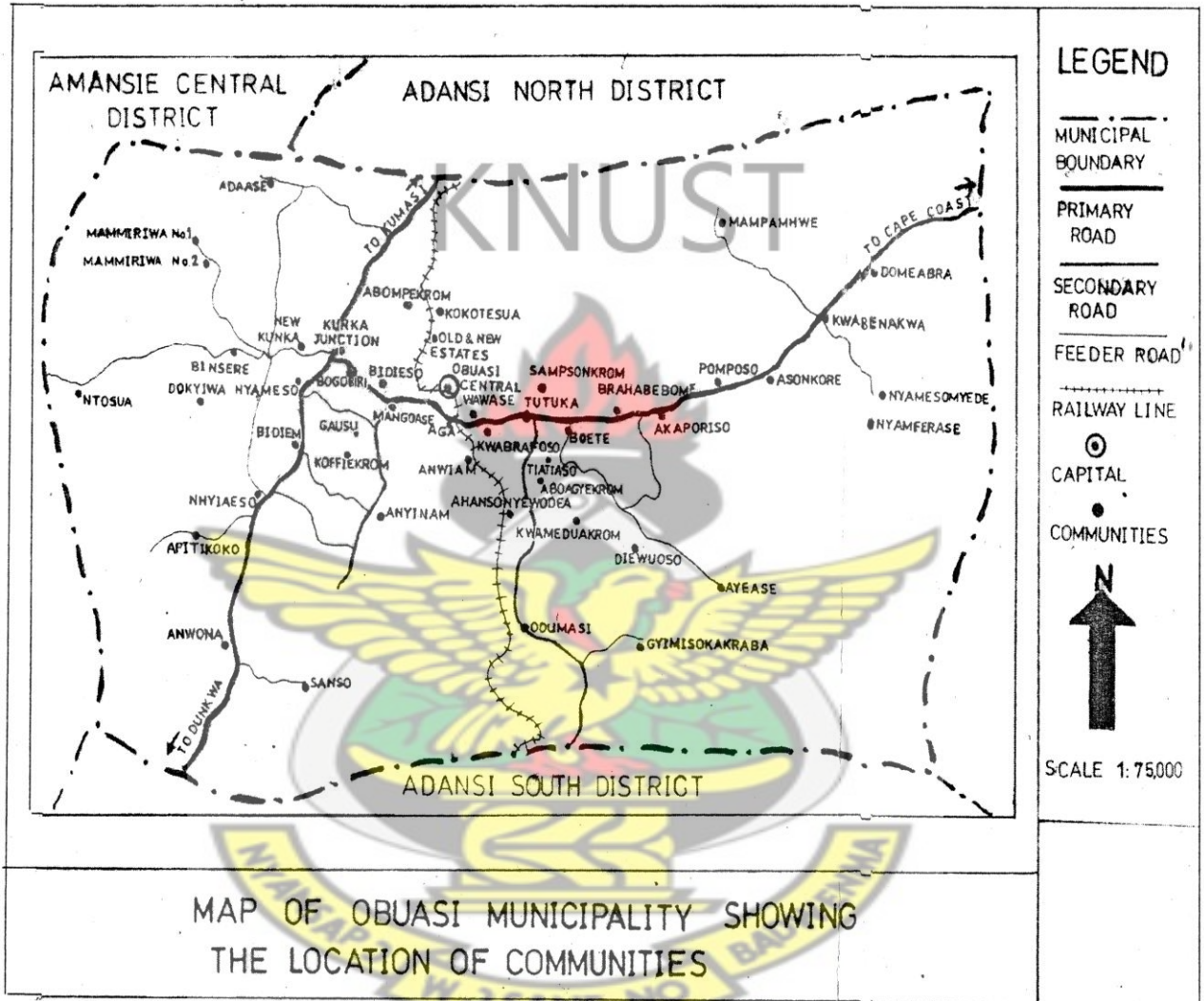
According to WACAM, a prominent farmer at Teberebie had his village destroyed by AGA Iduapriem Mine but the company went ahead to exploit the Judicial system on June 26, 2009 to succeed in rendering the farmer, one James Sarpong, a destitute.

Contributing to the discussion, Mr. Ben Annan, the re-elected assembly member for Sanso, said if there was a more appropriate word than evil he would have used it to describe the operations of the then AGC. "But now, the situation has changed drastically with all the human rights abuses not being experienced these days under Mr Kwesi Enyan's management", he added.

GNA

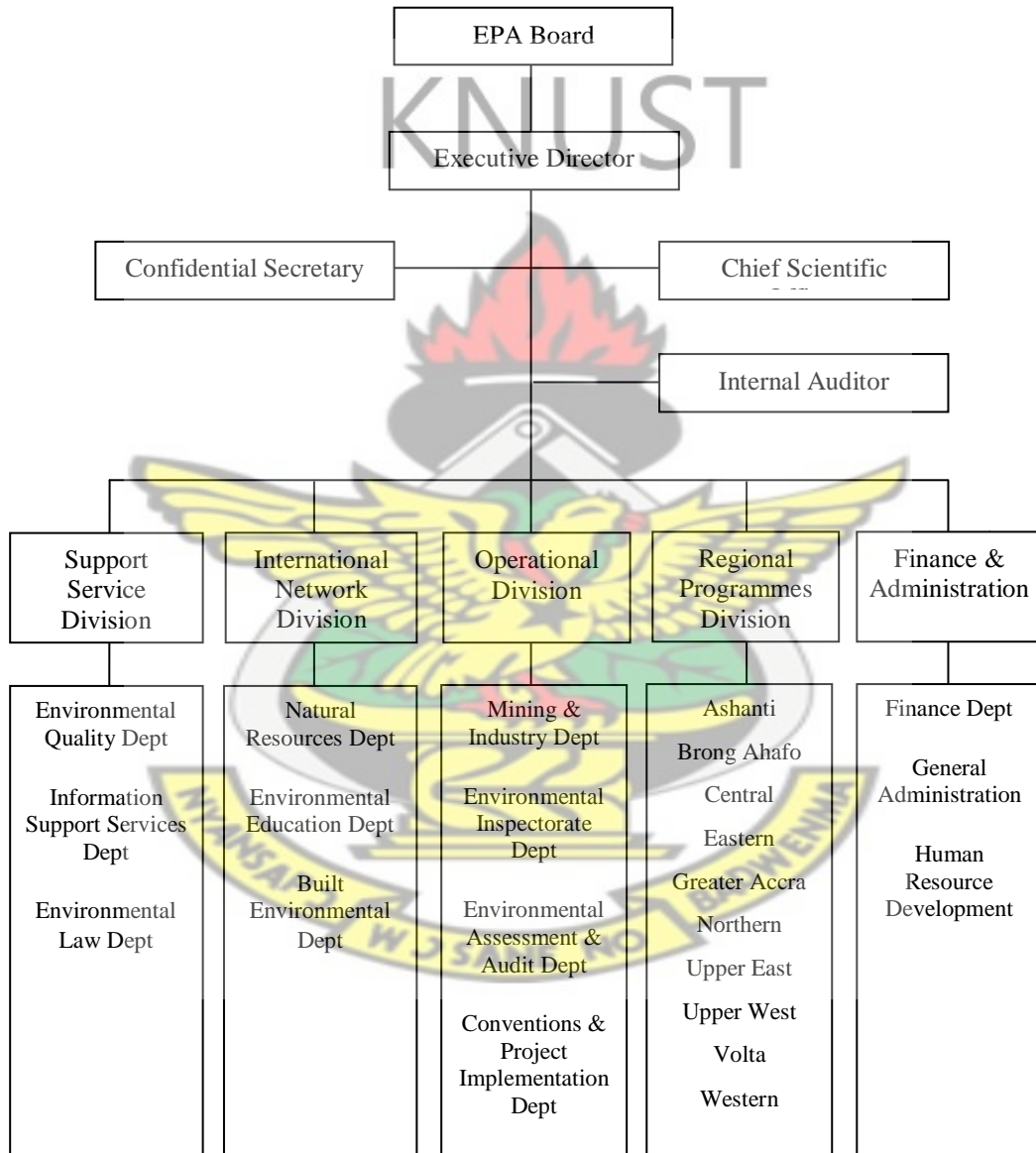
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APPENDIX 3



APPENDIX 4

ORGANISATIONAL CHART OF THE EPA



APPENDIX 5

GUIDE FOR INTERVIEWS ON THE EAP, 1991

1. What is your regular schedule within your organisation?
2. Do you know about the Environmental Action Plan of 1991?
3. Does your regular schedule relates in any way to the EAP?
4. How does your regular schedule relate to the EAP?
5. What do you think was the national objective for drawing the plan?
6. Do you think that the content of the EAP has fulfilled this objective?
7. What is the evidence of your claim?
8. Do you know some of the strategies outlined in the plan?
9. To what degree have the strategies outlined in the plan been adhered to?
10. Do you know some of the legislations prescribed in the EAP?
11. To what degree have the legislations and procedures prescribed in the EAP been promulgated?
12. Do you know of some of the implementation bodies prescribed in the EAP?
13. To what degree have the implementation bodies prescribed in the EAP been set up?
14. Are you aware that the EAP was a ten-year plan, expiring in 2000?
15. Do you know the reason why a new plan has not been drawn to replace the expired one?
16. What are your views on this twelve year absence of a plan?
17. If you were to assess the EAP in terms of achieving the objectives for which it was drawn up, what score would you give?

GUIDE FOR INTERVIEWS ON ENVIRONMENT-RELATED LEGISLATION

1. What is your regular schedule within your organisation?
2. Do you know about the various legislations related to the protection and preservation of the environment?
3. Does your regular schedule relates in any way to these legislations?
4. How does your regular schedule relate to these legislations?
5. What do you think were the national objectives for promulgating the legislations you have mentioned?
6. Do you think that these legislations have fulfilled their objectives?
7. What is the evidence of your claim?
8. Do you know some of the key dos-and-don'ts these legislations?
9. Have these laws, regulations and procedures been adequately enforced?
10. Do you see any shortcomings in the legislations that need to be addressed?
11. Do you think we need more legislation to address the environmental challenges facing Ghana as a country?
12. If you were to assess the body of laws, regulations and procedures for managing the environment in terms of achieving the objectives for which they were passed, what score would you give?

GUIDE FOR INTERVIEWS ON IMPLEMENTATION BODIES FOR IMPLEMENTING, PLANS, POLICIES, LAWS, REGULATIONS AND PROCEDURES FOR MANAGING THE ENVIRONMENT

1. What is your regular schedule within your organisation?
2. Which state institutions, in your view are responsible for implementing policies, laws, regulations and procedures related to the management of the environment?
3. In your normal course of duty do you relate to any of these institutions?
4. How does your regular schedule relate to these institutions?
5. In relation to the environment, what do you think were the national objectives for setting up the following bodies:
 - i. Ministry of Environment, Science & Technology
 - ii. Environmental Protection Agency
 - iii. Obuasi Municipal Assembly
 - iv. District Small Scale Mining Centre in Dunkwa
 - v. Minerals Commission
 - vi. Water Research Institute
6. Do you think that these bodies have lived up to the reasons for setting them up?
7. What is the evidence of your claim?
8. What are some of the things you would want to see these bodies do that they are not doing now?
9. Do you think the country needs to set up more institutions to oversee the management of our environment?
10. If you were to assess these bodies in terms of achieving the objectives for which they were set up, what score would you give?