Investigating Performance Indictors Disclosure in Sustainability Reports of Large Mining Companies in Ghana

Purpose - This study examines 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 used to analyse 50 sustainability reports of 10 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 for 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 implication: - 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 encourage the mining sector moving forward in the adoption of international reporting standards.

Originality/value - This paper initialises investigating into the degree, contents and trends of performance indicators in sustainability reports of large mining companies in Ghana using content analysis.

Paper type - Research paper

Keywords: sustainability reporting, performance indicators, Global Reporting Initiative, environmental issues, mining companies, Ghana.

1. Introduction

Sustainability issues have increasingly gained attentions among corporations and their stakeholders over the last three decades as more and more corporations prepare their sustainility reports (SRs) (Papasolomou, 2007; Roca and Searcy, 2012). Despite this development, the structure and items of performance indicators (PIs) disclosed in sustainability reports (SRs) remain controversial (Davis and Searcy, 2010; Roca and Searcy, 2012). This is

mainly due to the fact that the preparation of 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 last two decades, many guidelines have been developed for corporations, especially for multinational enterprises (MNEs) as the benchmarks of disclosure of sustainability information to stakeholders and the general public. Among these guidelines, Global Reporting Initiative (GRI) is the most globally accepted guidance of sustainability reporting preparation. Therefore, many studies of SRs carried out at national levels in both developed and developing countries (e.g. Austria, Australia, Bangladesh, Greece, Norway, Sweden, Switzerland, Thailand, Canadian, Argentina, Kyrgyzstan and Tajikistan) are based on GRI performance indicators (e.g. 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 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 petrochemical, 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 (see 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, Ghanaian mining industry face more pressures than other industries to prepare SR in line with their corporate and social responsibilities (CSR) to the society, in particular to the local communities. This is in order to compensate for the environmental damages to the country despite mining companies making significant contributions to the economic development of Ghana through the payment of taxes, provision of employment and social amenities.

On the other hand, there is an obvious research shortage gap in this area as little research has been carried out to assess current practices and performance of mining companies in Ghana in terms of their social and environment responsibility performance in SRs. We thus intend to

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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, as well as the contents of the SRs and reporting development over the investigation period. In brief, this paper initialises 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 (for example Barako et al., 2006). The findings suggest that large mining companies in Ghana 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 SR (Lozano and Huisingh, 2011) in order to effectively communicate CSR activities with stakeholders (Du et al., 2010; Hsu et al., 2013). Sustainability report 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 in a sustainability management system (Daub, 2007). World Business Council for Sustainable Development (WBCSD) treats SR 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, 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 SR 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 (see 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 SR. 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 like 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, SR should be viewed as a part of the strategy of organisations to build and maintain their legitimacy in the society (Ratanajongkol et al., 2006). It is also argued that more legislations and regulations of reporting SRs should be applied to industries and companies which are the main contributors to environmental pollution (e.g. mining) because some of these companies are reluctant to disclose negative information in the SRs. For instance, a study by Murguía and Böhling (2013) of SRs on 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 Lighteringen 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 organisations' 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 mining industry in Ghana which is the focus of this paper.

3. Performance indicators using the GRI 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 8000, Ethical Trading Initiative, Accountability 1000, 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 (e.g., Jenkins and Yakovleva, 2006; Isaksson and Steimle, 2009; Joseph, 2012). Specifically, the GRI guidelines have the main principle to achieve transparency and credibility with the complete information disclosure on indicators required to reflect impacts and 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 compliance 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). In another perspective, 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).

In the GRI framework, there are three different types of disclosures in a 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 9 economic indicators, 30 environmental indicators, and 45 social indicators[1] which are further categorised into labour practices & decent work, human rights, society, and product responsibility (version 3.1, GRI, 2011; Joseph, 2012). There are

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[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 and local communities etc. (Wilburn and Wilburn, 2013).

two types of indicators in the GRI, namely core and additional indicators. "Core Indicators" are those 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 organisations but not generally for 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 since they are relevant primarily for a specific range of reporting organisations 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 are a wide range of empirical studies reporting social accounting and techniques for disclosing sustainability information, little of this relates to the mining sector, especially about mining companies operating either in Ghana or Africa. Here we intend to review some research in the same vein which are in general include mining and other sectors but using content analysis or similar methodology in order to obtain some degree of comparability. In the developed world, we consider four previous studies. Firstly, to answer the question 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. In this regard, 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 guideline in sustainability report. Secondly through the analysis of 8 large MNEs, Wiburn and Wiburn (2013) proved that the GRI can help MNEs create CSR strategies and help stakeholders evaluate the firms' values effectively. Their findings confirm that the performance indicators reported in SRs are evidence of the levels of these firms' compliance with CSR principles. Thirdly, 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. Fourthly, in a Canadian case study, Roca and Searcy (2012, p. 103) analyses 94 SRs in 2008 and shows that a total of 585 different indicators

were used in the reports, with "31 of the 94 reports included 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 did the economic and social indicators.

On the other hand, in the less developed world, the study by Murguía and Böhling (2013) reveals the conflicts in sustainability reporting in large scaled 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 such are tackled through a stakeholder engagement process which includes 'anti-mining' groups" (p. 202). 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 emphasised the importance of the national and local contexts in the implementation of the CSR activities. This is because the results are so 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) examine the SR practice 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) assess 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 elsewhere with lack of desired content and comprehensiveness.

Four important points can be summarised 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 also can

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 creditability. 2) However, transparency and creditability 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 guidance 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 large extents, depending on national or local contexts. Also, the results from individual research studies are difficult to generalise as research biases may remain.

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

4. Research Methods

Sample selection

To achieve the objectives of this paper, 10 large scale mining companies in Ghana[2] are selected as the research sample. The reasons for selecting these large mining companies include: 1) they are major mining companies in Ghana and have 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 intensive pressure from stakeholders to behave well (Stratos, 2003; Daub, 2007). 2) Unlike SME mining firms, they are subsidiaries of multinational companies which are required to publish standard SRs, with which their financial and non-financial information are available to be used for data analysis and result discussions (Alazzani and Wan-Hussin, 2013). 3) According to previous studies (e.g. Adams et al., 1998; Deegan and Gordon, 1996; Friedman and Miles, 2001), size effects 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

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[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".

the disclosure of PIs after IFRS adoption by these sample companies (Assenso-Okofo et al., 2011; Khalid et al., 2013). Finally, a total of 50 SRs (10 firms, 5 years coverage) was used to do content analysis in order to yield insights into SR practices by MCGs. The SR reports are collected mainly from the website of the companies by referring to other studies (e,g, Stratos, 2008; Slater, 2008; Roca and Searcy, 2012).

Analysis methods

Content analysis was used to analyse the data as a mature technique to make inferences objectively and 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 be served 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).

In order to minimise 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 MCGs 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 performance indicators, the SRs were carefully read and analysed. 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 assure coded data produced by the content analysis are factually reliable (Bouten et al., 2011). Firstly, as the investigation is limited to 10 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 code and the results then compared and the differences were discussed and sorted with re-coding (Duff, 2014). Secondly, 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, labour 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 the internal consistency among the PIs in the SRs is achieved.

5. Results

The following subsections will present the assessment of the ten mining companies' sustainability reports against the GRI indicators. For this purpose, social responsibility activities were classified in terms of the most and the least commonly practised by the MCGs. The disclosure of corporate sustainability performance indicators of these mining companies has been presented under the management approach themes: i.e. (i) economic performance indicators (EC), (ii) environmental performance indicators (EN), (iii) human right performance indicators (HR), (iv) labour practice & decent work performance indicators (LA), (v) product responsibility performance indicators (PR) and (vi) society performance indicators (SO). The last four categories (iii, iv, v, vi) belong to the social dimension of performance indicators. According to the GRI (2011), social dimension of sustainability is related to the impact of an organisation on the social system it operates in.

Economic Performance Indicators (EC)

Corporate economic sustainability is used to measure the economic outcomes of an organisation's activities and its impact on their stakeholders (GRI, 2006; Sobhani et al., 2012). The economic performance of an organisation is fundamental to understanding the organisation and its sustainability due to the fact that an organisation may be financially viable, but may have been achieved by creating significant externalities that impact other stakeholders (Sobhani et al., 2009, 2012). It can be seen from Table 1 that the frequency of the EC disclosure indices reported in the SRs is an average of 65%. This means that majority of economic performance indicators 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 whilst the bottom two are EC9 and EC8 which are about measurement of indirect economic impacts.

<Insert Table 1 about here>

Environmental Performance Indicators (EN)

Environmental performance indicators concern an organisation's impact on living and non-living natural systems, including ecosystems, land, air, and water as well as covering performance related inputs (e.g., material, energy, water) and outputs (e.g., emissions, waste) (Sobhani et al., 2012). EN is a very important indicator for mining companies due to the industrial operational consequences to environment. The frequency of the EN by MCGs can be seen in Table 2. The top three environmental performance indicators disclosed in the SRs are EN1 (86%), EN2 (82%) and EN3 (80%), 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%), EN24 (36%) and EN6 (38%) and they are related to environmental protection (EN30, EN24) and energy efficiency (EN6). In addition, it is noted that the average of disclosure of environmental items is only 58% with near one third of the items (9 out of 30) below 50% (i.e. EN5, EN6, EN9, EN14, EN15, EN24, EN25, EN29 and EN30). These results suggest that there is a significant space to improve for environmental PIs reported in SRs of MCGs, compared to economic performance indicators (EC).

<Insert Table 2 about here>

Human Rights Performance Indicators (HR)

Human rights performance indicators require organisations to report the extent to which processes have been followed on 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 of Investment and Procurement Practices, Non-discrimination, Freedom of Association and Collective Bargaining, Child Labour, Forced and Compulsory Labour, Security Practices, Indigenous Rights, Assessment and Remediation. From Table 3, we can see that some items (e.g. HR1 and HR2) have high report rates while some are extremely low (e.g. HR10-16% and HR11-12%). From a detailed count, nearly half is below 50% while the average rate is also only 50%. The findings might require further investigation to find the reasons, especially for those indicators with significantly lower reporting scores.

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<Insert Table 3 about here>

Labour Practices & Decent Work Performance Indicators (LA)

The LA addresses 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 4 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 4 that two important items (LA1 and LA2) are the most reported PIs with an average of 54% report rate in this category, and we thus treat it as normal, though the least mean of 0.04 was for report on LA15[3].

<Insert Table 4 about here>

Product Responsibility Performance Indicators (PR)

The PR, comprising of Customer Health and Safety, Product and Service Labelling, Marketing Communications, Customer Privacy and Compliance addresses the aspects of reporting organisation's products and services that affect customers in respective areas (GRI, 2011). It can be observed from Table 5 that out of a total of 450 PIs, only 191 PIs representing an average of 42% were disclosed in the survey period. Only one third of the items (i.e. PR1, PR2 and PR3) are higher than the 50% rate whilst other items are below that. A closer look at individual items found that the highest two reported indicators (PR1 and PR2) are items relating to health and safety. However for a number of lower reported items (e.g. PR4, PR5, PR9, PR7 and PR8), they are all associated with reporting on non-compliance incidents in certain areas, or complaints and customer satisfaction. The results suggest that MCGs have concentrated attentions on 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.

<Insert Table 5 about here>

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[3] This extremely low disclosed rate perhaps suggests that parental leave is not a visible policy in Ghana.

Society Performance Indicators (SO)

The SO deals with issues such as local communities, corruption, public policy, anti-competitive behaviour and compliance issues (GRI, 2011). It looks at the impacts of the organisations' activities on local communities in which they operate by disclosing the risks that exist in their interactions with local communities. SO is an important measure of the relationship of the firms with the local community. For mining companies, it is even more crucial because mining operation can seriously damage local 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 6, on average 59% of items pertaining to society issues were disclosed in the SRs during the period. The highest three disclosure items are SO9 (100%), SO1 (94%) and SO10 (84%) and they all relate to managing relationships with local communities. While the lower rates of disclosures are for SO8 (26%), SO4 (30%) and SO2 (42%), which are links to negative activities and consequences (e.g. fines and corruptions).

<Insert Table 6 about here>

Social Performance Indicators Disclosure Index (SOCPDI) and Corporate Sustainability Performance Indicators Disclosure (CSPDI)

In order to clearly disclose three dimension performance of mining companies under TBL accounting framework (Elkington, 1994), i.e. incorporating economic, environmental and social performance, we merged human right performance indicators disclosure index (HRPDI), labour practice & decent work performance indicators index (LAPDI), product responsibility performance indicators index (PRPDI) 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 Economic Performance Indicators (EC), Environmental Performance Indicators (EN) and Social Performance Indicators Disclosure Index (SOCPDI) into a general Corporate Sustainability Performance Indicators Disclosure (CSPDI) which can be used to measure a general GRI compliance of the MCGs. The method is consistent with that used in prior studies (Hossain and Adams, 1995; Hossain et al., 1995; Dixon et al., 1994; Barako , et al., 2006). A descriptive summary of all the PIs can be found in Table 7.

<Insert Table 7 about here>

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Trend development in Sustainability Performance Disclosure from 2008 to 2012

A trend development for all the variables mentioned above is summarised in Table 8. From Table 8, we can confirm that all the TBL components of performance indicators (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 (ECPHI) has received the highest attention (0.65 disclosure index), followed by environmental issues (ENPDI, 0.58) and social issues (SOCPDI, 0.52). Of the SOCPDI components, issues attracting interests from high to low in order are social (SOPDI, 0.59), labour practices & decent work (LAPDI, 0.54), human rights (HRPDI, 0.50 and product responsibility (PR, 0.42), respectively. In general, a 55% CSPDI reporting rate indicates that large mining companies in the 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 compared to 2008. Therefore this result provides a strong evidence of a much improved awareness of sustainability issues in Ghana mining sector. On the other hand, stakeholders and the public expect the mining sector to take seriously reporting environment related performances. However the findings are a bit disappointing suggesting that there is a big room for improvement in reporting environmental performances in MCGs because ENPGI disclosure index (0.58) for the 5 years is lower than that of ECPDI (0.68).

<Insert Table 8 about here>

6. Conclusion, discussion and implication

This study has examined to what extent the large mining companies in Ghana disclosed performance indicators in the Sustainability Reports following the Global Reporting Initiative, the contents of the SRs and their trend development over time. Using content analysis, the research has analysed 50 Sustainability Reports for 10 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% of which economic PIs have the highest disclosure rate (65%), followed by environmental indicators (58%) and social PIs is third (52%).

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- A steady and increasing rate in reporting trend over the 5 years of the survey period across all dimensions has been observed, doubling in 2012 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 environment 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 social dimension, the reporting rate ranging from high to low are Society Performance Indicators (59%), Labour Practices & Decent Work Performance Indicators (54%), Human Rights Performance Indicators (50%) and Product Responsibility Performance Indicators (42%), respectively. It is also worthwhile mentioning that large mining companies in Ghana 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 the companies' images negatively.

The results of the study are representative of large commercial mining companies, but might be only indicative for all mining companies in Ghana 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 a 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 (Wiburn and Wiburn, 2013). The companies are also willing to comply with legitimacy and global standard reporting practices such as the GRI in order to "legitimately" obtain the 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, creditable and comparable and suitable reports are made available (Dhaliwal et al., 2011; Hahn and Kühnen, 2013). Consequently the perception of stakeholders, the reputations and images of these companies have been significantly improved. The findings also suggest that in Ghana the environment which favours 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 voluntary disclosure. If we treat this stage as a transition as suggested by Joseph (2012), one can see a good prospect for Ghanaian large mining companies ~~transfering~~transferring smoothly to compulsory SR disclosure. However the study also highlights a concern identified in other research (e.g. 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 a number of items linked to negative concerns are less reported.

This study has added ~~fille~~understanding of ~~d a research gap~~ sustainability reporting practices~~in this field~~ in the context of 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 in order to assess the possibilities for compulsory reporting requirements, regulations and policies. The Ghana Chamber of Mines can set up sector wide guideline to improve the quality of reporting and promote the reporting of those 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 recognise 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 sustainability reports 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 findings related to various perspectives such as 1) if the SR reporting quality has achieved a true and fair view of the company's sustainability performance; 2) 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; 3) if there is a balance being achieved in disclosing positive and negative aspects of the company's performances; and 4) 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.

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