

Investigating performance indicators disclosure in sustainability reports of large mining companies in Ghana

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Abstract

Purpose – *The purpose of this study is to examine the degree, contents and trend development of Global Reporting Initiative (GRI) performance indicators disclosed in sustainability reports of large mining companies in Ghana.*

Design/methodology/approach – *Content analysis methods are used to analyse 50 sustainability reports of ten large-scale mining companies in Ghana, covering the period 2008-2012.*

Findings – *The study finds that there has been a widening and increasing trend in the disclosure of performance indicators in sustainability reports of the large mining companies in Ghana, in accordance with GRI guidelines. The findings suggest that good progress in the strategic sector has been made in the voluntary adoption of the GRI guidelines to increase transparency, credibility and comparability in sustainability reporting. The findings also indicate areas to be improved.*

Practical implications – *The Government of Ghana and the Ghana Chamber of Mines could learn from the findings about the current status of this matter in order for them to formulate policies and regulations which would encourage the mining sector in moving forward in the adoption of international reporting standards.*

Originality/value – *This paper initializes investigation into the degree, contents and trends of performance indicators in sustainability reports of large mining companies in Ghana using content analysis.*

Keywords *Ghana, Sustainability reporting, Performance indicators, Global reporting initiative, Environmental issues, Mining companies*

Paper type *Research paper*

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1. Introduction

Sustainability issues have increasingly gained attention among corporations and their stakeholders over the past three decades as more and more corporations prepare their sustainability reports (SRs) (Papasolomou, 2007; Roca and Searcy, 2012). Despite this development, the structure and items of performance indicators (PIs) disclosed in SRs remain controversial (Davis and Searcy, 2010; Roca and Searcy, 2012). This is mainly due to the fact that the preparation of an SR in most countries is on a voluntary basis (GRI, 2006; Roca and Searcy, 2012). In this regard, Ghana is of no exception.

Over the past two decades, many guidelines have been developed for corporations, especially for multinational enterprises (MNEs), as they act as the benchmarks for disclosure of sustainability information to stakeholders and the general public. Among these guidelines, the Global Reporting Initiative (GRI) is the most globally accepted set of guidelines on the preparation of sustainability reports. Therefore, many studies on SRs, carried out at national levels in both developed and developing countries (e.g. Austria, Australia, Bangladesh, Greece, Norway, Sweden, Switzerland, Thailand, Canadian,

Received 27 May 2016
Revised 17 January 2017
Accepted 18 January 2017

Argentina, Kyrgyzstan and Tajikistan), are based on GRI performance indicators (Gallego, 2006; Lynch 2010; Roca and Searcy, 2012; Sobhani *et al.*, 2012; Murguía and Böhling 2013; Kotilainen *et al.*; 2015).

Comparatively speaking, studies on SRs in developing countries in the past have focused on their structure and contents, rather than on the extent of performance indicator disclosure (Slater, 2008; Beloe *et al.*, 2006; KPMG, 2008; Adams and Frost, 2008). Recent studies on GRI indicators have moved to focus on the industries which contribute to more environmental problems, such as petrochemicals, forestry and mining (Clarkson *et al.*, 2008; Alazzani and Wan-Hussin, 2013). In Ghana, the mining sector, regulated by Minerals and Mining Act of 2006 (Act 703), is the most important strategic industry in terms of GDP (gross domestic product) growth, tax revenues and employment provision. As it is in other countries (Dashwood, 2012), when the global mining industry is expanding and shifting from cheap to expensive resources, it faces increasing challenges and restraints related to social and environment issues (Kotilainen *et al.*, 2015). In other words, the Ghanaian mining industry faces more pressure than other industries to prepare SRs in line with their corporate and social responsibilities (CSR) to the society, in particular to the local communities. This is required from them to compensate for the environmental damage they cause, despite mining companies making significant contributions to the economic development of Ghana through the payment of taxes, and provision of employment and social amenities.

On the other hand, there is an obvious research shortage in this area as little research has been carried out to assess current practices and the performance of mining companies in Ghana in terms of their social and environmental responsibility performance in SRs. We thus intend to answer some of these questions in our paper, such as to what extent large mining companies in Ghana (MCGs) have disclosed GRI performance indicators in their sustainability reports, and what are the developments in the contents of the SRs and their reporting over the investigation period. In brief, this paper initializes an examination of the extent, contents and trend of PI disclosure in the SRs of MCGs, using content analysis which is a common technique in other studies (Barako *et al.*, 2006). The findings suggest that large MCGs have made incredibly good progress in voluntary adoption of the GRI guidelines since 2008 to increase transparency, credibility and comparability in sustainability reporting. The results also highlight SRs being used as important communication vehicles between MCGs and their stakeholders/public. The findings from this paper can be of importance for the government of Ghana, Ghana Chamber of Mines and Management of MCGs (see discussions in the final section) and perhaps other developing countries with significant mining sectors.

The rest of the paper is organized as follows: Section 2 reviews the literature in sustainability reporting and Section 3 discusses performance indicators using the GRI framework. Section 4 sets out the research methods used and Section 5 presents the results. Section 6 provides some conclusions, discussions and implications of the findings.

2. Sustainability reporting

Corporate sustainability is defined by Van Marrewijk (2003) as the demonstration of social and environmental concerns in business operations and their interactions with stakeholders (Roca and Searcy, 2012). Corporations worldwide increasingly adopt SRs (Lozano and Huisin, 2011) to effectively communicate CSR activities with stakeholders (Du *et al.*, 2010; Hsu *et al.*, 2013). An SR is a report which must contain qualitative and quantitative information on the extent to which the company has managed to improve its economic, environmental and social effectiveness and efficiency in the reporting period and integrated a sustainability management system (Daub, 2007). The World Business Council for Sustainable Development (WBCSD) treats SRs as public reports used by companies to provide internal and external stakeholders with a picture of the corporate position and

activities on economic, environmental and social dimensions (WBCSD, 2002). As such, an SR becomes a systematic means of managing sustainability issues (Park and Brorson, 2005) and a communication instrument primarily aimed at influencing the public perception of a company and enhancing a company's corporate image or reputation (Hooghiemstra, 2000; Daub, 2007).

Scholars have developed a number of theories underpinning SRs, such as resource-based theory (Barney, 1991), institutional theory (DiMaggio and Powell, 1983), legitimacy theory (Suchman, 1995), stakeholder theory (Freeman, 1984) and factors influencing corporate sustainability (Hart, 1995; Jennings and Zandbergen, 1995; Bansal, 2005; Roca and Searcy, 2012). Of these, stakeholder theory and legitimacy theory are widely used to explain many perspectives of sustainability reporting. Stakeholder theory holds the view that corporations have obligations to a number of individuals and groups, who have different priorities and should be treated equally regardless of their relative power (Deegan *et al.*, 2000). In view of this, SRs should disclose different indicators and report on parameters which widely meet the requirements of all stakeholders, including those who have legitimate stakes in the activities of the company but lack the power to exercise their stakes, for example the public (Mitchell *et al.*, 1997). Legitimacy theory states that corporations are a part of the larger society, and they must operate within the bounds set by that society (Suchman, 1995). In view of this theory, SRs should be viewed as a part of the strategy of organizations to build and maintain their legitimacy in the society (Ratanajongkol *et al.*, 2006). It is also argued that more legislations and regulations on reporting should be applied to industries and companies that are the main contributors to environmental pollution (e.g. mining) because some of these companies are reluctant to disclose negative information in their SRs. For instance, a study by Murguía and Böhling (2013) of SRs of large-scale mining companies concludes that there was evidence of low quality or lack of data on negative issues in the SRs, although those reports claimed that they provided a balanced view and credible data on firm performance toward sustainability.

According to Lighterigen and Zadek (2005), there are more than 300 international standards and guidelines which currently provide accepted reference standards for corporate sustainability reporting in measuring social and environmental performance. Among them, the GRI has received global recognition as a framework of organizations' sustainability and CSR reports and applied in more than 50 countries worldwide (Roca and Searcy, 2012). In the next section, we will review the GRI's performance indicators and argue that it is an appropriate benchmark to be used in reporting firm sustainability performance in the mining industry of Ghana, which is the focus of this paper.

3. Performance indicators using the Global Reporting Initiative framework and some empirical studies

Many guidelines have been used by international corporations as benchmarks for disclosure of sustainability information. These include the United Nations Global Compact; the OECD Guidelines for multinational enterprises; Social Accountability 8,000; Ethical Trading Initiative; Accountability 1,000; Dow Jones Sustainability Group Index; FTSE4Good; and the Global Reporting Initiative (Duff, 2014). Among them, the GRI, founded in 1997 by the Coalition for Environmentally Responsible Economies (CERES) and the United Nations Environmental Programme (UNEP), is one of the network-based frameworks widely adopted in preparing companies' SRs on a voluntary basis (Jenkins and Yakovleva, 2006; Isaksson and Steimle, 2009; Joseph, 2012). Specifically, the GRI guidelines' main principle is to achieve transparency and credibility with complete information disclosure on indicators required to reflect impacts to enable stakeholders to make decisions accordingly (Joseph, 2012). This feature is particularly suitable for large multinational companies that operate globally in less developed or even non-democratic

countries because being compliant with GRI disclosures allows for comparability with other companies operating elsewhere in terms of measuring economic, environmental and social performance in SRs. Compared to other guidelines, the GRI provides detailed guidance on “how to report” by defining overall goals, and “what to report” by determining contents and providing standard disclosures and sector supplements (Joseph, 2012). Moreover, the GRI extends the traditional accounting lens into the development of measures which can provide companies with opportunities to adopt them to fit locally because it includes different industries with their technological and economic impacts on the environment and society (Joseph, 2012; Wilburn and Wilburn, 2013).

Under the GRI framework, there are three different types of disclosures in an SR, namely, Strategy and Profile (SP), Management Approach (MA) and Performance Indicators (PI). This study will concentrate on the PIs as the main questions asked in this paper are what kinds of PIs are being reported by the MCGs in relation to GRI guidelines and to what extent? To answer these questions, we use the GRI guidelines issued in 2011 (also known as “G3.1”) for the evaluation of the SR practices of MCGs. Given the assurance of triple-bottom-line, the G3.1 guidelines outline a list of 84 PIs comprising of nine economic indicators, 30 environmental indicators and 45 social indicators^[1] which are further categorized into labor practices and decent work, human rights, society and product responsibility (version 3.1, GRI, 2011; Joseph, 2012). There are two types of indicators in the GRI, namely core and additional indicators. “Core indicators” are those that are identified to be of interest to most stakeholders and assumed to be material unless deemed otherwise. “Additional indicators” represent emerging practice or address topics that may be material to some organizations but not to the majority (GRI, 2011). Our study does not distinguish between the core and additional indicators due to the fact that the companies investigated are within the same sector, and factually, their performance indicators are currently still mainly concentrated in the range of core indicators. There are also GRI Supplements that capture relevant issues essential to a specific sector that may not appear in the guidelines, as they are relevant primarily for a specific range of reporting organizations or sectors (e.g. GRI Mining and Metal Sector Supplement). Again, this study does not capture these indicators because only a couple of the companies provided required information in their SRs.

Although there is a wide range of empirical studies on social accounting and techniques for disclosing sustainability information, little of this relates to the mining sector, especially to the mining companies operating either in Ghana or Africa. Here, we intend to review some research studies in the same vein which are general and include mining and other sectors, but use content analysis or a similar methodology to obtain some degree of comparability. In the context of the developed world, we consider four previous studies. First, to answer the question of whether a voluntary requirement for environmental reporting could mitigate the environmental damage caused by oil and gas companies and improve public impression of these companies, Alazzani and Wan-Hussin (2013) evaluated the SRs of eight global large oil and gas companies using the GRI framework. Their findings confirm that the voluntary adoption of GRI has increased transparency, credibility and comparability in SRs. In other words, the results show public support for and society assurance by the use of the GRI guidelines in sustainability reports. Second, through the analysis of eight large multi-national enterprises (MNEs) Wilburn and Wilburn (2013) proved that the GRI can help MNEs create CSR strategies and help stakeholders evaluate the firms’ values effectively. Their findings confirm that the PIs reported in SRs are evidence of the levels of these firms’ compliance with CSR principles. Third, Lynch (2010) investigated SR practice in Australian state governments and found that the coverage of disclosure practices varied across different states and were also inconsistent across the states, during the period 2000-2008. Fourth, in a Canadian case study, Roca and Searcy (2012, p. 103) analyze 94 SRs in 2008 and show that a total of 585 different indicators were used in the reports, with “31 of the 94 reports including indicators explicitly identified as GRI

indicators”, evenly spreading along economic, environmental and social dimensions. The research also suggests a significant diversity in the indicators reported across sectors. In the mining sector, the environmental indicators were more frequently reported than the economic and social indicators.

On the other hand, in the less developed world, the study by [Murguía and Böhling \(2013, p. 202\)](#) reveals the conflicts in sustainability reporting in large scale mining companies in Argentina. Their finding suggests that sustainability reporting can only be useful in improving a firm’s reputation “if the quality of the reported data is good enough to answer community-raised contentious issues and if these are tackled through a stakeholder engagement process which includes ‘anti-mining’ groups”. Interestingly and contrary to most other studies, they also conclude that environmental and economic indicators are the least reported indicators, as they are the most contentious and sensitive ([Murguía and Böhling, 2013](#)). [Kotilainen et al. \(2015, p. 202\)](#) comparatively examine CSR of mining companies in Kyrgyzstan and Tajikistan, and their analysis on CSR policies of the mining sectors in these two countries emphasized the importance of the national and local contexts in the implementation of CSR activities. This is because the results are very divergent in these two adjoining countries as a result of the different “ways in which the mining companies adapt their CSR practices to the different sets of stakeholders”. In Bangladesh, [Sobhani et al. \(2012\)](#) examined the SR practices of the banking sector through annual reports and corporate websites. The study indicates that annual sustainability reporting is more advanced than corporate websites information, and younger banks perform better than older banks in SR disclosure. Besides, social dimension disclosure received more attention than economic and environmental dimensions in the banking SRs. In Greece, [Skouloudis et al. \(2010\)](#) assessed the quality and inclusiveness of SRs at a country-level. Their overall findings reveal that preparation of sustainability reports in Greece is far from adequate, largely lagging behind the international experience, with lack of desired content and comprehensiveness.

Four important points can be summarized from reviewing the above studies:

1. Despite it currently working on a voluntary basis, sustainability reporting using the GRI performance indicators indeed helps improve companies’ relationship with broad stakeholders and enhance their public reputation and image. For some specific industries such as mining, it can also mitigate the sector’s negative environmental impact to some extent. This is because the GRI is an internationally acceptable standard and stakeholders, especially the public, think it can ensure transparency and credibility.
2. However, transparency and credibility can only be achieved when the data recorded in sustainability reporting is of good quality, and even better, if engagement with stakeholders is ensured.
3. Sustainability reports following the GRI guidelines are more useful for stakeholders/ public than respective companies’ website information because of SRs’ formality, accuracy and comparability in the former.
4. It is inconclusive whether the contents and extents of sustainability reporting in developed countries (or in some sectors) are better than those in developing countries (or in other sectors), as they are to a large extent, dependent upon the national or local contexts. Also, the results from individual research studies are difficult to generalize as research biases may remain.

Upto this point, we have provided justifications to our research objectives. In the next section, we therefore tend to discuss the research and data analysis methods.

4. Research methods

4.1 Sample selection

To achieve the objectives of this paper, ten large-scale mining companies in Ghana^[2] were selected as the research sample. The reasons for selecting these large mining companies include:

- They are the major mining companies in Ghana and have a larger share of responsibility for economic, social and environmental issues compared to small and medium-sized (SMEs) mining companies. As such, they are normally under intense pressure from stakeholders to behave well (Stratos, 2003; Daub, 2007).
- Unlike SME mining firms, they are subsidiaries of multinational companies which are required to publish standard SRs, through which their financial and non-financial information are made available to be used for data analysis and result discussions (Alazzani and Wan-Hussin, 2013).
- According to previous studies Adams *et al.* (1998), Deegan and Gordon (1996), and Friedman and Miles (2001), effects of size are important when considering disclosure of environmental issues (Duff, 2014).

Moreover, we consider data coverage as from 2008 to 2012 because the adoption of International Financial Reporting Standard (IFRS) in Ghana commenced in 2007, and therefore, our data can well serve to reveal the disclosure of PIs after IFRS adoption by these sample companies (Assenso-Okofu *et al.*, 2011; Khalid *et al.*, 2014). Finally, a total of 50 SRs (ten firms, five years coverage) were used to do content analysis in order to yield insights into SR practices by MCGs. The SR reports were collected mainly from the website of the companies or by referring to other studies (Stratos, 2008; Slater, 2008; Roca and Searcy, 2012).

4.2 Analysis methods

Content analysis was used to analyze the data as a mature technique to make inferences objectively and to identify specified characteristics of messages systematically (Holsti, 1969; Alazzani and Wan-Hussin, 2013). Content analysis demands that the coding structure is derived from shared meanings (Beattie and Thomson, 2007; Bouten *et al.*, 2011). According to Bouten *et al.* (2011), GRI guidelines (version 3.1) can serve as an appropriate starting point for the development of the coding structure because GRI is a rigorous framework with consideration of triple bottom line (TBL) in reporting (Lamberton, 2005) and stakeholder consultation (Reynolds and Yuthas, 2008). It is also globally accepted (Farneti and Guthrie, 2009).

To minimize issues associated with content analysis, such as counting of words or sentences and how to deal with charts and pictures, this study uses a GRI disclosure index to reveal the number of PIs disclosed in the report (Barako *et al.*, 2006). A disclosure index involves the researchers identifying whether an MCG does or does not disclose a PI according to the GRI guideline list (Barako *et al.*, 2006; Alazzani and Wan-Hussin, 2013). To identify the disclosed PIs, the SRs were carefully read and analyzed. Certain words and concepts appearing in the texts of SRs were detected using GRI guidelines (Alazzani and Wan-Hussin, 2013). The results are presented in the next section.

As indicated in Hayes and Krippendorff (2007), conclusions from research data can be trusted only when their reliabilities can be demonstrated. To achieve coding reliability in this study, we adopted two measures, to ensure coded data produced by the content analysis are factually reliable (Bouten *et al.*, 2011). First, as the investigation is limited to ten large mining companies, it is possible for us to use manual searching rather than electronic searching of GRI disclosure index. In the first place, inter-coder test was used, i.e. the prime and second researchers were independently doing the coding, and the results were

then compared and the differences discussed and sorted with re-coding (Duff, 2014). Second, the reliability in the study was further measured by Cronbach's coefficient alpha (Botosan, 1997; Gul and Leung, 2004). The Cronbach's coefficient alpha for the disclosure indexes are 0.81, 0.85, 0.80, 0.76, 0.85 and 0.85 for economic, environmental, human right, labor practices and decent work, product responsibility and society indicators over the five years of the study from 2008 to 2012, respectively (higher than the accepted lower bound of 0.6). These results indicate that there is internal consistency among the PIs in the SRs.

5. Results

The following sub-sections will present the assessment of the ten mining companies' SRs against the GRI indicators. For this purpose, social responsibility activities were classified in terms of the most and the least commonly practiced by the MCGs. The disclosure of corporate sustainability performance indicators of these mining companies has been presented under the management approach themes: economic PIs (EC), environmental PIs (EN), human right PIs (HR), labor practice and decent work PIs (LA), product responsibility PIs (PR) and society PIs (SO). The last four categories belong to the social dimension of PIs. According to the GRI (2011), the social dimension of sustainability is related to the impact of an organization on the social system it operates in.

5.1 Economic performance indicators

Corporate economic sustainability is used to measure the economic outcomes of an organization's activities and its impact on the stakeholders (GRI, 2006; Sobhani *et al.*, 2012). The economic performance of an organization is fundamental to understanding the organization and its sustainability due to the fact that an organization may be financially viable, but this may have been achieved by creating significant externalities that impact other stakeholders (Sobhani *et al.*, 2009, 2012). It can be seen from Table I that the frequency of the economic performance indicator (EC) disclosure indices reported in the SRs is an average of 65 per cent. This means that the majority of economic PIs have been disclosed by the MCGs during the investigation period. Looking further at the most and the least frequent items, we found that the top two reported items are EC1 and EC2, which are linked to companies' financial positions, while the bottom two are EC9 and EC8, which are about measurement of indirect economic impacts.

5.2 Environmental performance indicators

Environmental PIs concern an organization's impact on living and non-living natural systems, including ecosystems, land, air and water, as well as the performance-related inputs (e.g. material, energy, water) and outputs (e.g. emissions, waste) (Sobhani *et al.*, 2012). The environmental performance indicator (EN) is a very important indicator for mining companies due to the industrial operational consequences to the environment. The frequency of the EN by MCGs can be seen in Table II. The top three environmental performance indicators disclosed in the SRs are EN1 (86 per cent), EN2 (82 per cent) and EN3 (80 per cent), respectively, and they all relate to direct materials or energy consumed and are obviously measured. On the other side, the bottom three disclosed PIs are EN30 (32 per cent), EN24 (36 per cent) and EN6 (38 per cent), and they are related to environmental protection (EN30, EN24) and energy efficiency (EN6). In addition, it is noted that the average frequency of disclosure of environmental items is only 58 per cent with nearly one-third of the items (9 of 30) disclosed below 50 per cent of the times (i.e. EN5, EN6, EN9, EN14, EN15, EN24, EN25, EN29 and EN30). These results suggest that there is significant space to improve environmental PIs reporting in SRs of MCGs, more so as compared to EC.

Table I Frequency of disclosures of economic performance indicators (EC)

Variable	Core indicators	Expected disclosure	Actual disclosure	(%)
EC1	Direct economic value generated and distributed, including revenues, operating costs, employee compensation, donations and other community investments, retained earnings and payments to capital providers and governments	50	49	98
EC2	Financial implications and other risks and opportunities for the organization's activities due to climate change	50	41	82
EC3	Coverage of the organization's defined benefit plan obligations	50	36	72
EC4	Significant financial assistance received from government	50	32	64
EC5	Range of ratios of standard entry level wage by gender compared to local minimum wage at significant locations of operation	50	31	62
EC6	Policy, practices and proportion of spending on locally based suppliers at significant locations of operation	50	27	54
EC7	Procedures for local hiring and proportion of senior management hired from the local community at significant locations of operation	50	27	54
EC8	Development and impact of infrastructure investments and services provided primarily for public benefit through commercial, in-kind, or pro bono engagement	50	25	50
EC9	Understanding and describing significant indirect economic impacts, including the extent of impacts	50	24	48
ECPDI	Economic performance disclosure index	450	292	65

Note: ECPDI = Economic performance disclosure index

5.3 Human rights performance indicators

Human rights (HR) PIs require organizations to report the extent to which processes have been followed during incidents of human rights' violations and changes in the stakeholders' ability to enjoy and exercise their human rights, occurring during the period (GRI, 2011). According to the GRI, the HR aspect comprises investment and procurement practices, non-discrimination, freedom of association and collective bargaining, child labor, forced and compulsory labor, security practices, indigenous rights, assessment and remediation. From Table III, we can see that some items (e.g. HR1 and HR2) have high report rates while some have extremely low rates (e.g. HR10 -16 per cent and HR11-12 per cent). From a detailed count, nearly half have below 50 per cent, while the average rate is also only 50 per cent. The findings might require further investigation to find the reasons, especially for those indicators with significantly lower reporting scores.

5.4 Labor practices and decent work performance indicators

The labor practices and decent work performance indicator (LA) address the broad issues on employment, labour/management relations, occupational health and safety, training and education, diversity and equal opportunity and equal remuneration for women and men (GRI, 2011). Table IV shows that all the companies in the sample have disclosed items such as employee compensation, welfare and donation, executive profile, in-house training arrangement for the employees and appreciating and motivating employees for their efforts in the SRs. From a total of 750 items relating to LA disclosure, 402 items were disclosed in the SRs by the MCGs within the period of the study. It can be seen from Table IV that two important items (LA1 and LA2) are the most reported PIs with an average of 54 per cent report rate in this category, and we thus treat it as normal, though the least mean of 0.04 was for reporting on LA15[3].

Table II Frequency of disclosures of environment performance indicators (EN)

<i>Variable</i>	<i>Core indicators</i>	<i>Expected disclosure</i>	<i>Actual disclosure</i>	<i>(%)</i>
EN1	Materials used by weight or volume	50	43	86
EN2	Percentage of materials used that are recycled input materials	50	41	82
EN3	Direct energy consumption by primary energy source	50	40	80
EN4	Indirect energy consumption by primary source	50	26	52
EN5	Energy saved due to conservation and efficiency improvements	50	22	44
EN6	Initiatives to provide energy-efficient or renewable energy-based products and services, and reductions in energy requirements as a result of these initiatives	50	19	38
EN7	Initiatives to reduce indirect energy consumption and reductions achieved	50	29	58
EN8	Total water withdrawal by source	50	31	62
EN9	Water sources significantly affected by withdrawal of water	50	24	48
EN10	Percentage and total volume of water recycled and reused	50	26	52
EN11	Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	50	29	58
EN12	Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas	50	33	66
EN13	Habitats protected or restored	50	25	50
EN14	Strategies, current actions and future plans for managing impacts on biodiversity	50	20	40
EN15	Number of IUCN Red List species and national conservation list species with habitats in areas affected by operations, by level of extinction risk	50	22	44
EN16	Total direct and indirect greenhouse gas emissions by weight	50	37	74
EN17	Other relevant indirect greenhouse gas emissions by weight	50	35	70
EN18	Initiatives to reduce greenhouse gas emissions and reductions achieved	50	32	64
EN19	Emissions of ozone-depleting substances by weight	50	36	72
EN20	NO _x , SO _x and other significant air emissions by type and weight	50	25	50
EN21	Total water discharge by quality and destination	50	34	68
EN22	Total weight of waste by type and disposal method	50	36	72
EN23	Total number and volume of significant spills	50	27	54
EN24	Weight of transported, imported, exported, or treated waste deemed hazardous under the terms of the Basel Convention Annex I, II, III and VIII, and percentage of transported waste shipped internationally	50	18	36
EN25	Identity, size, protected status, and biodiversity value of water bodies and related habitats significantly affected by the reporting organization's discharges of water and runoff	50	22	44
EN26	Initiatives to mitigate environmental impacts of products and services, and extent of impact mitigation	50	26	52
EN27	Percentage of products sold and their packaging materials that are reclaimed by category	50	33	66
EN28	Monetary value of significant fines and total number of non-monetary sanctions for noncompliance with environmental laws and regulations	50	34	68
EN29	Significant environmental impacts of transporting products and other goods and materials used for the organization's operations, and transporting members of the workforce	50	23	46
EN30	Total environmental protection expenditures and investments by type	50	16	32
ENPDI	Environmental performance disclosure index	1,500	864	58

Note: ENPDI = Environmental performance disclosure index

5.5 Product responsibility performance indicators

The product responsibility (PR), comprising customer health and safety, product and service labelling, marketing communications, customer privacy and compliance address the aspects of reporting of an organization's products and services that affect customers in respective areas (GRI, 2011). It can be observed from Table V that out of a total of 450 PIs, only 191 PIs, representing an average of 42 per cent, were disclosed in the survey period. Only one-third of

Table III Frequency of disclosures of human rights performance indicators (HR)

Variable	Core indicators	Expected disclosure	Actual disclosure	(%)
HR1	Percentage and total number of significant investment agreements and contracts that include clauses incorporating human rights concerns, or that have undergone human rights screening	50	45	90
HR2	Percentage of significant suppliers, contractors and other business partners that have undergone human rights screening, and actions taken	50	40	80
HR3	Total hours of employee training on policies and procedures concerning aspects of human rights that are relevant to operations, including the percentage of employees trained	50	26	52
HR4	Total number of incidents of discrimination and corrective actions taken	50	26	52
HR5	Operations and significant suppliers identified in which the right to exercise freedom of association and collective bargaining may be violated or at significant risk, and actions taken to support these rights	50	21	42
HR6	Operations and significant suppliers identified as having significant risk for incidents of child labor, and measures taken to contribute to the effective abolition of child labor	50	29	58
HR7	Operations and significant suppliers identified as having significant risk for incidents of forced or compulsory labor, and measures to contribute to the elimination of all forms of forced or compulsory labor	50	31	62
HR8	Percentage of security personnel trained in the organization's policies or procedures concerning aspects of human rights that are relevant to operations	50	20	40
HR9	Total number of incidents of violations involving rights of indigenous people and actions taken	50	22	44
HR10	Percentage and total number of operations that have been subject to human rights reviews and/or impact assessments	50	8	16
HR11	Number of grievances related to human rights filed, addressed, and resolved through formal grievance mechanisms	50	6	12
HRPDI	Human rights performance disclosure index	550	274	50

the items (i.e. PR1, PR2 and PR3) had a higher than the 50 per cent rate, while other items have lower rates. A closer look at individual items found that the two highest reported indicators (PR1 and PR2) are items relating to health and safety. However, a number of lesser reported items (e.g. PR4, PR5, PR9, PR7 and PR8) are associated with reporting on non-compliance incidents in certain areas, or complaints and customer dissatisfaction. The results suggest that MCGs have concentrated their attention on the health and safety issues in the mining industry in Ghana, but might be reluctant to highlight more negative issues related to those firms in their SRs.

5.6 Society performance indicators

The society performance indicator (SO) deal with issues such as local communities, corruption, public policy, anti-competitive behavior and compliance issues (GRI, 2011). It looks at the impacts of the organizations' activities on local communities in which they operate by disclosing the risks that exist in their interactions with local communities. The SO are an important measure of the relationship of the firms with the local community. For mining companies, it is even more crucial because mining operations can seriously damage local

Table IV Frequency of disclosures of labor practices and decent work performance indicators (LA)

<i>Variable</i>	<i>Core indicators</i>	<i>Expected disclosure</i>	<i>Actual disclosure</i>	<i>(%)</i>
LA1	Total workforce by employment type, employment contract, and region, broken down by gender	50	44	88
LA2	Total number and rate of new employee hires and employee turnover by age group, gender and region	50	44	88
LA3	Benefits provided to full-time employees that are not provided to temporary or part-time employees, by significant locations of operation	50	25	50
LA4	Percentage of employees covered by collective bargaining agreements	50	34	68
LA5	Minimum notice period(s) regarding significant operational changes, including whether it is specified in collective agreements	50	32	64
LA6	Percentage of total workforce represented in formal joint management-worker health and safety committees that help monitor and advice on occupational health and safety programs	50	21	42
LA7	Rates of injury, occupational diseases, lost days and absenteeism, and total number of work-related fatalities, by region and by gender	50	24	48
LA8	Education, training, counselling, prevention and risk-control programs in place to assist workforce members, their families, or community members regarding serious diseases	50	25	50
LA9	Health and safety topics covered in formal agreements with trade unions. Health and safety topics covered in formal agreements with trade unions	50	23	46
LA10	Average hours of training per year per employee, by gender and by employee category	50	33	66
LA11	Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings	50	25	50
LA12	Percentage of employees receiving regular performance and career development reviews, by gender	50	20	40
LA13	Composition of governance bodies and breakdown of employees per employee category according to gender, age group, minority group membership and other indicators of diversity	50	23	46
LA14	Ratio of basic salary and remuneration of women to men by employee category, by significant locations of operation	50	27	54
LA15	Return to work and retention rates after parental leave, by gender	50	2	4
LAPDI	Labor practices and decent work performance disclosure index	750	402	54

environment; as such, how they work with local communities and how they take their social responsibilities to win local support are key for a sustainable business. According to [Table VI](#), on average, 59 per cent of items pertaining to society issues were disclosed in the SRs during the period. The highest three disclosure items are SO9 (100 per cent), SO1 (94 per cent) and SO10 (84 per cent), and they all relate to managing relationships with local communities. On the other hand, the lower rates of disclosures are for SO8 (26 per cent), SO4 (30 per cent) and SO2 (42 per cent), which are links to negative activities and consequences (e.g. fines and corruptions).

5.7 Social performance indicators disclosure index and corporate sustainability performance indicators disclosure

To clearly disclose a three dimensional performance of mining companies under TBL accounting framework ([Elkington, 1994](#)), i.e. incorporating economic, environmental and social

Table V Frequency of disclosures of product responsibility performance indicators (PR)

Variable	Core indicators	Expected disclosure	Actual disclosure	(%)
PR1	Life cycle stages in which health and safety impacts of products and services are assessed for improvement, and percentage of significant products and services categories subject to such procedures	50	41	82
PR2	Total number of incidents of non-compliance with regulations and voluntary codes concerning health and safety impacts of products and services, by type of outcomes	50	30	60
PR3	Type of product and service information required by procedures and percentage of significant products and services subject to such information requirements	50	25	50
PR4	Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labelling, by type of outcomes	50	9	18
PR5	Practices related to customer satisfaction, including results of surveys measuring customer satisfaction	50	9	18
PR6	Programs for adherence to laws, standards, and voluntary codes related to marketing communications, including advertising, promotion and sponsorship	50	24	48
PR7	Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion and sponsorship, by type of outcomes	50	16	32
PR8	Total number of complaints regarding breaches of customer privacy and losses of customer data	50	18	36
PR9	Monetary value of significant fines for non-compliance with laws and regulations concerning the provision and use of products and services	50	19	26
PRPDI	Product responsibility performance disclosure index	450	191	42

performance, we merged human right performance indicators disclosure index, labor practice and decent work performance indicators index, product responsibility performance indicators index and society performance indicators disclosure index (SOPDI) into a new social performance indicators disclosure index (SOCPDI) by adding individual items together. Then we further merged the EC, the EN and the SOCPDI into a general Corporate Sustainability Performance Indicators Disclosure (CSPDI), which can be used to measure the general GRI compliance of the MCGs. The method is consistent with that used in prior studies (Hossain and Adams, 1995; Hossain *et al.*, 1995; Barako *et al.*, 2006). A descriptive summary of all the PIs can be found in Table VII.

5.8 Trend development in sustainability performance disclosure from 2008 to 2012

A trend development for all the variables mentioned above is summarized in Table VIII. From Table VIII, we can confirm that all the TBL components of PIs (i.e. ECPDI, ENPDI and SOCPDI) reported in SRs of the MCGs showed a steady increase year on year from 2008 to 2012, except for two episodes (i.e. ENPDI in 2010 and SOCPDI in 2011). Within these components, reporting economic issues has received the highest attention (0.65 disclosure index), followed by environmental issues (0.58) and social issues (SOC PDI, 0.52). Of the SOCPDI components, issues attracting interests, from high to low in order, are social (0.59), labor practices and decent work (0.54), human rights (0.50) and product responsibility (0.42), respectively. In general, a 55 per cent CSPDI reporting rate indicates that large MCGs have achieved more than half of the GRI threshold during the investigation period. Also, the increase in reporting rate was significant because by 2012, CSPDI reporting doubled as compared to 2008. Therefore, this result provides a strong evidence of a much improved awareness of sustainability issues in Ghana's mining sector. On the other hand, stakeholders and the public expect the mining sector to take reporting of

Table VI Frequency of disclosures of society performance indicators (SO)

<i>Variable</i>	<i>Core indicators</i>	<i>Expected disclosure</i>	<i>Actual disclosure</i>	<i>(%)</i>
SO1	Percentage of operations with implemented local community engagement, impact assessments and development programs	50	47	94
SO2	Percentage and total number of business units analyzed for risks related to corruption	50	21	42
SO3	Percentage of employees trained in organization's anti-corruption policies and procedures	50	30	60
SO4	Actions taken in response to incidents of corruption	50	15	30
SO5	Public policy positions and participation in public policy development and lobbying	50	25	50
SO6	Total value of financial and in-kind contributions to political parties, politicians and related institutions by country	50	30	60
SO7	Total number of legal actions for anticompetitive behavior, anti-trust, and monopoly practices and their outcomes	50	24	48
SO8	Monetary value of significant fines and total number of non-monetary sanctions for noncompliance with laws and regulations	50	13	26
SO9	Operations with significant potential or actual negative impacts on local communities	50	50	100
SO10	Prevention and mitigation measures implemented in operations with significant potential or actual negative impacts on local communities	50	42	84
SOPDI	Society performance disclosure Index	500	297	59

Table VII Descriptive and summary statistics of performance indicators

<i>Variable</i>	<i>Observation</i>	<i>Mean</i>	<i>SD</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Skewness</i>	<i>Kurtosis</i>
ECPDI	50	5.84	2.435788	2	9	-0.00035	1.6225
ENPDI	50	17.2	8.015292	4	30	-0.03175	1.7377
SOCPSDI	50	16.94	8.072149	3	32	0.34340	2.4440
HRPDI	50	5.44	3.16331	0	11	-0.02701	2.0967
LAPDI	50	8.06	4.573259	1	15	0.08015	1.8015
PRPDI	50	3.82	2.670244	0	9	0.42223	2.5165
SOPDI	50	3.74	2.693984	0	9	0.47581	2.5049
CSPDI	50	39.36	17.54849	9	71	-0.08202	2.0932

environment-related performances seriously. However, the findings are a bit disappointing, suggesting that there is a big room for improvement in reporting of environmental performances in MCGs because ENPGI disclosure index (0.58) for the five years is lower than that of ECPDI (0.68).

6. Conclusion, discussion and implication

This study has examined the extent to which large MCGs disclosed PIs in the SRs, following the GRI, the contents of the SRs and their trend development over time. Using content analysis, the research has analyzed 50 SRs for ten large mining companies over the survey period of 2008-2012. The findings suggest the following points:

- All dimensions of TBL (i.e. economic, environmental and social) performance indicators in SRs of the sample companies have met the critical threshold of 50 per cent, of which economic PIs have the highest disclosure rate (65 per cent), followed by environmental indicators (58 per cent) and social PIs (52 per cent).

Table VIII Trend development of sustainability reporting in MCGs

Year	ECPDI	ENPDI	SOCPDI	HRPDI	LAPDI	PRPDI	SOPDI	CSPDI (times compared to 2008)	
2008	38	98	144	26	46	26	46	280	(1.00)
2009	51	180	213	48	73	35	57	444	(1.58)
2010	61	161	269	65	97	46	61	491	(1.75)
2011	67	204	267	68	98	39	62	538	(1.92)
2012	75	221	271	67	88	45	71	567	(2.02)
Actual disclosure	292	864	1,164	274	402	191	297	2,320	
Expected disclosure	450	1,500	2,250	550	750	450	500	4,200	
Disclosure index	0.65	0.58	0.52	0.50	0.54	0.42	0.59	0.55	

- A steady and increasing rate in reporting trend over the five years of the survey period across all dimensions has been observed, doubling in 2012 as compared with the reporting index in 2008.
- With regard to the economic PIs, the items relating to the company's financial position which can easily be quantified have received higher attention, compared to those involving the measurements of indirect impacts.
- Similarly, in the category of environmental disclosure, the items receiving high report percentage are those related to materials or energy consumption quantities rather than the measures of environmental protection and energy efficiency.
- In terms of the social dimension, the reporting rates, from high to low, are society PIs (59 per cent), labor practices and decent work PIS (54 per cent), human rights PIs (50 per cent) and product responsibility PIs (42 per cent), respectively. It is also worthwhile to mention that large MCGs value their relationships with local communities as all related items have been given high importance. However, the companies seem reluctant to disclose items that would affect their images negatively.

The results of the study are representative of large commercial mining companies, but might be only indicative for all MCGs as small- and medium-sized mining firms are deliberately excluded from the sample. The findings are in line with most studies published in the area (some discussed earlier) by providing strong evidence that companies in general (mining companies in particular in this case) treat sustainability reporting as an effective way to communicate their economic, environmental and social responsibility issues with stakeholders and the public to meet their varying expectations (Wilburn and Wilburn, 2013). The companies are also willing to comply with legitimacy and global standard reporting practices such as the GRI to "legitimately" obtain social license to operation in exchange for the resources they use (Deegan, 2002; Hahn and Kühnen, 2013). In so doing, the information asymmetry between companies and their stakeholders has been reduced, and as a result, transparent, credible and comparable and suitable reports are made available (Dhaliwal *et al.*, 2011; Hahn and Kühnen, 2013). Consequently, the perception of stakeholders, and the reputations and images of these companies have been significantly improved. The findings also suggest that in Ghana, the environment which favors and supports sustainability reporting practices have been incredibly improved in recent years since the adoption of the IFRS in Ghana in 2007. This is partly because SR rates doubled in 2012 in comparison with 2008, even though this is a voluntary disclosure. If we treat this stage as a transition stage, as suggested by Joseph (2012), one can see a good prospect for Ghanaian large mining companies transferring smoothly to compulsory SR disclosure. However, the study also highlights a concern identified in other research studies (Fayers, 1999; Laufer, 2003; Hahn and Kühnen, 2013) that companies might be selective and complacent in what to report and what not to report, as we have found that a number of items that are linked to negative concerns are less frequently reported.

This study has added to the understanding of sustainability reporting practices in the context of the mining sector in Ghana. Our research findings have a number of implications for the policy makers in Ghana, management in Ghana Chamber of Mines and for the firms in the sample. For example, the government can learn from the current state of SR disclosure in the sector to assess the possibilities for compulsory reporting requirements, regulations and policies. The Ghana Chamber of Mines can set up sector-wide guidelines to improve the quality of reporting and promote the reporting of those areas that are less disclosed. For the individual company, our results provided an average benchmark which can be used to compare and contrast their own position to assess where they stand.

As an initial research, we recognize that it has limitations. The current study has only identified the degree, contents and development of TBL performance disclosure for large mining companies through content analysis from their SRs published online. The single data collection and analysis methods are limited to obtaining more meaningful research insights. It would be desirable in future if we could attempt using multiple sources of data (e.g. questionnaire, interview and focus group) and several analytical tools to explore more richly, the findings related to various perspectives, such as:

- if the SR reporting quality has achieved a true and fair view of the company's sustainability performance;
- if the company's internal corporate governance, including governance structure, auditing/sustainability committees and the presence or absence of independent directors can have impacts on the quality of sustainability reports;
- if there is a balance being achieved in disclosing positive and negative aspects of the company's performances; and
- whether stakeholders have been engaged (rather than managed) through the reporting process (Hahn and Kühnen, 2013; Murguía and Böhling, 2013).

Despite some of these limitations, the merit of this study is also obvious.

Notes

- 1 The GRI economic dimension concerns a firm's impacts on economic and financial systems locally, nationally and even globally. The environmental dimension measures its impacts on living and non-living natural systems, while the social dimension deals with concerns on employees, products, local communities, etc. (Wilburn and Wilburn, 2013).
- 2 Sample demographic information is omitted to protect their identities. However collectively they all are actual commercial mining companies in Ghana Chamber of Mines under the Category – "Represented".
- 3 This extremely low disclosed rate perhaps suggests that parental leave is not a visible policy in Ghana.

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