

# Quality of Environmental Impact Statements in Ghana

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## Abstract

Studies are normally undertaken to evaluate quality of EIS because it gives an indication of the usefulness of the EIA process. However, such study is lacking in Ghana. 30 sampled EISs were reviewed in this paper using Lee and Colley review package. About 93% of EISs were rated satisfactory. Out of this, 50% were rated “good” whilst the remaining 50 were rated “borderline”. None of them was rated “A”. Many factors accounted for the satisfactory rating. These are availability of guidance and guidelines from EPA and use of consultants in preparation of the statements.

However there were many significant omissions within review categories and sub-categories. These included determination of magnitude of impacts, estimating quantities of waste materials and methods employed, estimating quantities of raw materials, consideration of alternative sites for projects and avoidance of bias in EISs. Although their effects on overall assessments were masked by higher ratings in other categories and sub-categories, improvements are required to rectify these omissions.

**Keywords:** proponent, review area, categories, environmental impact assessment (EIA), environmental impact statement (EIS), environmental protection agency (EPA).

## 1. Introduction

Environmental Impact Assessment (EIA) is prepared for projects which are likely to cause considerable impacts on the environment. It describes assessment of environmental and socio-economic impacts likely to arise from developmental projects (Wood, 2002). It focuses on prevention by assessing the impacts of a project before its execution. Also, it serves to monitor the impacts after development of these projects (Glasson et al., 2002). EIA was initially adopted by United States in 1969 through the National Environmental Policy Act (NEPA). It gained international attention due to the success of the system in US. Many countries realized that the problems which necessitated the adoption of NEPA in US were also present in their regions (Wood, 2002). This also coincided with an era of increasing public awareness of environmental issues (Jay et al., 2007). Hence, many countries adopted or adapted the system in the US to suit their own situations (Wood, 2002).

Results of EIA are presented in Environmental Impact Statement (EIS). EIS usually contains information about impacts of projects on the socio-economic, ecology, traffic, transport and landscape conditions of areas where projects are proposed to take place. Due to its relevance in decision-making (Sandham et al., 2013), most EIA authorities have prepared guidelines for writing of EIS. This is to ensure that statements produced contain adequate information fit for decision-making. Generally, EIS is reviewed by EIA authorities or committees mandated by law to do so (Wood, 2002).

Because the quality of EIS gives an indication of the entire EIA process, studies have been conducted in many countries to evaluate the quality of EISs (Sandham et al., 2013). Although some studies have been conducted to evaluate EIA procedures in Ghana (Appiah-Opoku, 2001), studies on the quality of EIS produced is lacking. Thus, it is essential for such research to be conducted in Ghana. This paper therefore will provide such a review. There are two main objectives of the study. These are assessing the quality of a purposeful sample of EIS in Ghana and analyzing the results of the assessments. Based on the results, recommendations if any will be proposed.

There are four main sections of the paper. Firstly, EIA process in Ghana is described, followed by materials and methods used in the study, and then results and discussion. Conclusion with recommendations is the last section.

## 2. EIA process in Ghana

In Ghana, there are defined laws and regulations guiding EIA process. The law on EIA is EPA Act 490, 1994. It grants the Environmental Protection Agency (EPA) rights to request a company or anybody undertaking a project to carry out EIA and submit EIS to the agency (Appiah-Opoku, 2001). EIA regulations and procedures were formally launched by EPA in 1995. These regulations were amended in 1999 and 2002 (Netherlands Commission for Environmental Assessment, 2014). The EPA may request a full EIA for projects which have potential to cause significant impact on the environment. The projects have been grouped into two main schedules which are Schedule 1 and Schedule 2. EIA is mandatory for all projects in Schedule 2. Schedule 1 projects are required to register and obtain an environmental permit (EPA, 1999).

EIS is prepared and submitted by proponents of projects after EIA process to the EPA for decision-making. The statement should contain information on direct and indirect impacts of the project on the environment at pre-

construction, construction, operation and decommissioning phases. The statement should also include social, economic, ecological, health and cultural impacts of the project. These impacts may differ depending on the nature and location of the project (EPA, 1999). Initially, a draft EIS is sent to EPA by project proponents. It undergoes an initial review process which may include public hearings if deemed necessary. The results and recommendations are then sent back to proponents for any suggested amendment. A final EIS is prepared and submitted to EPA by proponents for final decision-making (Netherlands Commission for Environmental Assessment, 2014; EPA, 1999). For EIS to be easily understandable to everyone, it must contain a non-technical summary (Netherlands Commission for Environmental Assessment, 2014).

### 3. Materials and methods

Review packages are mostly used globally for assessing the quality of EIS. These packages consist of specific criteria used for assessing how well assessment and reporting tasks were performed (Sandham et al., 2013). The Lee and Colley review package (Lee and Colley, 1999) was used for the review process. This package was chosen because of its systematic approach for reviewing qualities of EIS and is simple to use. Also, because of its worldwide usage, the results obtained using this review package can be compared to other similar studies in different countries.

#### 3.1 Structure of the Lee and Colley review package

The Lee and Colley package involves a set of criteria, a collation sheet and an A–F grading system used for determining qualities of EIS. Its operation has a hierarchical structure as depicted in Fig.1 and is structured around four review areas shown in Table 1.

Each review consists of categories which are further divided into sub-categories (Lee and Colley, 1999).

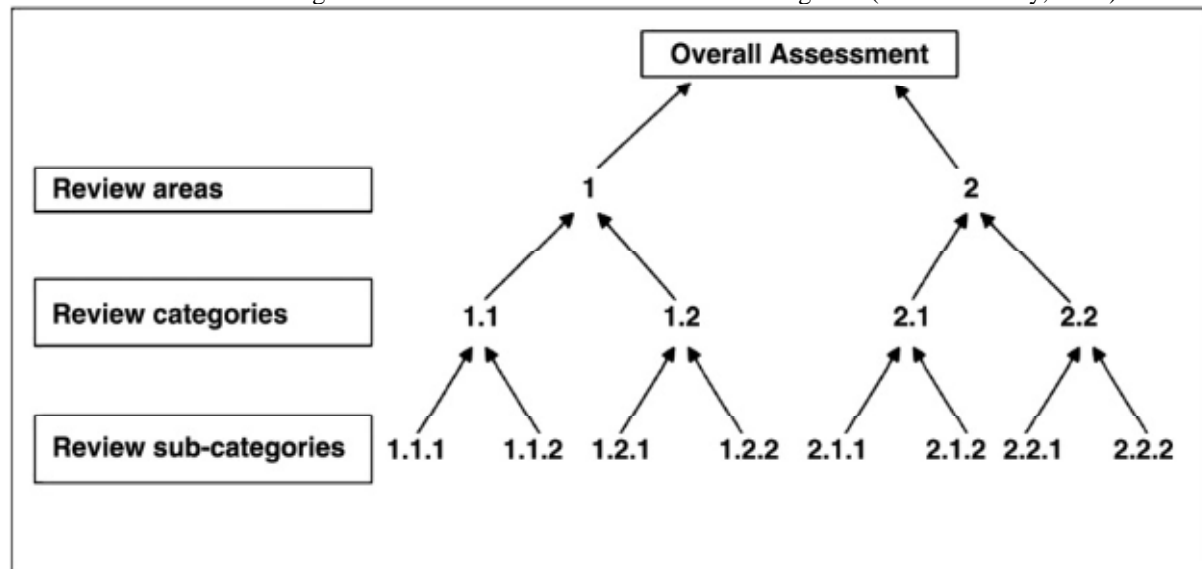


Fig 1. Structure of the Lee and Colley review package (Lee and Colley, 1999).

**Table 1 Description of Review Areas and their categories**

<b>Review area 1 Description of the development , local environment and the baseline conditions</b>	
1.1	Description of the development
1.2	Site description
1.3	Wastes
1.4	Environment description
1.5	Baseline conditions
<b>Review area 2 Identification and evaluation of key impacts</b>	
2.1	Definition of impacts
2.2	Identification of impacts
2.3	Scoping
2.4	Prediction of impact magnitude
2.5	Assessment of impact significance
<b>Review area 3 Alternatives and mitigation</b>	
3.1	Alternatives
3.2	Scope and effectiveness of mitigation measures
3.3	Commitment to mitigation
<b>Review area 4 Communication of results</b>	
4.1	Layout
4.2	Presentation
4.3	Emphasis
4.4	Non –technical summary

The review process starts from the sub-categories. Marks which range from A to F are awarded to sub-categories depending on how a reviewer assessed tasks to have been performed. Table 2 shows description of the grading system. Results are recorded on a collation sheet which is part of the review package. Individual marks of sub-categories are added to obtain a grade for a particular category and subsequently for a Review Area. Marks for all review areas are then added to determine overall grade for EIS (Lee and Colley, 1999).

**Table 2 List of assessment symbols of EIS**

<b>Symbol</b>	<b>Explanation</b>
A	Relevant tasks well performed, no important tasks left incomplete.
B	Generally satisfactory and complete, only minor omissions and inadequacies.
C	Can be considered just satisfactory despite omissions and/or inadequacies.
D	Parts are well attempted but must, as a whole, be considered just unsatisfactory because of omissions or inadequacies.
E	Not satisfactory, significant omissions or inadequacies.
F	Very unsatisfactory, important task(s) poorly done or not attempted.
NA	Not applicable. The Review Topic is not applicable or it is irrelevant in the context of this Statement.

Source: Lee and Colley (1999).

An additional rating (Lee and Dancey, 1993) used for the review is shown below;

“Good” = A or B

“Borderline” = C or D

“Poor” = E or F

### 3.2 Sample of the review

A purposive sample was done for the review. 30 EISs submitted between 2008 and 2014 to the EPA were used for the study. 28 of the EIS covered projects in Schedule 2 of the 1999 EIA legislation of Ghana. Each EIS was reviewed by two independent reviewers as prescribed by the review package.

## 4. Results

The overall findings on EIS quality are presented in Table 3. Almost all the 30 EIS were rated satisfactory (93.3%) whilst 6.7% were unsatisfactory. Out of the satisfactory ones, 50% were rated “Good” and 50% “Borderline”.

**Table 3 The overall quality of EISs**

Overall assessment	Percentage of sample (%)
A	0
B	50
C	43.3
D	6.7
E	0
F	0
Satisfactory	93.3
Unsatisfactory	6.7
Good (A,B)	50
Borderline (C,D)	50
Poor (E,F)	0

**4.1 Variations within the Review areas**

General variation with review areas is presented in Table 4. From the table, the most unsatisfactory was review area 4 which generally deals with communication of results. Review areas 1 and 2 were deemed to be 100% satisfactory.

**Table 4 Overall variation in EIS quality within the four review areas**

Overall assessment	Review area 1 (% of sample )	Review area 2 (% of sample )	Review area 3 (% of sample )	Review area 4 (% of sample )
Satisfactory	100	100	93.3	50
Unsatisfactory	0	0	6.7	50

**4.1.1 Variation within Review area 1**

From Table 5, all categories with the exception of Category 1.3 were deemed to be 100% satisfactory. Only 6.7% of the EIS were rated “poor” in category 1.3.

**Table 5 Variation in EIS quality within review area 1**

Overall assessment	Categories				
	1.1	1.2	1.3	1.4	1.5
%Satisfactory	100	100	36.7	100	100
%Unsatisfactory	0	0	63.3	0	0
%Good	50	100	0	100	100
%Borderline	50	0	93.3	0	0
%Poor	0	0	6.7	0	0

**4.1.2 Variation within Review area 2**

From Table 6, 83.3% of EISs were rated unsatisfactory in category 2.4. This category deals with the prediction of the magnitudes of identified impacts. Categories 2.1, 2.3 and 2.5 were rated as 100% satisfactory.

**Table 6 Variation in EIS quality within review area 2**

Overall assessment	Categories				
	2.1	2.2	2.3	2.4	2.5
%Satisfactory	100	93.3	100	16.7	100
%Unsatisfactory	0	6.7	0	83.3	0
%Good	50	50	100	0	100
%Borderline	50	50	0	93.3	0
%Poor	0	0	0	6.7	0

**4.1.3 Variation within Review area 3**

In this review area, 50% of the EIS were rated “Borderline” for both categories 3.1 and 3.3 with a 50% “poor” rating in category 3.1. This category generally deals with the consideration of alternatives to proposed projects.

**Table 7 Variation in EIS quality within review area 3**

Overall assessment	Categories		
	3.1	3.2	3.3
%Satisfactory	50	100	100
%Unsatisfactory	50	0	0
%Good	0	63.3	50
%Borderline	50	36.7	50
% poor	50	0	0

#### 4.1.4. Variation within Review area 4

The worst performed category in all the EIS was category 4.3. All (100%) of the EIS were rated unsatisfactory for this category with a further 86.7% rated “poor”. This category entails how spaces were accorded to both negative and both impacts of the project in the statements and also whether there were biases in the statements.

**Table 8 Variation in EIS quality with review area 4**

Overall assessment	Categories			
	4.1	4.2	4.3	4.4
%Satisfactory	100	50	0	100
%Unsatisfactory	0	50	100	0
%Good	50	33.3	0	100
%Borderline	50	60	13.3	0
% Poor	0	6.7	86.7	0

#### 4.1.5 Distribution of EIS according to projects

The overall variations among the different types of project is presented in Table 9. Listed in brackets are the numbers of EISs reviewed for the different types of projects.

**Table 9 Variation in quality of EISs of different project types**

Type of project	Satisfactory	Good	Borderline
Drainage and irrigation (2)	100%	0%	100%
Mining (10)	90%	40%	60%
Infrastructure (9)	90%	44.4%	55.6%
Petroleum (2)	100%	100%	0%
Power generation and transmission (3)	100%	100%	0%
Housing (2)	100%	0%	100%
Other (2)	100%	100%	0%

## 4. Discussion

### 4.1. Overall assessment

Generally, overall quality of the 30 sampled EISs was rated satisfactory. 28 EISs representing about 93% were rated satisfactory with 50% in the “good” category and the remaining 50% in the “borderline” category. Only 2 EISs representing about 7% were rated unsatisfactory. No EIS was rated “poor”. The best review areas were 1 and 2 which were rated 100% satisfactory whilst Review area 4 was the worst performed with 50% unsatisfactory.

However, there were many deficiencies within the review categories and sub-categories for most of the EISs.

### 4.2. Assessment of Review areas

#### 4.2.1. Review Area 1 – Description of the development and the baseline conditions

Generally, most of the EISs were rated satisfactorily under this review area. Review areas 1 and 2 had the highest rating amongst all the review areas. Categories 1.4 and 1.5 were the highest rated categories in all review areas.

However, there were omissions with some categories. Category 1.3 had the lowest rating. About 93% of EIS were rated “Borderline” in this category. Although EISs presented information on the types of wastes to be generated by various projects, estimates of quantities of wastes and their generation rates were not presented. Subsequently, methods used in arriving at such estimates were also not given. This finding is supported by a study by Sandham et al. (2013) who identified this category as a limitation with EISs in South Africa. However, other review categories were performed to 100% satisfaction. Adequate information was given on description of the projects, the sites and environmental descriptions of areas where the proposed projects are to be undertaken.

#### 4.2.2 Review area 2 – Identification and evaluation of key impacts

Categories 2.1, 2.3 and 2.5 were rated 100% satisfactory. Most of the EISs contained adequate information on likely impacts of projects on all relevant receptors within proposed environments and beyond. The statements contained enough information on numerous public consultations between project proponents and residents of affected communities as well as relevant statutory bodies. Many studies have identified public consultation as a key requirement in successful EIA (Wood, 2002; Pöder and Lukki, 2011).

Also, all statements were able to present significance of impacts of projects to local, regional and national societies. However, 83.3% of EISs were rated unsatisfactory in category 2.4. Prediction of impacts was identified as a primary deficiency during the review. Although few made use of relevant national and international data, most of the EISs relied on arbitrary qualitative methods in their impact prediction. This finding is consistent with other studies which identified impact prediction as a challenge in most EISs in South Africa (Sandham et al., 2013), Ireland and United Kingdom (Lee and Dancey, 1993).

#### 4.2.3. Review area 3 – Alternatives and mitigation

From Table 7, category 3.1 had the lowest rating. 50% of EISs were rated unsatisfactory with 50% “borderline”

and 50% “poor”. There were limitations with consideration of site alternatives to proposed projects. This finding supports a review of EISs in Ireland and UK (Lee and Dancey, 1993) but is in contrast with a study in South Africa by Sandham et al. (2013) who rated EISs in South Africa higher in the consideration of alternative location category.

Again, most mitigation measures presented were for only direct impacts of projects. Similar findings have been reported in EISs in UK (Cooper and Sheate, 2002).

However, other categories in the Review area were rated higher. Commitments were shown by developers to ensure effective implementation of proposed mitigations. This is in line with EIA regulations in Ghana which mandate project proponents to prepare an environmental management plan after environmental permits have been granted. The plan details how mitigation measures will be implemented and is updated every three years to ensure that proponents strictly adhere to the plan. Developers are also mandated to send an annual environmental report of their activities to the EPA (EPA, 1999).

#### **4.2.4. Review area 4 – Communication of results**

Generally, most of the categories were rated high except 4.3. From Table 8, with a “poor” rating of 86.7%, category 4.3 was the worst performed category amongst all four review areas. All 30 EISs were rated 100% unsatisfactory. Although few of the statements gave equal representation of both negative and positive impacts, most sought to play down the magnitude and significance of the negative impacts and as such were bias.

Also, 50% of the statements contained too many technical terms which were not explained in the text or glossary.

However, most statements had excellent presentation, layouts and non-technical summary which contained summaries of other components of the EIS. Similar findings have been documented in most EISs in Spain and Portugal (Canelas et al., 2005).

#### **4.3 Determinants of the qualities of EIS in Ghana**

Many factors accounted for the satisfactory (93.3%) performance of sampled EIS in Ghana. Firstly, EIS preparation process in Ghana involves many stages which serve to correct omissions before preparation of final statements. Draft EISs are initially submitted to the EPA. Necessary corrections and adjustments if any are made by developers after receiving reviewed drafts. A draft EIS which is deemed by EPA to be satisfactory can be presented as the final statement (EPA, 1999). The correction process ensures that significant omissions are avoided in final EISs if developers follow the recommendations from the agency. According to Glasson et al. (1999), the availability of guidance from EIA authorities influence EISs qualities.

Secondly, most (80%) of the statements were prepared by consultants on behalf of project proponents. Some of the consultants were foreign based who worked with local experts. This has been identified as a necessary requirement in the preparation of satisfactory EIS especially if the consultants have enough experience in EIA process (Lee and Colley, 1999; Glasson et al., 1999).

Thirdly, the scale of projects also influenced the quality of sampled EISs. All projects were in Schedule 2 of EIA regulations in Ghana. EIA is mandatory for such projects and as such are guided by defined procedures. Proponents are not given environmental permits if they go contrary to the regulations (EPA, 1999). This is consistent with a similar assertion by Glasson et al. (1999) who identified EISs qualities to be influenced by the size and nature of projects.

Finally, from the review, it was clear that public involvement also influenced the quality of EISs. Due to many years of pollution and degradation of their environments, many communities especially in rural areas, are hesitant to the siting of big projects in their communities. As such, in all the EISs, numerous public meetings were held between such communities and developers to allay their fears. They were involved in all stages of the EIA process and many formed part of the monitoring management committees formed to ensure that mitigation measures are effectively carried out.

#### **Conclusion**

The quality of EISs prepared in Ghana has been reviewed in this paper. From the review, 93% of sampled EISs were rated satisfactory whilst 7% were rated unsatisfactory based on Lee and Colley review package. Out of the total sample, 50% were rated “good” whilst the remaining 50% were rated “borderline”. None of the sampled EISs was rated “A” or “poor”.

Most of the review areas, categories and sub-categories were performed well. Review areas 1 and 2 had the highest ratings. The best performed review categories were categories 1.4 and 1.5 which deal with descriptions of the environment and baseline conditions respectively.

Many factors were identified to have influenced the quality of the EISs. These include the availability of guidelines from EPA and use of consultants in the preparation of the statements.

However, there were many significant omissions within review categories and sub-categories of review areas. The worst performed sub-categories were with determination of magnitude of impacts, estimating quantities of waste materials and methods employed, estimating quantities of raw materials, consideration of alternative sites

for projects and avoidance of bias in the EISs. Although their effects on overall assessments were masked by higher ratings in other review categories and sub-categories, improvements are required to rectify these omissions.

Some recommendations may be suggested. [A] There is the need to place premium on certain review categories and sub-categories. This will likely prevent omissions in one category being masked by others in different categories in determination of overall assessment of EIS quality. [B] EPA should consult with experts to develop appropriate methods for estimating quantities of waste and raw materials. [C] EISs which fail to consider alternative locations for projects should be rejected outright by EPA to enforce proponents to do this category.

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