



ADRRI JOURNALS ([www.adrri.org](http://www.adrri.org))

ISSN-L: 2343-6891 VOL. 15, No.2 (3), July, 2017

## **An examination of environmental accounting and reporting Practices of large-scale mining companies in Ghana**

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Available Online: 31<sup>st</sup> July, 2017

URL: <http://www.journals.adrri.org/>

[Cite article as: Tackie, G., Agyenim-Boateng, C, and Arthur, C. L. (2017). An examination of environmental accounting and reporting Practices of large-scale mining companies in Ghana. ADRRI Journal of Arts and Social Sciences, Ghana: Vol. 15, No. 2 (3), Pp. 1-22, ISSN-L: 2343-6891, 31<sup>st</sup> July, 2017.]

### **Abstract**

The study involved a benchmark analysis and examination of the state of sustainability accounting and reporting of four gold mining companies in Ghana from 2009 to 2015 comparing and contrasting the sustainability accounting processes and the sustainability indicators being adopted by the these companies as far as sustainability reporting initiatives are concerned. Further, the purpose examines the accounting convention, traditional or otherwise, used to recognize, measure and disclose transactions relating to the environment of four large-scale gold mining companies in Ghana. The study draws extensively on publicly available official documents and interview data. Based on the responses from the interview respondents and information from the publicly available official documents, it develops a case report based on the key questions and other themes that emerge from the literature and the empirical material. The study reveals that environmental accounting and reporting are now critical strategies that environmentally sensitive industries like gold mining companies are seriously tackling. The findings show that although the conventional accounting system was used in the recognition and measurement of environmental transactions, the nature of environmental accounts, presentation and disclosure varies across the companies. Some reports were stand-alone while others were integrated in the main annual reports. The main significance of the study is that the findings, thus, reinforce the proposition that the need for decoupling environmental accounting and reporting within the broader sustainability reporting

framework is due. There is also the need to develop a positive rather than a normative environmental accounting and reporting framework.

**Keywords:** environmental accounting, environmental reporting, gold mining industry

## INTRODUCTION

The term sustainable development has been defined as “Development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland, 1987). While debates about the practical meaning of sustainable development still abound, the key to sustainability is to understand that it is fundamentally about the stewardship of the total wealth or literally, “the conditions of well-being” of a community or society (Anielski, 2002). How to effectively render stewardship and management of the common-wealth requires practical accounting and management systems that can monitor and assess these “conditions of well-being” that will contribute to quality of life and at the same time ensuring nature’s capital is maintained in a condition that will ensure future flows of nature’s goods and services for human species (Anielski, 2002). Over the last two to three decades, there have been clarion calls for corporate responsible organisations to account for their economic/financial, environmental and social performance (see for examples, Mathews, 1993; Deegan & Newson, 1996; Elkington, 1999; Lamberton, 2005; Amponsah-Tawiah & Dartey-Baah, 2011; Boiral, 2013; Edens, 2013; Biondi, 2014). This sort of accounting usually entails measuring and communicating the impact of the corporate policies and practices on an organisation’s performance at the economical (financial), ecological (environment) and social (socio-cultural) levels. This is commonly known as the triple bottom line or Triple-Ps: People (Social), Planet (Ecological or Environmental) and Profit (Economical) (Elkington, 1999).

There is a great challenge in defining the degree of corporate accountability for sustainability outcomes which is another complicating factor in designing a sustainability accounting system. In view of this challenge, the question that needs to be asked is what should economic, social and environmental sustainability look like? Economic, social and environmental sustainability values and goals will vary depending on the values of a corporation in particular and society as a whole. Some efforts have been made by some practitioners and sustainability initiatives such as Global Reporting Initiative (GRI) guidelines on sustainability reporting. They suggest that there may be fundamental principles of sustainability, practical strategic planning processes to implement sustainability into organizational cultures, and practical tools for measuring and monitoring progress along the so-called sustainability journey (Anielski, 2002). According to

Arthur et al. (2017) mining companies in Ghana have made considerable progress in developing sustainability measurement and reporting systems. This bodes for the emergence of a sustainability accounting system that integrates sustainability measurement at all levels to track genuine progress towards sustainability accounting. Notwithstanding, sustainability accounting system in developing countries in general and in Ghana in particular is still years in the making and will require a sustained commitment to sustainable development and sustainability reporting by governments, practitioners as well as by corporations.

The study involved a benchmark analysis and examination of the state of sustainability accounting and reporting of mining companies in Ghana comparing and contrasting the sustainability accounting processes and the sustainability indicators being adopted by the these companies as far as sustainability reporting initiatives are concerned. In view of the above discussions the main objective of the study to examine the extent of development of sustainability accounting and reporting system that would link corporate sustainability measurement. Specifically, the study will examine the accounting convention, traditional or otherwise, used to recognize, measure and disclose transactions relating to the environmental activities of four large-scale gold mining companies in Ghana. Therefore the main research question of the study is to what accounting convention, traditional or otherwise, do the four large-scale gold mining companies in Ghana used to recognize, measure and disclose transactions relating to their environmental activities. The main significance of the study is that the findings, thus, reinforce the proposition that the need for decoupling environmental accounting and reporting within the broader sustainability reporting framework is due. There is also the need to develop a positive rather than a normative environmental accounting and reporting framework. The ultimate goal is that the study will help firms in environmental sensitive industries develop an environmental accounting and reporting framework.

The next section reviews literature involving environmental accounting concepts. Section 3 presents the methodology used for the study. Section 4 presents the results of a qualitative analysis using the themes that emerged from the study. Section 5 concludes the study whiles Section 6 discusses the limitations of this study and the potential directions for future research.

## **LITERATURE REVIEW**

### **Ghana's Mining Industry and CSR**

Ghana's gold mining industry is ranked the second largest producer in Africa after South Africa and eight largest globally (KPMG, 2014). In 2013, the mining sector alone contributed 10% of the Ghana's Gross Domestic Product. Minerals make up 37% of total exports, of which gold contributes over 90%. Thus, the principal focus of Ghana's mining and minerals development

effort remains anchored on gold. Ghana is also a major producer of bauxite, manganese and diamond. According to the Ghana Revenue Authority (GRA), a total outflow from the sector to the nation's purse was approximately GH¢1.1 billion in 2013. This amount represented 18.7% of direct tax and 14.3% of total domestic revenue mobilised by the GRA in 2013.

The legislative framework for mining in Ghana is laid down in the Minerals and Mining Law of 1986 (PNDCL 153) as amended by the Minerals and Mining Act of 2006 (Act 703). The law is however silent on the social responsibility of the companies towards the communities in which they operate. In fact, there is no national policy framework that guides the implementation of corporate social responsibility (CSR) in Ghana. Mining companies are therefore not bound by law to implement CSR activities in the country. In other words, CSR activities are undertaken more in response to moral convictions rather than legal obligations. Apart from the Minerals and Mining Act, 2006 (Act 703) and other legislations, most of the regulations that affects mining operations in the country, on a yearly basis, are promulgated in the annual budget<sup>1</sup> drawn up by the Finance Ministry. Albeit, these mining companies make significant contributions to the economic development of Ghana through the payment of taxes, provision of employment, development of sectors like banking, financial services, transport and logistics, amongst others. Mining also contributes to community development through CSR programmes for host communities and the general public at large.

Currently, there are a lot of players in the gold mining industry. The major gold mining companies, according to Ghana Chamber of Mines (GCM) (2013) performance report, on the basis of ounces of gold produced, are Gold Fields Ghana (Tarkwa), Newmont Ghana Gold (Ahafo/Akyem), AngloGold Ashanti (Iduapriem/Obuasi), Chirano Gold Mines, Golden Star Resources (Bogoso/Prestea/Wassa), Perseus Mining, Abosso Gold Fields, and Adamus Resources. These gold mining companies along with many others and small scale miners have been accused of polluting the environment with cyanide, mercury and other chemicals which they employ in processing gold ores and in a bid to mitigate the negative effects of their operations, they engage in CSR and some sustainable mining practices. The mining sector is plagued with key challenges which tend to increase its operating costs and reduce the profitability of its operations. These include the increasing presence of illegal; mining ('galamsey') operations on company concessions, substantial land compensation and CSR

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<sup>1</sup>Since 2012, mining companies operating in Ghana have been subjected to the following taxes: corporate tax 35%, capital gains tax 15%, and withholding tax 15%. Capital allowances are granted at 20% for five years. In addition, the mining companies are required to pay a royalty of 5 percent of their total revenues.

issues. Another key challenge is the increasing cost of energy needed to power its operations in the light of Ghana's energy generation challenges.

### **Conventional and environmental accounting models**

Over the years, the conventional accounting model (CAM) has been widely used in preparation and presentation of financial and non-financial information. The CAM comprises of financial reports and their underlying records; the generally accepted accounting principles that guide the preparation of these accounting records and their associated accounting reports; the objective of financial reporting; and the qualitative characteristics of financial information generated (Ijiri, 1983; Elliot and Jacobson, 1991; Solomons, 1995). Opponents of the use of CAM for accounting for the environment have proposed the development of an alternative accounting model which incorporates environmental, social and economic perspectives. In the view of Lamberton (2005), themes which contribute to the specification of this model are (1) the insatiable definition of sustainability; (2) the multi-dimensional indicators of sustainability; (3) multi-units of measurement of sustainability indicators; (4) interdisciplinary nature of sustainability accounting; and (5) application of conventional accounting principles and practice in sustainability accounting. Lamberton (2005) further argues that the process of reporting sustainability accounting information is open to manipulation by vested interests. The only way out to reduce manipulation and increase the qualitative attributes of sustainability accounting information is the design of a sustainability accounting model or framework.

Environmental accounting and reporting puts information into the public domain and as such should be subjected to the same qualitative rigor of materiality, comparability, accuracy and completeness as is traditionally applied to financial disclosure. The question is whether we can recognise and measure environmental impacts of the elements of financial statements (assets, liabilities, capital, income and expenses). According to Boiral (2013), as cited by Speziale and Klovienè (2014), environmental accounting and reporting is intended to provide additional information to stakeholders who want to be better informed about the social and environmental impacts of their business activities. Environmental accounting and reporting issues are centred on report content and internal actions contradictions, rationale/management motivations for reporting, stand alone or integrated reporting and compliance or voluntary reporting. Apart from demonstrating transparency, creating financial value and enhancing corporate reputation, environmental accounting and reporting improves regulatory compliance, enhances management systems, and attracts long term capital and favourable financing conditions. The challenge is how to account for the environment through the stewardship function of accounting.

**The concept of environmental and sustainability accounting**

Sustainability reporting is an emerging practice by corporate bodies in Ghana. According to a recent study by Arthur (2016) and Arthur et al. (2017), most large scale mining companies operating in Ghana published some environmental, social or sustainability report but only could be defined as genuine sustainability reports. Corporate sustainability reports describe the “triple bottom line” of a company’s economic, social and environmental management and performance. In simple terms, environmental accounting depicts accounting for and managing the environment for future use. Environmental accounting sits within the three dimensions of sustainability namely economic sustainability, ecological (or environmental) sustainability and social sustainability. Environmental accounting calls for recycling, reuse and reduction of waste products. Environmental factors and actors are indicated by eco-friendly, capacity of the planet to absorb waste and support life, zero pollution and waste, waste recycling, renewable energy, water, greenhouse gases emission, conservation, restoration and safe environment (Agyenim-Boateng, 2014). Environmental accounting, which is a sub-measurement of sustainability accounting, measures the use of the environment in terms of natural resource inputs and outputs of waste and emissions (Edens, 2013).

Sustainability has in recent years become a controversial phenomenon. Some erroneous impression has been created to equate sustainability to green revolution. But the two terms are uniquely different. Green revolution involves a preference for the natural over the artificial. However, it is common knowledge that the natural is practically not sustainable. In the end, it cannot ensure food security. The proposed solution is artificial production and reproduction (genetically modified). But that may also not be sustainable because the consequences are unimaginable. This leads to the sustainability-green revolution paradox or tension. In the theoretical literature, green accounting is prevalent while sustainability accounting dominates the empirical literature (Edens, 2013).

Over the past two to three decades environmental accounting alongside sustainability accounting has received widespread attention in the academic literature (Gray, 1994; Lamberton, 2005; Lodhia & Hess, 2014). Lodhia and Hess (2014) found that, in developing countries, while there is slow progress in sustainability accounting and reporting practices, mining companies seem not to be fully accountable for their sustainability impacts. Gray’s (1994) work on sustainability accounting draws on the concept of capital maintenance recognising the need to maintain the stock of natural capital for future generations. In this context, the concept of capital maintenance, as stipulated by the IASB conceptual framework, should apply to natural capital and not only financial capital (Lamberton, 2005). This will allow

for the determination of sustainable cost which when deducted from accounting profit will lead to a notional level of sustainable profit or unsustainable loss. Arriving at a reasonable estimate of sustainable cost poses grave difficulties. A sustainability cost is one of the obvious ways of accounting for the environment. Sustainable cost is the amount which must be spent to put the biosphere at the end of the accounting period back into the state it was at the beginning (Hart, 1997). Sustainable cost calculation involves two elements: costs required to ensure inputs have no adverse environmental impacts; and costs required to remedy any environmental impacts that may arise. The question is whether sustainability costs are recoverable.

According to Anielski, (2002) various factors motivate companies to report beyond their financial bottom including enhancing business value, attracting investment and addressing heightened citizen and shareholder expectations of greater social and environmental responsibility. Mining corporations have made tremendous progress in sustainability measurement and reporting. A variety of initiatives, processes and tools for environmental performance measurement, monitoring and management have been developed. According to Lighter and Zadek (2005), there are over 300 international standards and guidelines which are currently providing accepted reference standards for improving social and environmental performance and desired legitimacy, consistency and comparability which is required by business and its stakeholders. However, the variety of tools used to measure sustainability has also created some confusion as to how sustainability should be interpreted or how environmental performance can be compared across companies and sectors.

The Global Reporting Initiative (GRI) as one of the initiative is a long-term, multi-stakeholder, international collaborative initiative to develop and disseminate globally acceptable sustainability reporting guidelines. These GRI guidelines (released in June 2000 as the Sustainability Reporting Guidelines) are to be used on a voluntary basis by organizations seeking to report on the economic, environmental, and social performance of their activities, products and services. The GRI Guidelines have been further refined and developed and re-released in 2014. The new guidelines provide a comprehensive list of potential economic, social, environmental and integrated sustainability performance indicators that may be used by corporations. Over time, the GRI hopes to move towards a fully integrated reporting structure linking economic, environmental and social elements of sustainable development more explicitly (Anielski, 2002). The primary goal of GRI is to design and build acceptance of a common framework for disclosure for sustainability reporting. On the linked aspects of sustainability, the three linked elements of sustainability as they apply to an organization is summarised in Table 1.

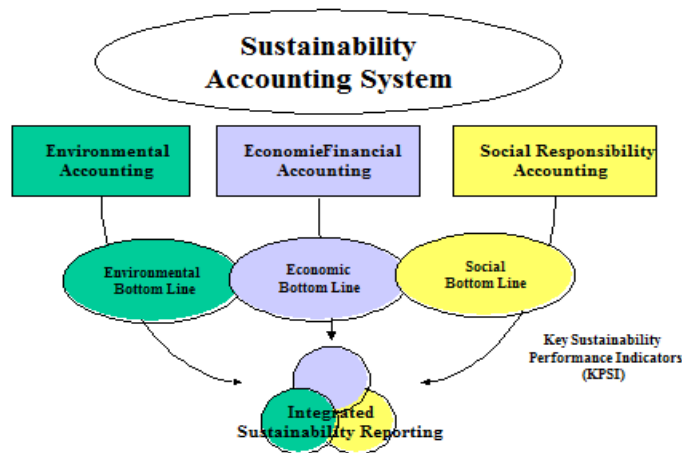
**Table 1 Elements of sustainability**

<b>Elements</b>	<b>Examples</b>
Economic	Wages and benefits, labour productivity, job creation, expenditures on outsourcing, expenditures on research and development, and investments in training and other forms of human capital. The economic element includes, but is not limited to, financial information
Environmental	Impacts of processes, products and services on air, water, land, biodiversity, and human health.
Social	Workplace health and safety, employee retention, labour rights, human rights, and wages and working conditions at outsourced operations.

Source: Anielski (2002)

The GRI initiative is gaining widespread exposure and acceptance in civil society, business, government, and labour. Most large scale commercial mining companies in Ghana are using the GRI Sustainability Reporting Guidelines in the preparation of their sustainability reports (Arthur et al., 2017). Arthur et al. (2017)'s work on performance indicators reporting used the GRI guidelines to develop a methodology for assessing Ghanaian mining companies corporate sustainability reporting. Their study found that most sustainability reports are being prepared using GRI Sustainability Reporting Guidelines. The GRI guidelines help organizations articulate and communicate a coherent vision and describe their corporate goals, strategies and performance indicators in terms of sustainability objectives. The guidelines are intended to facilitate a clear picture and reporting of the human and ecological impact of business activities to facilitate informed decisions about investments, purchases and partnerships (Anielski, 2002). In view of this, sustainability reporting is intended not as a replacement of financial reporting but as a new integrated performance measurement and reporting system that shows the relationship among the three linked elements of sustainability – economic (including but not limited to financial information), environment and social (Anielski, 2002). The GRI guidelines provide guidance to developing corporate sustainability reporting and management systems that is illustrated in Figure 1.





Source: Adapted Anielski (2002).

Figure 1: Triple Bottom Line Sustainability Accounting Framework

Stratos (2001) also used the GRI guidelines as a basis of assessing the current scope of corporate sustainability reporting in Canada where it found that most reports provided good information on energy use, environmental emissions, community philanthropic activities and health and safety performance. In terms of environmental performance reporting, Stratos (2001) further found that while companies report on energy use and a few regulated emissions, companies will have to move to a full life cycle accounting perspective and consider their relative impacts of their operations on the surrounding ecosystems, communities and regions in which they operate. They conclude that there is still considerable room for improvement in reporting. According to Stratos (2001), reporting beyond financial performance reflects a growing recognition that business sustainability will require increasing attention to managing across the “triple bottom line” of performance to desire for enhanced accountability and greater social and environmental responsibility by stakeholders.

Most companies are experimenting adoption of GRI-type indicators of performance using their own methods and discretion in interpretation of the results due to its voluntary application. Some researchers are of the view that although the voluntary reporting approach advocated by GRI would appear to be a prudent approach it will be difficult to compare corporate performance results across companies or within sectors if there is no common methodological or reporting standard. Furthermore, many small to medium sized firms do not have the resources or do not feel the need to generate sustainability reports or develop sustainability management systems. According to Stratos (2001) and Anielski (2002) there are several challenges that are facing corporate sustainability reporting namely, data reliability, quality and

credibility; sustainability performance indicator comparability across companies and within sectors; external verification by independent third parties, and; improved quality of performance information. As depicted from Figure 1 creating a sustainability accounting and reporting system that moves towards a truly “integrated” system where corporate reporting aligns with community, regional and eco-systems sustainability reporting is one of the greatest challenges ahead. Table 2 shows summaries of the key findings of the work of Stratos (2001).

**Table 2 Key findings of Stratos (2001)**

S/N	Key findings
1	The majority of companies clearly describe their operations and the scope of their report, and communicate these messages effectively;
2	While many reports communicate a future vision for discrete performance dimensions of sustainability, very few articulate an integrated triple bottom line vision and strategy;
3	Environmental performance reporting was surprisingly poor;
4	On average, the report score slightly higher on economic performance than on environmental performance. Stratos noted that many firms have to broaden their economic reporting providing information on a wider range of factors such as investment in intellectual capital and the direct and indirect economic contributions to the local economies in which they operate;
5	Most of the reports give much less emphasis to social performance than to environmental and economic performance. Stratos found encouraging examples of corporate reporting on health and safety and community philanthropy, with some firms (e.g. Suncor) reporting on labour relations, wages and aboriginal relations;
6	Very few reports venture beyond the facility gate to address supply chain and product stewardship issues, and;
7	Eco-efficiency indicators are in common use among reporters.

Source: Anielski (2002)

## METHODOLOGY

With the use of case study, we empirically examined the annual reports, including the environmental reports, of four large scale gold mining companies in Ghana (AngloGold Ashanti; Gold Fields Ghana; Newmont Ghana Limited; and Golden Star Resources Limited), covering a period of six years, from 2010 to 2015. The four companies were chosen because they are considered to be environmentally sensitive companies. The study draws extensively on

publicly available official documents and interview data to draw conclusions. One of the main reasons for using the annual reports is that annual reports are mainly used by companies to discharge their accountability functions in communicating with their stakeholders (Arthur, 2016; Bouten et al., 2011). The study adopted a qualitative research methodology using content analysis and narratives to address the questions posed in this study. This was intended to provide a fully and richer picture of the research process (De Silva, 2011). As a qualitative research, the researchers embarked on field visits with the use of a self-constructed interview guide<sup>2</sup> as the research instrument to solicit the views of key officers of the four gold mining companies. Thinking on the side of the social constructivist (and not realist) ontology and epistemology, we believe that knowledge is established through the meanings attached to the phenomena studied (Coll & Chapman, 2000; Cousins, 2002, as cited by Krauss, 2005). And while a researcher can interact with the object of study to obtain data, the researcher can still be independent of the object of study.

Face-to-face interviews were conducted to gather sufficient, reliable and valid data which have been analysed and appropriately presented in this case report. As part of the primary data collection exercise, corporate offices of the four mining companies were visited to enable the researchers to arrange for mine site interviews. Furthermore, to fully appreciate the environmental accounting and reporting framework within the broader conceptual framework for financial reporting and its inherent limitations, the technical director of the Institute of Chartered Accountants – Ghana (ICAG) was engaged in an extensive interview to ascertain the position of the ICAG. This was considered crucial to the study due to the fact that ICAG is the legally mandated regulatory body of the accountancy profession in Ghana.

## **RESULTS**

This section presents the results of the examination of the sustainability reporting practices of the sampled firms for the study; AngloGold Ashanti, Gold Fields Ghana, Newmont Ghana Limited and Golden Star Resources Limited. Secondary data derived from the 6-year annual reports of the four gold mining companies covering the period 2010 to 2015 and the interviews were thoroughly studied and analysed. The data were analysed with the help of GRI reporting guidelines as shown in Table 1.

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<sup>2</sup> In addition to the interview guide and the electronic version of the introductory letter, which were emailed to prospective interviewees, we designed a concept note on the research to explain the rationale and objectives of the research, and also to assure prospective interviewees of the strict confidentiality attached to this purely academic exercise.

**Environmental accounting**

AGA has an A+ compliance level with regards to the Global Reporting Initiative (GRI) reporting standard. The company also complies fully with the reporting requirements of the International Council on Mining and Metals (ICMM) Sustainable Development Framework. There were instances within the 6-year period where operations such as the Obuasi and Iduapriem mines had to be temporarily shut down to address environmental safety concerns (usually concerning water resource management) raised by either the Environmental Protection Agency (EPA) or the group's own internal assessment. AGA's operations have ISO 14001 certification although some operations' certifications were temporarily withdrawn to enable them address infrastructural challenges. During the visit to the Iduapriem mine in Tarkwa, in the Western Region of Ghana, we sighted two environmental certifications; one issued by the EPA and the other by Davis Langdon Certification Services in respect Australian/New Zealand Standard AS/NZS ISO 14001:2004 – Environmental Management Systems. The Senior Finance Manager of AGA (Iduapriem) Limited emphasised that due to the global nature of AGA's operations, each of the 22 mines of AGA globally are required to comply with the tenets of the standardised operations.

Gold Fields Environmental Management System (EMS) generates data on the environment for management use. The company has an incident reporting system which classifies reported environmental incidents from level 1-5 based on the severity with level 5 being the most severe. To mitigate the environmental footprint of its operations, the group has several safety certifications at all of its operations and carefully monitors environmental indicators. Water treatment plants and tree planting exercises are some initiatives undertaken to mitigate environmental destruction. Like AGA, Gold Fields sets aside a fund to cater for expenses associated with mine closure which is also reviewed annually and adjusted accordingly. Since 2009, Gold Fields, in its bid to operate as a responsible and sustainable investment, has integrated sustainable considerations in the structure of its annual reports to produce a single integrated report.

Newmont's global sustainability report is compiled in accordance with GRI G3 guidelines and is reviewed by an independent assurance company with the goal of achieving an A+ GRI rating. It used the G4 framework for its 2014 report. Each of its operations has a reclamation plan in place. To manage climate change risks, it has reported its greenhouse gas emissions annually to the Carbon Disclosure Project since 2004 and these reports are independently verified. Newmont became the first gold mining company selected to be part of the Dow Jones Sustainability World Index. It has also adopted a conflict free gold policy to encourage responsible gold mining practices. Its operations maintain safety certifications.

**Economic accounting**

Findings from the annual reports of the mining firms surveyed revealed the elements that bother on economic accounting. These relate to, among others, minerals output, revenue recognition, cash cost determination, profitability assessment, forms of remuneration for wages and benefits, labour productivity, payment of taxes, job creation, expenditures on outsourcing, expenditures on research and development, and investments in training and other forms of human capital. The economic element mostly relate to financial information.

Cash cost is measured as the sum of on-site mining costs, on-site general and administrative cost, royalties and production taxes, realized gains/losses on hedges due to operating cost, community cost related to current operations, permitting costs related to current operations, 3<sup>rd</sup> party smelting, refining and transport cost, non-cash remuneration (site-based), stock-piles inventory write down, operational stripping costs, by-products credits.

Compensation, wages and salaries to personnel in the mining industry averaged US\$370 million for the four firms over the period. With respect to payment of taxes, Newmont Ghana and Gold Fields Ghana were the largest payers of company tax in 2013 respectively. Gold Fields Ghana recorded an 11 per cent dip in its total output in 2013 due to industrial action, premature closure of the Damang mines due to safety concerns, closure of Tarkwa's South Heap Leach and poor ore grade. AngloGold Ashanti Obuasi also witnessed a decline in output as a result of operational challenges. On the other hand, AngloGold Ashanti Iduapriem's output saw an increase within the same period.

A review of the average all-in-cost of producing an ounce of gold in Ghana appears to suggest that, over the period, Ghana appears to be a relatively costly destination for mining investments. Relative to other mining jurisdictions and the global average, Ghana's growth rate in cash cost is considered the highest.

**Social responsibility accounting**

AGA holds community stakeholder meetings to understand how best they can help their host communities develop and also receive feedback on the effects of its activities on such communities. AGA's operations have community trust funds which fund community driven-projects such as Malaria Control programmes, Scholarship schemes, and provision of clinics, among others. Although AGA has a growing global workforce, in light of current economic pressures, AGA undertook restructuring programmes to reduce its workforce and enable it retain a quality workforce by offering voluntary separation packages and early retirement where possible. In 2013, mine fatalities significantly reduced by 56% (from 15 in 2010 to 8 in

2013). AGA evaluates new projects taking into account closure and associated costs. It also plans and sets aside financial resources which will cater for closure obligations when operations become defunct. This is in the form of an Environmental Rehabilitation Trust Fund (ERTF) which is invested in financial instruments but it must be noted that the fund is not used for the usual operations of the group. An assessment of closure liabilities is undertaken annually. Change in the extent of liability is effected when changes in certain variables require it.

The sustainable development section of Gold Fields Ghana Limited's report is in accordance with its Sustainable Development Framework (SDF) and other issues that are deemed material from its frequent engagements with its stakeholders. Gold Fields' SDF is supported by the following policies: occupational health and safety; human rights; ethics and corporate governance; risk management; environment; material stewardship and supply chain management; community and indigenous peoples and stakeholder engagements. Through community stakeholder engagements, Goldfields implements selected projects in education, health and other social welfare projects. In Ghana, the Gold Fields Ghana Foundation is a charity set up by the group as a vehicle driving such community investments. Alternative Livelihood Programmes are also catered for by the Foundation.

Apart from encouraging local procurement at all of its operations, Newmont Ghana also provides various social infrastructures such as water treatment plants, free health screening as well as educational scholarships for their host communities. Newmont engages its stakeholders in various ways to understand their needs and help them as best as possible. Newmont has funds to cater for community driven projects at most of its operations. Similar to the practice of AGA, the company contributes \$1 per ounce of gold sold and one percent of the net profit from its Ahafo operation to a community development fund. Newmont invested an average of over \$50 million globally to support a wide range of community initiatives. Out of this, its operations in Ghana used average of over \$10,000 in community initiatives, over the period. To promote a well-diversified workforce, Newmont employs more locals from its local communities and provides welfare packages for its workforce.

In the case of Golden Star Resources Limited (GSR), selected community projects are funded by the community development fund. From 2009, funded projects include nurses' quarters, clinics, and scholarships for students. GSR also owns a subsidiary - Golden Star Oil Palm Plantation (GSOPP) which partners local authorities, affected farmers who engage in the production of oil palm and subsequent ownership of portions of the plantation through an agreed upon conditions. Funding for each of the projects is \$1 per ounce of gold produced plus 0.1% of pre-

tax profits. Another social initiative instituted by GSR is the Golden Star Skills Training and Employability Programme (GSSTEP) which encourages indigenes to develop other skills in alternative livelihood programmes. Obviously, the activities of GSR, like all mining companies, have adverse effects on the environment. Hazardous chemicals such as mercury and cyanide which GSR uses in recovering gold have adverse effects on air and water quality. To mitigate these effects, GSR has established objectives to achieve regulatory requirements in all of its operational activities so that all stakeholders are protected. GSR also trains and educates its employees on social and environmental matters and how they affect the mines and communities in the long and short term. It has also signed and implemented the International Cyanide Management Code and attained certification for its operations in Ghana. To meet the demands of EPA, GSR has an Environmental Management Plan which it reviews periodically and as part of it, the group has set aside funds to cover future reclamation obligations on all its operations in Ghana. GSR is committed to engaging a high quality workforce by providing training and development in safety and environmental practices. GSR has a relatively low fatality rate among its employees involved in work related accidents. It invests heavily in safety gadgets and training for its growing workforce.

In terms of corporate social and environmental accountability and reporting (i.e. sustainability), Golden Star Resources (GSR) places emphasis on community, employees' welfare and the environment. Community projects are initiated by its Community Affairs Department in consultation with community leaders and stakeholders.

#### **Summary of Responses from the Interviews Conducted**

Overall, the feedback from the interviews conducted indicates that environmental accounting and sustainability issues are now critical strategies that environmentally-sensitive industries like the mining companies are seriously tackling proactively. All the mining companies studied have community affairs directorate with the responsibility of engaging the community in social and environmental projects and programmes. Majority have sustainability departments. In the case of AGA, there is a senior manager in charge of sustainability. The mining companies' social and environmental activities are in the areas of health, education, environment, SMEs support, social infrastructure and charitable donations. In spite of the numerous community engagements and the social and environmental activities and projects that the mining companies have undertaken within and for the communities in which they operate, there seem to be non-satiation on the part of the beneficiary communities. As one of the Senior Finance Manager puts it, "...they always want more, they are never satisfied" in economic science, such is human nature. It is important to report that mining companies, as a matter of policy, do not entertain request for cash or kind contribution to any political campaign, party or candidate.

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They do not also contribute in cash or kind to support religious activities, which in turn will limit their support to a specific religious faith and its members, thereby excluding the broader community.

There were mixed results with regards to the nature of environmental and social accountability and reporting regimes. Although the conventional accounting system was used in the recognition and measurement of environmental and social transactions, the nature of its reporting vis-à-vis presentation and disclosure varies across the companies. Some reports were stand-alone while others were integrated in the main annual reports. The rationale for this can be attributed to the stakeholders involved. In the case of AGA, for instance, there are wide array of global investors demanding mandatory, standardised and voluntary disclosures. This is the reason for the five different stand-alone reports<sup>3</sup> that AGA produces annually. Certainly, management motivations for providing these reports are influenced by the stakeholder complexities. Perhaps, decoupling environmental issues (in sustainability) may enhances accountability and improves the environmental behaviour of mining companies.

## DISCUSSIONS

The results confirm the assertions made by Arthur (2016) and Arthur et al. (2017) that most large scale mining companies operating in Ghana published some environmental, social or sustainability report but only few could be defined as genuine sustainability reports. The reason is the fact that the corporate sustainability reports as described do not produce adequate information on the “triple bottom line” of a company’s economic, social and environmental management and performance as posited by Elkington (1999). Notwithstanding, the study confirm that mining companies in Ghana have made considerable progress in developing sustainability measurement and reporting systems according to Arthur et al. (2017).

From the findings of this study, it is evident that financial accounting adopts an entity assumption where the entity is treated as distinct from its owners and other stakeholders. Moreover, transactions not directly impacting on the entity is ignored which also implies that externalities caused by the reporting entity, some relating to social and environmental implications of the entity’s operations are ignored. In effect, sustainability and the ‘entity assumption’ are mutually exclusive leading to the non-recognition of expenses that impact on resources not controlled by the entity. This is because externalities (social and environmental

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<sup>3</sup> As a pacesetter in the mining industry in Ghana, AGA has a dedicated website for its annual reports ([www.aga-reports.com](http://www.aga-reports.com)). Apart from the Chairman’s statement, the CEO’s review and the CFO’ report, AGA publishes a suite of five different reports annually: financial statements, integrated report, sustainability report, minerals resource and ore reserve report and notice of AGM and summarised financial information.



sustainable costs) caused by the entity that cannot be reliably measured are not recognised given the recognition criteria provided in the conceptual framework for financial reporting. This results also agree to the existing calls clarion calls for corporate responsible organisations to account for their economic/financial, environmental and social performance by studies such as Mathews, (1993), Deegan and Newson, (1996), Lamberton (2005), Amponsah-Tawiah and Dartey-Baah (2011), Boiral, (2013), Edens (2013) and Biondi (2014) over the last two to three decades. This sort of accounting usually entails measuring and communicating the impact of the corporate policies and practices on an organisation's performance at the economical (financial), ecological (environment) and social (socio-cultural) levels.

In the view of the researchers, environmental reporting by gold mining companies to some extent does not reinforce the limitations of the conceptual framework for financial reporting because both reports serve different purposes. Environmental reporting is part of the Triple bottom line (TBL or 3BL) reporting which is an accounting framework with three parts: social (people), environmental (planet) and financial (profit) (Elkington, 1999). These are the three pillars of sustainability. TBL is therefore a broad based stakeholder approach to providing a wide variety of information. On the other hand, environmental reporting was not originally part of the financial reporting framework, and many have questioned whether it is real accounting. The objective of general purpose financial reporting forms the foundation of the conceptual framework, with other aspects of the framework flowing from it. According to Stratos (2001), reporting beyond financial performance reflects a growing recognition that business sustainability will require increasing attention to managing across the "triple bottom line" of performance to desire for enhanced accountability and greater social and environmental responsibility by stakeholders.

The results also revealed that although the conventional accounting system was used in the recognition and measurement of sustainability transactions as revealed in studies by Ijiri, (1983), Elliot and Jacobson (1991) and Solomons, (1995), the nature of sustainability reports, presentation and disclosure varies across the companies. Some reports were stand-alone while others were integrated in the main annual reports. The study agree to the opponents such as Lamberton (2005), of the use of CAM for accounting for the environment have proposed the development of an alternative accounting model which incorporates environmental, social and economic perspectives. In the view of Lamberton (2005), themes which contribute to the specification of this model are (1) the insatiable definition of sustainability; (2) the multi-dimensional indicators of sustainability; (3) multi-units of measurement of sustainability indicators; (4) interdisciplinary nature of sustainability accounting; and (5) application of

conventional accounting principles and practice in sustainability accounting. Lambertson (2005) further argues that the process of reporting sustainability accounting information is open to manipulation by vested interests. The only way out to reduce manipulation and increase the qualitative attributes of sustainability accounting information is the design of a sustainability accounting model or framework.

It is also realised from the study that provisioning for future social and environmental sustainability costs is one way in which the sustainability reporting practices of the mining companies might overcome the limitations of the framework, if any. The conceptual framework for financial reporting has clearly defined investors, lenders and other creditors as the primary users' financial information (performance, position, cash flow and notes). The conceptual framework defines users, objectives, fundamental and enhancing qualitative characteristics, constraints and four assertions of financial statements (recognition, measurement, presentation and disclosure). The conceptual framework therefore did not have environment as its objective and so cannot be concluded as a limitation. However, to the extent that we are aiming at measuring and reporting sustainable profit (which incorporates the dimensions of sustainability) then the framework needs to clearly define how to cater for the remaining two dimensions – social and environmental.

Finally, one observation in the annual reports of the mining companies studied was that the manner in which each of entities had accounted for and reported on sustainability. In some instances, it was stand-alone while in others it was integrated which confirm the fact that there is no standardisation in the reporting practices of the mining companies. This supports the research by Stratos (2001) on assessing the current scope of corporate sustainability reporting in Canada where it found that most reports provided good information on energy use, environmental emissions, community philanthropic activities and health and safety performance using the GRI guidelines as a basis. In terms of environmental performance reporting, Stratos (2001) further found that while companies report on energy use and a few regulated emissions, companies will have to move to a full life cycle accounting perspective and consider their relative impacts of their operations on the surrounding ecosystems, communities and regions in which they operate. They conclude that there is still considerable room for improvement in reporting.

## **CONCLUSIONS AND IMPLICATIONS**

Research linking accounting to the emerging concept of sustainability surfaced in the early 1990s and has received continuing attention in academic and professional accounting literature. Sustainability Reporting Guidelines (SRG) was released at the World Summit on Sustainable

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Development in August 2002, consolidating the various approaches into a sustainability accounting framework. The result is a comprehensive reporting model that presents an enormous challenge to business organisations, requiring a significant commitment of resources to achieve widespread implementation. Failure to meet this challenge enables business organisations to continue to avoid accountability for their continuing unsustainability (Lamberton, 2005).

In conclusion, one observation in the annual reports of the mining companies studied was the manner in which each of entities had accounted for and reported on sustainability. In some instances, it was stand-alone while in others it was integrated which confirm the fact that there is no standardisation in the reporting practices of the mining companies. It is also realised from the study that provisioning for future social and environmental sustainability costs is one way in which the sustainability reporting practices of the mining companies might overcome the limitations of the framework, if any. Other triple bottom line proponents have suggested a sustainable framework. The study reveals that environmental accounting and sustainability reporting are now critical strategies that environmentally sensitive industries like the mining companies are seriously tackling. The findings show that although the conventional accounting system was used in the recognition and measurement of sustainability transactions, the nature of sustainability reports, presentation and disclosure varies across the companies. Some reports were stand-alone while others were integrated in the main annual reports. The main significance of the study is that the findings, thus, reinforce the proposition that the need for decoupling environmental accounting and reporting within the broader sustainability reporting framework is due. There is also the need to develop a positive rather than a normative environmental accounting and reporting framework.

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