

Sustainability and environmental reports of a mining firm in Ghana: A pilot study

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ABSTRACT

The need for environmental reporting for stakeholder decision making cannot be over emphasized, especially in the past two decades. This is a pilot study that investigates what environmental and sustainability information is reported in narrative, physical and monetary forms by two plant sites of a multinational mining firm operating in Ghana. The study combines the Global Reporting Initiative (GRI) and the United Nations Division for Sustainability Development (UNSD) models to benchmark the sustainability information found on the websites of the plant sites: Ahafo and Akyem. In all about 70 documents and webpages were examined. It was discovered that both sites mostly reported sustainability information in narratives. Quite a few sustainability physical measures are reported, especially by Ahafo site. There was limited information in monetary measures on all aspects of sustainability: economic, environmental and social. In addition, the plant sites differ in the content and details of reports even though the websites had the same headings. The study recommends further research into how sustainability and environmental accounting information are gathered at these plant sites and how they are used in decision making.

Key words: Environmental accounting, sustainability reporting, mining firms, content analysis.

SECTION I: RESEARCH BACKGROUND

Worthington (2012) and ACCA (2015) claims that environmental awareness by businesses of the environmental repercussions of their operations (products and services) has been growing. Rinaldi, Unerman & Tilt (2014) also argues that there has been increasing attention given to engaging stakeholders in a company's sustainability issues. Hence businesses can no longer ignore these issues as they affect operations and finances (ibid). However, there is a growing consensus that conventional accounting practices do not provide adequate information to properly support decision-making on environmental management responsibilities (Shleifer & Vishny, 1997; Seal, 2006; Jasch, 2006; Braendle & Kostyuk, 2007; Bebbington, Gray, Hibbitt & Kirk, 2001; Schaltegger, Gibassier & Zvezdov, 2013; Aldridge, 2014). Consequently, Environmental Accounting, also known as the Sustainability Accounting, came into being (Birkin, 1996).

Many sustainability accounting studies have used manufacturing firms, with a few service organisations, for their study. However, mining is one of the industries most likely to affect the environment (Schueler, Kuemmerle, Schröder, 2011; Bland, 2014). According to the World Bank (2002) the industry by its very nature always leaves indelible environmental, social and economic foot prints wherever it finds itself. Ross (2001) concludes that the best option for poor economies is to utterly avoid the extraction of their natural resources and rather focus more on agriculture of which, in effect, mining firms end up depriving these economies. Much is yet to be done in terms of sustainability accounting research in the mining and exploration industry; hence there is the need for more research into natural resource exploration firms. Environmental research on this industry could result in recommendations for improvement.

Mining activities in emerging economies have tremendously affected the principal elements of the environment (land, water and air) culminating into serious consequences for the health of indigenes (Schueler et al., 2011; Roe & Samuel, 2007; Amponsah-Tawiah & Dartey-Baah, 2011). Ghana, being a developing economy as well as a heavy mining destination, is not different in terms of vulnerability to environmental challenges in the hands of this industry. Okai (2012) claims that occupational health problems caused by mining activities in Ghana include malaria and upper respiratory tract infections. Aside from this challenge, Roe & Samuel (2007) and Akabzaa & Darimani (2001) report that in Ghana, for the purpose of large

scale surface mining operations large proportions of farm lands have been acquired by mining companies depriving communities of their source of livelihood. In addition, periodic cyanide contamination of water bodies by large scale surface mining operations and mercury contaminations from small-scale and illegal mining are common features of communities in mining areas in Ghana (Amponsah-Tawiah & Dartey-Baah, 2011; Roe & Samuel, 2007; Schueler et al, 2011).

So far, there is limited environmental accounting research in Ghana in spite of the numerous environmental challenges the nation faces from over 26, 000 manufacturing firms (Kraakah, Nsowah-Nuamah, Awoonor-Williams & Teal, 2009) as well as almost 70 small and large scale mining firms, excluding hundreds of illegal miners (KPMG, 2014). Rahaman (2000) and Rahman, Lawrence & Roper (2004) studied perceptions of social and environmental reporting by senior managers of Ghanaian companies with emphasis on motivations for corporate social responsibility (CSR) reporting. In addition, a very limited number of environmental reporting studies have been done at the national accounting level (Kurantin, 2011). Kurantin's theoretical review emphasised the need to "move towards an enhanced approach that supports and guide[s] oil and gas industry, environmental management within the processes of good governance, security, economic growth and development" (p. 73). Hence, there is a need for further empirical environmental accounting studies on the mining industry in Ghana.

The rest of the paper is presented as follows: section II focuses on literature review with emphasis on the triple bottom line reporting contents. Section III briefly explains two sustainability accounting reporting frameworks or guidelines: The Global Reporting Initiative (GRI), the United Nations Division for Sustainability Development (UNSD) and the research questions. Section IV looks at the methods of data collection and analysis. Section V presents the findings in a tabular form using the combined elements of the GRI and the UNSD guidelines. Finally section VI is on the conclusions drawn from the study and recommendations for further studies based on the findings of the study.

SECTION II: LITERATURE REVIEW

Gray and Bebbington (2000) argue that the phenomenal growth in environmental reporting by organisations is an area which accounting researchers have embraced with enthusiasm.

Early studies in this area (such as Milne & Adler, 1999; Gray, Koushy & Lavers, 1995b) have been dominated primarily descriptive studies

According to Petcharat and Mula (2010) such studies typically apply various forms of content analysis. Many studies have recorded an upward trend in environmental disclosure both through the annual report and through stand-alone environmental reports. However, analyses of the phenomenon (such as Jasch, 2006; Gray et al., 1995a; Hackston & Milne, 1996; Fekrat, Inclan & Petroni, 1996; Pava & Krauz, 1996; Adams, 2000; Albelda, 2011 and Doorasamy & Garbharran, 2015) confirm that such reporting is principally restricted to the very largest companies and is, to an extent, country and industry variant. Studies on environmental reporting are diversifying into topics such as exploration of users' needs (Epstein & Freedman, 1994; Deegan & Rankin, 1997), the impact of pressure groups (Tilt, 1994; Frost & Wilmshurst, 1998; Ross & Kovachev, 2009), size of company and type of industry (Ferreira et al., 2010) and other external forces (Gray et al., 1995b; Deegan & Gordon, 1996), exploration of the truthfulness of environmental disclosure (Deegan & Rankin, 1997) and theoretical development (Patten, 1992; Roberts, 1992; Gray et al., 1995a; Parker, 1997; Buhr, 1998; Adams, Hill & Roberts, 1998; Brown & Deegan, 1998; Neu, Warsame & Pedwell, 1998).

Environmental reporting is predominantly voluntary with a growing interest in guidelines for such reporting (KPMG, 1997). Surveys of the practice of this voluntary reporting keep attention on the doubtful quality and, especially, the global paucity of such reporting. According to Petcharat & Mula (2010), if environmental reporting is imperative then the predominant view of business that environmental reporting is adequate in a voluntary regime should be subject to test. Consequently, any external environmental reporting would have to challenge an organisation's legitimacy especially how it attained the reported profit taking cognisance of existing sustainability issues.

Dixon & Fallon (1989) and Petcharat & Mula (2010) assert that sustainability for development should focus on three performance indicators, namely, economic, social, and ecological systems (environment). Goodland (2002) and Berkel (2003) also give the main areas of development as being human, social, economic and environment, which companies need to disclose in the form of a triple bottom line report. The triple bottom line is established on the belief that the success of a business cannot be credited only to its financial position but

also to its ability to appropriately address its ethical and environmental performance (Atu, 2013). The Global Reporting Initiative (GRI) (2006) expands this by arguing that, going beyond conventional monetary reports, the triple bottom line discloses the company's impact on the world around it by including environmental issues into accounting. Wang & Lin (2007) call the three main areas of focus "people, planet, and profit". According to the authors it consists of a "concerted effort to incorporate economic, environmental and social considerations into a company's evaluation and decision making processes" (p. 2).

As a way of determining what sustainability information organizations should report under each aspect of the triple bottom line, frameworks or guidelines has been developed by several interest groups. These frameworks could also be called environmental reporting indexes.

Diagram 1: The triple bottom line reporting elements



(Source: CIMA, 2013)

SECTION III: ENVIRONMENTAL REPORTING INDEXES

There are several environmental reporting indexes, two of which are used in this study. A brief overview of these follows.

The United Nations Division for Sustainability Development (UNSD)

In 2001 the United Nations developed a framework focusing on techniques for quantifying environmental expenditures or costs as a basis for the development of national sustainability accounting guidelines and frameworks. The contents of the framework covered two main types of EMA information: physical and monetary (see appendix 2). Physical information covers the use, flows and destinations of energy, water and materials (including wastes). Monetary sustainability accounting information is information on environment-related costs, earnings and savings (UNSD, 2001).

Global Reporting Initiative (GRI) - Mining and metals sector

GRI is an international independent standards organization that empowers businesses, governments and other organizations to appreciate and communicate their impacts on issues such as climate change, human rights and corruption (See appendix 3). The Global Reporting Initiative has pioneered and developed a comprehensive Sustainability Reporting Framework that is widely used around the world (Jones, 2010; GRI, 2013). The GRI has categorised these reporting guidelines have been categorised into ten sectors: airport operations, food and processing, construction and real estate, electric utilities, media, mining and metals, oil and gas, event organisers, financial services and NGO.

The GRI states that the mining and metals sector's disclosures deal with the aspects of sustainable development that are encountered more frequently or in greater measure than in other sectors and are not necessarily captured in the main guidelines. According to GRI (2013) the main contextual issues for the mining and metals sector include the control, use and management of land, the contribution to national economic and social development, community and stakeholder engagement, labour relations, environmental management, relationships with artisanal and small-scale mining and an integrated approach to minerals use.

In conclusion, the elements of the triple bottom line are outlined in the sustainability reporting indexes for easy identification, reporting and benchmarking. In answering the research questions of this paper, the GRI and the UNSD frameworks are the sustainability reporting guidelines the paper uses in conducting the pilot study for a gold mining firm operating in Ghana.

RESEARCH QUESTIONS

The aims of this research are as follows:

1. To determine the various aspects of sustainability that are externally reported by two different plant sites of Newmont Mining Corporation operating in Ghana, compared to the GRI and the UNSDS reporting elements.
2. To compare and contrast the contents of sustainability external reporting by these two plant sites.
3. To identify further research opportunities on sustainability accounting in the mining sector.

SECTION IV: METHOD

This section discusses the methods used by the researchers in conducting the study. It covers the research strategy, data sources and method of data analysis.

Research strategy

A case study approach will be adopted since case studies are usually used to explain the specific (Burrell & Morgan, 1979; Hudson & Ozanne, 1988; Ryan, et al., 2002; Vaivio, 2008). Case study research allows an in-depth understanding of a specific context and emphasises the development of prior constructs to guide the research (Yin, 2009). In this situation, case study enabled researchers to understand environmental accounting practices in terms of the triple bottom line elements reported and the form in which they are reported by a mining firm in Ghana (Scapens, 1990; Vaivio, 2008). In addition, Adams and Larrinaga-Gonzalez (2007) encourages academics to engage with companies in their pursuit of improved sustainability performance and accountability. Lodhia (2014) and Adams (2002) further encourages that further research is needed to assess the in particular instance issues

surrounding sustainability accounting and these discernments influenced the authors' design of this research and led to the selection of the case study approach (Adams and Larrinaga-Gonzalez , 2007; Yin, 2009).

Data sources

Newmont Mining Corporation is the mining firm that was used for this study. The mining firm has ten plant sites globally with two sites in Africa: Ahafo and Akyem, both in Ghana, with each site having a separate website under the parent's website. Located in the Brong Ahafo region of Ghana, the Ahafo site began operating in 2006 and whilst Akyem plant is located in the Eastern region started operating in the last quarter of 2013. Outputs are 442,000 and 472,000 ounces as well as 4400 and 2000 employees and contractors respectively (Newmont Mining Corporation, 2015).

Out of the several mining firms in Ghana, I chose Newmont for this study firstly because they are a multi-national mining firm, listed on the New York Stock exchange and they have a lot of mining experience and a reputation for sustainability. For example, it is the first gold mining company selected to join the Dow Jones Sustainability World Index which is based on a rigorous analysis of corporate economic, environmental and social performance and it has been included in the index every year since 2007 (Newmont, 2015)

The researchers accessed sustainability data and information on websites of two sites in Ghana operated by Newmont Mining Corporation. Website data comprise heading/webpages (drop-down menus) and downloaded reports. On the websites of each plant site, headings are arranged in the following order: overview, operations facts, health and safety, environment, community, career, reports, news and contact. Under each menu are narratives and drop down menus or documents reporting on sustainability. The information on these web pages and documents were used for this pilot study. Overall, about 70 webpages and documents were examined with the reports sections of both websites containing more information than the others.

Content analysis

Krippendorff (1980) defines content analysis as a research method for making replicable and valid inferences from data to their context, with the aim of rendering knowledge, representation of facts, new insights, and a useful guide to action. The aim is to attain a condensed and broad description of the phenomenon, and the outcome of the analysis is concepts or categories describing the phenomenon. Cole (1988) and Morgan (1993) also explain content analysis as a method of analysing written, verbal or visual communication messages. Usually the purpose of those concepts or categories is to build up a model, conceptual system, conceptual map or categories.

Lodhia (2014) and Bebbington, Unerman & O'Dwyer (2014) assert that there has been a shift on the part of corporations from providing a summary of sustainability issues in annual reports to preparing detailed sustainability reports and communicating via the World Wide Web (internet). To this effect using themes in the GRI and the UNSDS sustainability guidelines, the researchers conducted content analysis to the data collected from the websites of Newmont Mining Corporation.

The sustainability data on each site were benchmarked against the GRI and UNSDS sustainability reporting requirements. Findings are presented in tabular format making it easy for comparison and benchmarking purpose. Each table presents one category of sustainability data (economic, environmental or social) and has five main columns with details in this order: aspects that fall under that category; whether information on sustainability was found in narrative, physical and monetary reports; and source documents for the sustainability information (see tables 1-6). The "aspects" columns comprise categories of sustainability issues recommended by GRI and UNSDS combined. If an aspect of sustainability was found on any page of the website or in the documents accessed, be it narrative, physical or monetary, it was coloured with green and red for sites Ahafo and Akyem respectively. There was no attempt to "score" the disclosure with regards to the detail of the information. The "documents" columns of the tables contained abbreviated titles of documents (See the Appendix A for full names of each document).

SECTION V: RESULTS AND ANALYSIS

The following results and analysis are grouped under the triple bottom line elements: economic, environmental and social.

Economic

On economic aspects of sustainability, both sites reported on the first three aspects covered by the GRI, namely, economic performance, market presence, and indirect impacts, and in all of the types of report, narrative, physical and monetary. However, Ahafo site had more detailed reports on all of those aspects. On procurement practices, only Ahafo site uploaded the procurement Act of Ghana and mentioned that that is what they use (see table 1 below).

Table 1: Economic aspects reported

Aspects	Narrative		Physical		Monetary		Document
	Ahafo	Akyem	Ahafo	Akyem	Ahafo	Akyem	
Economic Performance							AHOPF, AKOPF, AHRE1a, AHRE1b, AKRE1
Market Presence							AHOV, AKOV
Indirect Economic Impacts							AHRE1a, AKRE1, AHNADeF, AKNAKDeF, AHRE1b, AHOV
Procurement Practices							AHOV1

Environmental

The Ahafo site reported on inputs of raw materials, auxiliary materials, packaging materials, water consumption and energy consumption in both narrative and physical forms (see table 2a). The Akyem site only reported on inputs of water, with both narrative and physical information being briefly given. There was no report on operating materials on either plant site. Neither of the plant sites reported on monetary value of the environmental inputs at their websites.

Table 2a: Environmental aspects reported: Inputs

Aspects	Narrative		Physical		Monetary		Document
	Ahafo	Akyem	Ahafo	Akyem	Ahafo	Akyem	
Material Inputs							
Raw materials							AHRE1a,
Auxiliary materials							AHRE1a,
Packaging materials							AHRE1a,
Operating Materials							
Water							AHEN5, AHRE1a, AHRE2, AHRE5, AKRE1
Energy							AHRE1a, AHRE5,

As shown in Table 2b, information on material outputs were found on the websites of both plant sites in narratives, physical quantities and the current world market price of gold. Reports on non-product outputs (waste & emissions) were also found on both plant sites with narratives on waste water, hazardous waste, air emission, biodiversity, compliance and environmental grievances mechanisms. Even though both sites reported on the monetary aspects of biodiversity, there were no physical sustainability data on solid waste, water waste, and biodiversity. Only Ahafo site reported on transport issues, in narrative format. There was no report on supplier environmental assessment.

Table 2b: Environmental aspects reported: Outputs

Aspects	Narrative		Physical		Monetary		Document
	Ahafo	Akyem	Ahafo	Akyem	Ahafo	Akyem	
Material Outputs (Product)							
Products (including Packaging)							AHOV, AHRE1a, AKRE2, AKOV

By-products (including Packaging)							AHRE1a, AKRE2
Non-product Outputs (Waste & Emissions)							
Solid Waste							AHRE6k, AHRE1a, AKRE1, AKCOM
Hazardous Waste							AHEN5, AHRE2, AHEN2, AHEN7, AKRE2, AKCOM
Wastewater							AHEN2, AHEN3, AHEN6, AKRE1
Air Emissions							AHRE1a, AKEN7, AKRE1,
Biodiversity							AHRE6d, AHEN3, AHRE3, AHCOM5, EN1-EN7
Compliance							AHRE5, AHEN1, AHEN2, AHEN4, AKEN7, AKSRE3
Transport							AHRE1a, AHRE5,
Overall							
Supplier Environmental Assessment							
Environmental Grievance Mechanisms							AHRE1a, AKRE2, AHCOM1, AHRE5.

Social aspects:

Both sites reported on employment, labour/management relations, occupational health and safety training and education, diversity and equal opportunity, equal remuneration for men and women and labour practices grievances mechanisms in the narratives (see table 3a). Physical sustainability data on employment were also reported by both sites but reported in monetary terms. Only Ahafo site reported on physical and monetary aspects of health and safety.

Table 3a: Social aspects reported: Labour practices reported

Aspects	Narrative	Physical	Monetary	Document
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	Ahafo	Akyem	Ahafo	Akyem	Ahafo	Akyem	
Employment							AHCO, AHRE1a, AKOV
Labour/Management Relations							AHCOM, AHCOM1,
Occupational Health and Safety							AHHAH-AHHS7, AHRE1a, AHRE2, AHRE6i, AKHS
Training and Education							NADef, AHRE6j, AHRE6b, AHRE1a, AHRE1b, AKCOM1,
Diversity and Equal Opportunity							NADef, AHRE6j, AHRE1a, AHRE6b
Equal Remuneration for Women and Men							AHCOM3, AKRE2
Supplier Assessment for Labour Practices							
Labour Practices Grievance Mechanisms							AHRE2, AKRE12

As shown in Table 3b, both plant sites had narratives on human rights issues concerning investment, non-discrimination, freedom of association and collective bargaining, child labour, forced or compulsory labour, security practices, indigenous rights, and human rights grievance mechanisms. Ahafo site reported the number of military men at a mini-barracks on site. There was nothing on supplier human rights assessment on either site.

Table 3b: Social aspects reported: Human rights reported

Aspects	Narrative		Physical		Monetary		Document
	Ahafo	Akyem	Ahafo	Akyem	Ahafo	Akyem	
Investment							AHNADef, AHRE6b, AHRE6f, AKCOM1 ,
Non-discrimination							AHCOM3, AHRE2, AKRE2

Freedom of Association and Collective Bargaining							AHRE2, AKRE2
Child Labour							AHRE1a, AKRE2
Forced or Compulsory Labour							AHRE1a, AKRE2
Security Practices							AHRE1a, AKRE2
Indigenous Rights							AHRE2, AKRE2
Assessment							
Supplier Human Rights Assessment							
Human Rights Grievance Mechanisms							AHRE2, AHCOM1, AHRE5, AKRE2

In regard to societal reporting both sites narrated on local communities, public policy, compliance, grievance mechanisms for impacts on society, emergency preparedness, resettlement and plant closure (see table 3c). In addition, both sites reported in physical and monetary forms on local community investments. Ahafo site reported both physical and monetary data on resettlement, but Akyem site did not reported monetary data on resettlement.

Table 3c: Social aspects reported: Societal reporting

Aspects	Narrative		Physical		Monetary		Document
	Ahafo	Akyem	Ahafo	Akyem	Ahafo	Akyem	
Local Communities							AHCO, NADef, AHRE6j, AHRE6b, AKRE1, AHRE1a, AHRE1b, AKCOM1,
Anti-corruption							
Public Policy							AHRE2, AHCOM1, AKCOM
Anti-competitive Behaviour							
Compliance							AHRE2, AHRE5, AKEN7,
Supplier Assessment for Impacts on Society							
Grievance Mechanisms for Impacts on Society							AHRE6f, AHRE2, AHCO, AHCOM1, AHRE6j, AHRE6b, AHRE1a, AKRE1,
Emergency Preparedness							AHHS8, AKRE2
Artisanal and Small-scale mining							
Resettlement							AHRE4, AHCOM4, AHRE6j, AHRE6b., AHRE1a, AHRE1b, AKCOM4
Closure Planning							AHRE6i, AHRE1a, AKRE1

Apart from Ahafo site that narrated briefly on product and service labelling, there was no report on product responsibility by either of the sites in either narrative, physical or monetary terms (see table 3d). There was no report on anti-competitive behaviour, supplier assessment impacts on society and artisanal and small scale mining.

Table 3d: Social aspects reported: Product responsibility

Aspects	Narrative		Physical		Monetary		Document
	Ahafo	Akyem	Ahafo	Akyem	Ahafo	Akyem	
Customer Health and Safety							
Product and Service Labelling							AHRE1a,
Marketing Communications							
Customer Privacy							
Compliance							
Materials Stewardship							

SECTION VI: CONCLUSIONS AND RECOMMENDATIONS

This is a pilot study on the contents of sustainability reporting information of a mining firm operating in Ghana. About 70 documents were examined from the websites of the Ahafo and Akyem sites of the mining company using the GRI and the UNSDS reporting elements as benchmarks. It was realised that even though the parent company reports on all elements of the GRI index and the UNSDS, the subsidiaries do not. This could possibly be due to the fact that, as subsidiaries, they do not prepare comprehensive environmental reports on their own but rather gather sustainability data and pass them on to the parent company for final reports to be created. Ahafo site reported more than Akyem site on most of the sustainability aspects. The Akyem site only started operating recently, in the fourth quarter of 2013, whilst Ahafo started in 2006. This could possibly be a reason why the Ahafo site was able to do more sustainability reporting than the Akyem site.

Most of the reports were in narrative format with some physical measures of the GRI and UNDS elements. There was little monetary information on sustainability aspects in the reports available. The most comprehensive reports, with narrative and both physical and monetary measures, were the economic reports on both websites. Environmental reports were moderately comprehensive with mostly narratives and some physical measures. Social aspects mostly were reported only in narratives. The more comprehensive reporting of economic aspects could be attributed to the fact that economic values are easily measured as

compared to environmental and social aspects of sustainability. In addition, since the parent firm is listed on the New York stock exchange, it must be obligatory for economic performance to be measured as investors will be most interested in that information.

Some aspects of the GRI and UNDSO measures were repeated in different documents. These repetitions could be due to the fact that aspects of sustainability sometimes overlap (see diagram 1). For instance, an agricultural project for community development could also result in biodiversity issues and vice versa, making it both a social and a community sustainability project. Consequently, documents reporting on such matters would comprise both community and social aspects.

These reasons given above are assumptions based on documents used for this study. Such assumptions are vulnerable to misinterpretations as the real situation could be different. Consequently, there is the need for researchers to get closer to have a look at reasons empirically as to why these disparities in sustainability reporting of these sites exist in two plants sites belonging to one mining firm. In addition, the researchers recommend that further studies be conducted to find out why mining firms in Ghana prepare sustainability reports, for whom they compile the reports, how the reports are used and by whom, and how sustainability reporting can be enhanced.

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APPENDIX 1 : WEBSITES DOCUMENTS

AHAFO PLANT SITE			
<i>Document</i>	<i>Code</i>	<i>Document</i>	<i>Code</i>
Overview	AHOV	Reports	AHRE
Local procurement policy	AHOV1	Environmental and social impact assessment	AHRE1a
Newmont Ahafo Development foundation	AHNADeF	Socio-economic impact of Newmont Ghana Gold ltd	AHRE1b
Operations fact	AHOPF	Public consultation and disclosure plan	AHRE2
		Ahafo linkages program	AHRE3
Health and safety	AHHS	Resettlement action plan	AHRE4
Certification OHSAS 18001	AHHAH	Independent reviews	AHRE5
Leadership safety Team Meetings	AHHAK	Supplemental documents	AHRE6
Safety interactions	AHHS3	Guide to land acquisition	AHRE6a
Talking safety	AHHS4	Social and community development	AHRE6b
Vital behaviour	AHHS5	Independent assessment of resettlement implementation No.2	AHRE6c
Community safety competition	AHHS6	Agricultural improvement program	AHRE6d
Community road safety	AHHS7	Validation draft agricultural improvement and land access program	AHRE6e
Malaria programs	AHHS8	Independent external compliance monitoring- General terms of ref	AHRE6f
Emergency response team	AHHS9	Summary- Ahafo south project	AHRE6h
		Independent external environmental health and safety completion audit	AHRE6i
Environment	AHEN	Environmental and social action plans	AHRE6j
Certification ISO 14001	AHEN1	Waste rock tailing geochemical	AHRE6k
Cyanide code	AHEN2	Draft reclamation plan	AHRE6l
Reclamation plan	AHEN3		
Monitoring and compliance	AHEN4	Community	AHCOM
Water storage facility	AHEN5	Stakeholder engagements and consultations	AHCOM1
Environmental control dams	AHEN6	Social Responsibility Forum	AHCOM2
Counter current decantation circuit	AHEN7	Women's consultative committee	AHCOM3
		Resettlement negotiation committee	AHCOM4
Careers	AHCA	Agricultural improvement and land access program	AHCOM5
News	AHNE	Vulnerable peoples program	AHCOM6
		Skill development for income improvement program	AHCOM7
		Ahafo linkage program	AHCOM8

AKYEM PLANT SITE			
<i>Document</i>	<i>Code</i>	<i>Document</i>	<i>Code</i>
Overview	AKVO	Reports	AKRE
Operations Facts	AKOPF	Environmental and social impact assessment	AKRE1
Health and Safety	AKHS	Public consultation and disclosure plan	AKRE2
		Annex A-Legal and Administration	AKRE3
Environment	AKEN	Annexes B-Supporting information	AKRE4
Flora Management	AKEN1	Annex C-Supplemental	AKRE5
Vetiver Plantation	AKEN2	Annex D-Environmental	AKRE6
Wildlife	AKEN3	Annex E-Environmental monitoring	AKRE7
Community Tree Planting And Medicinal Plant Farm	AKEN4	Annex F-Guide to land	AKRE8
Biodiversity Offset Programme	AKEN5	Annex G-Land rehabilitation	AKRE9
The Environmental Science Programme	AKEN5	Annex H-Part 1-3 Supplementary	AKRE10
Environmental Monitoring	AKEN6	Annex H-2 Stakeholder consultation	AKRE11
Reclamation	AKEN7	Annex H-3 Akyem Amanie	AKRE12
Community	AKCOM	Careers	AKCA
Resettlement	AKCOM1	News	AKNE
Community development	AKCOM2	Contacts	AKCA

**APPENDIX 2: UNITED NATIONS DIVISION FOR SUSTAINABLE
DEVELOPMENT INDEX**

Environmental media										
Environmental cost/expenditure categories	Air / Climate	Waste water	Waste	Soil / Groundwater	Noise / Vibration	Biodiversity / Landscape	Radiation	Other	Total	Source document
1. Waste and emission treatment										
1.1. Depreciation for related equipment										
1.2. Maintenance and operating materials and services										
1.3. Related personnel										
1.4. Fees, taxes, charges										
1.5. Fines and penalties										
1.6. Insurance for environmental liabilities										
1.7. Provisions for clean-up costs, remediation										
2. Prevention and environmental management										
2.1. External services for environmental management										
2.2. Personnel for general environmental management activities										
2.3. Research and development										
2.4. Extra expenditure for cleaner technologies										
2.5. Other environmental management costs										
3. Material purchase value of non-product output										
3.1. Raw materials										
3.2. Packaging										
3.3. Auxiliary materials										
3.4. Operating materials										
3.5. Energy										
3.6. Water										
4. Processing costs of non-product output										
Total Environmental expenditure										
5. Environmental revenues										
5.1. Subsidies, awards										
5.2. Other earnings										
Total Environmental revenues										

(Source: UNDSO, 2001)

APENDIX 3: GLOBAL REPORTING INITIATIVE (GRI) INDEX - MINING AND METALS SECTOR

Category Aspects1	<p>Economic</p> <p style="padding-left: 40px;">Economic Performance</p> <p style="padding-left: 40px;">Market Presence</p> <p style="padding-left: 40px;">Indirect Economic Impacts</p> <p style="padding-left: 40px;">Procurement Practices</p>	<p>Environmental</p> <p style="padding-left: 40px;">Materials</p> <p style="padding-left: 40px;">Energy</p> <p style="padding-left: 40px;">Water</p> <p style="padding-left: 40px;">Biodiversity</p> <p style="padding-left: 40px;">Emissions</p> <p style="padding-left: 40px;">Effluents and Waste</p> <p style="padding-left: 40px;">Products and Services</p> <p style="padding-left: 40px;">Compliance</p> <p style="padding-left: 40px;">Transport</p> <p style="padding-left: 40px;">Overall</p> <p style="padding-left: 40px;">Supplier Environmental Assessment</p> <p style="padding-left: 40px;">Environmental Grievance Mechanisms</p>		
Category Sub- Categories Aspects1	<p>Social</p> <p>Labor Practices and Decent Work</p> <p style="padding-left: 20px;">Employment</p> <p style="padding-left: 20px;">Labor/Management Relations</p> <p style="padding-left: 20px;">Occupational Health and Safety</p> <p style="padding-left: 20px;">Training and Education</p> <p style="padding-left: 20px;">Diversity and Equal Opportunity</p> <p style="padding-left: 20px;">Equal Remuneration for Women and Men</p> <p style="padding-left: 20px;">Supplier Assessment for Labor Practices</p> <p style="padding-left: 20px;">Labor Practices Grievance Mechanisms</p>	<p>Human Rights</p> <p style="padding-left: 20px;">Investment</p> <p style="padding-left: 20px;">Non-discrimination</p> <p style="padding-left: 20px;">Freedom of Association and Collective Bargaining</p> <p style="padding-left: 20px;">Child Labor</p> <p style="padding-left: 20px;">Forced or Compulsory Labor</p> <p style="padding-left: 20px;">Security Practices</p> <p style="padding-left: 20px;">Indigenous Rights</p> <p style="padding-left: 20px;">Assessment</p> <p style="padding-left: 20px;">Supplier Human Rights Assessment</p> <p style="padding-left: 20px;">Human Rights Grievance Mechanisms</p>	<p>Society</p> <p style="padding-left: 20px;">Local Communities</p> <p style="padding-left: 20px;">Anti-corruption</p> <p style="padding-left: 20px;">Public Policy</p> <p style="padding-left: 20px;">Anti-competitive Behavior</p> <p style="padding-left: 20px;">Compliance</p> <p style="padding-left: 20px;">Supplier Assessment for Impacts on Society</p> <p style="padding-left: 20px;">Grievance Mechanisms for Impacts on Society</p> <p style="padding-left: 20px;">Emergency Preparedness</p> <p style="padding-left: 20px;">Artisanal and Small-scale mining</p> <p style="padding-left: 20px;">Resettlement</p> <p style="padding-left: 20px;">Closure Planning</p>	<p>Product Responsibility</p> <p style="padding-left: 20px;">Customer Health and Safety</p> <p style="padding-left: 20px;">Product and Service Labeling</p> <p style="padding-left: 20px;">Marketing Communications</p> <p style="padding-left: 20px;">Customer Privacy Compliance</p> <p style="padding-left: 20px;">Materials Stewardship</p>

(Source: GRI 2013)