

# **Sustainability reporting: Insights from the websites of five plants operated by Newmont Mining Corporation**

Kwame Oduro Amoako, Beverley R. Lord and Keith Dixon

## **Abstract**

**Purpose** – Sustainability reporting serves as a means of communication between corporations and their stakeholders on sustainability issues. This study aims to identify and account for the contents of sustainability reporting communicated through the websites of the plants in five continents of the same multinational mining corporation.

**Design/methodology/approach** – This study uses data published by Newmont Mining Corporation. The corporation has regional headquarters in five continents: Africa, Asia, Australia and North America and South America. The data were drawn from the websites of the five plants adjacent to those regional headquarters. Economic, environmental and social aspects of sustainability as reported by each plant were identified; to do so, a disclosure analysis based on the elements of the Global Reporting Initiative and the United Nations Division for Sustainability Development was used. These aspects were then compared and contrasted to highlight if, and to what extent, institutional isomorphism influences variations in sustainability disclosures among plants compared with the parent company.

**Findings** – It was found that most of the reporting about sustainability matters comprises narratives; there were also a few physical measures but very little financial information. Notwithstanding that the websites of all five plants used similar headings, the contents of reports differed. The reports from the plants in Australia, South America and Africa were more comprehensive than those from the plants in Asia and North America. The authors attribute these differences to institutionalisation of location-specific characteristics, including management discretion, legislation and societal pressures influencing sustainability reporting. The authors argue that managers responsible for preparing sustainability reports and who work essentially as sustainability accountants should develop templates and measures to raise the standard and comprehensiveness of reports for improved communication, information and behaviour.

**Originality value** – Extant studies on sustainability reporting have focused mainly on comparisons between sustainability reports published by different corporations or

sustainability reports published in different years by the same corporation. The authors believe that this is one of the first studies to have examined differences in sustainability information published by different subsidiaries within the same large corporation and the first to show how concurrent disclosures can differ.

**Keywords:** Mining industry, Content analysis, Sustainability reporting, Mining plants, Triple bottom line reporting, Website reporting

**Paper type:** Research paper

## 1 Introduction

Sustainability reporting (also called environmental, triple bottom line corporate responsibility reporting) is a broad term for reporting on economic, environmental and social impacts of business operations (Elkington, 1997; Milne and Gray, 2013; Schmidheiny, 2006). Sustainability reporting serves as a means to inform stakeholders about what corporations are doing and to foster good community relations (Cormier and Magnan, 2004; Jenkins and Yakovleva, 2006; Marimon et al., 2012; Murguía and Böhling, 2013), with most of these corporations using guidelines such as of the Global Reporting Initiative (GRI) and the United Nations Division for Sustainable Development (UNDSD) (Cooper and Owen, 2007; GRI, 2015; KPMG, 2013; Warhurst, 2001).

Sustainability reporting has become increasingly relevant globally, paralleling a rise in public awareness of the environmental repercussions of doing business (Deegan and Rankin, 1997). Arguably, the reporting, with its various implications, repercussions and consequences, has led, in turn, to changes in behaviours in the business world, especially in industries seen as having high environmental impacts (Moneva et al., 2006; Mori Junior et al., 2014; Perego, 2009). Businesses with such impacts try to maintain their legitimacy in the eyes of increasingly aware stakeholders and broader publics by changing their reporting behaviours – essentially disclosing more about the environmental impact they are having – and by changing their operational behaviours to obtain favourable, publicly acceptable reports (Ferreira et al., 2010; Mori Junior et al., 2014).

The mining sector, being one of the industries with high environmental impacts (Bland, 2014; Jaskoski, 2011), are pioneers in the production of environmental reports, giving the example of Noranda, a Canadian mining and metals company, which has reported annually since 1991 (Perez and Sanchez, 2009). Thus, Azapagic et al. (2004) argue that notwithstanding the essentials of minerals to human life and a large number of industries, obtaining them usually

has high environmental impacts and indeed raises broader economic, social, demographic and cultural issues as well (Azapagic et al., 2004; Jenkins and Yakovleva, 2006; Van Berkel, 2000). The ways these impacts and issues are manifested include depletion of non-renewable resources, disturbance and wasting of the landscape, environmental conflicts, threats to the health and safety of workers and communities and the wholesale involuntary relocation of communities (Azapagic et al., 2004; Bebbington et al., 2008; Bland, 2014; Jaskoski, 2011; Schueler et al., 2011; Sigran and King, 2001; Weeramantry, 1992; World Bank Group Mining Department, 2002).

This study contributes to the literature on sustainability reporting, particularly in relation to variations in disclosure contents. By shedding light on these variations, our aim is to help improve the quality of the communication inherent in sustainability reporting. Set in the mining industry, the study builds on various published studies on mining and reporting by mining companies and on website reporting. We used the procedures, principles and guidelines developed by the UNDSD (2001) and the GRI (2015) to develop criteria to evaluate the quality of reporting. The GRI guidelines have enjoyed widespread popularity for voluntary reporting for some time and GRI (2015) are currently the benchmark in several sectors (Fonseca et al., 2011; KPMG, 2015).

Websites have been increasingly used for sustainability disclosures (Lodhia, 2014; Morhardt, 2010; Santos et al., 2016), some claiming that websites are one of the main channels for communicating sustainability information (Santos et al., 2016; Wanderley et al., 2008). Compared to other traditional means of communication, such as annual reports, websites are flexible, versatile and fast in disseminating an unlimited amount of information (Adelopo et al., 2012; Lodhia, 2014; Santos et al., 2016; Tagesson et al., 2009). Consequently, companies, including some in the mining sector, are publishing triple bottom line sustainability information on their websites, thus supplementing their annual reports (de Villiers and van Staden, 2011; Fonseca et al., 2014; Mori Junior et al., 2014; Murguía and Böhling, 2013; Pellegrino and Lodhia, 2012). Despite these trends in how websites are being used, studies of sustainability reporting in general (Joseph et al., 2014; Morhardt, 2010; Morhardt et al., 2002; Sinclair and Walton, 2003), and in the mining sector (e.g. de Villiers and Alexander, 2014; Jenkins and Yakovleva, 2006; Kolk, 2003), mainly focus on the contents of annual reports; studies solely of website disclosures are uncommon.

Previous studies of mining companies have compared and contrasted sustainability reporting by mining companies based in various locations and pointed out similarities and differences

(de Villiers and Alexander, 2014; Jenkins and Yakovleva, 2006). We build on these ideas but take a different tack: we analyse sustainability reports communicated on the websites of various subsidiaries within the same global mining corporation. The company in question, Newmont Mining Corporation, has plants on five continents, Africa, Asia, Australia, North America and South America (see Table 1). We draw our data from the websites of the plants that serve as a regional headquarters in each continent and from the website of the parent company. Having ascertained how the information they provide differs, we explore the factors that may explain the differences from one plant to another. Drawing on components of institutional theory, we go on to identify where collaborative change in practices could be encouraged to raise the standard and comprehensiveness of reports, and so improve communication, information and behaviour.

The rest of this paper is arranged as follows. In Section 2, we explore what constitutes sustainability reporting, literature on what motivates sustainability reporting and the theory that is used in this study. In Section 3, we discuss the method of data collection and analysis. Section 4 sets out information about Newmont and the methods we used to collect and analyse data and report our findings. Sections 5, 6 and 7 report the results, discuss the implications and set out conclusions and suggestions for further research, respectively.

## **2 Sustainability reporting**

The extant accounting literature indicates the significant extent to which the scope for sustainability reporting has grown, and the various influences on its form and contents, on the corporations performing it and the theories that have developed around it. We review here some of that literature that informed our study; we include literature in which the alternative labels environmental, triple bottom line, corporate responsibility and corporate citizen reporting are used.

### **2.1 State of sustainability reporting**

According to KPMG (2013), “CR [corporate responsibility] reporting is now undeniably a mainstream business practice worldwide, undertaken by almost three quarters (71 per cent) of the 4,100 companies surveyed in 2013” (p. 10). In terms of who produces quality reports, KPMG (2013) asserts that “large companies in the electronics and computers, mining and pharmaceuticals sectors produce the highest quality CR reports” (p.13). KPMG also claims that “use of Global Reporting Initiative (GRI) guidelines is almost universal” (p. 11). However, academic studies are less convinced about these trends, expressing doubt about the

quality of sustainability reports and claiming that their contents probably differ from what is actually happening (Chapman and Milne 2004; Milne and Gray, 2013; Morhardt, 2010; Morhardt et al., 2002; Sinclair and Walton 2003).

**Table 1: Locations and sizes of Newmont plants across the globe**

Year of first operations	Continent	Country	Locations	Employees and contractors	Output (ounces)
2006	Africa	Ghana	* Ahafo	4,400	442,000
2013	Africa	Ghana	Akyem	2,000	472,000
1999	Asia	Indonesia	* BatuHijau	5,700	37,000
2009	Australasia	Australia	* Boddington	2,000	696,000
1983	Australasia	Australia	Tanami	950	345,000
1989	Australasia	Australia	Kalgoorlie	1,000	329,000
1965	N. America	USA	* Twin Creeks, NV	5,100	1,500,000
	N. America	USA	Carlin, AZ		
1993	S. America	Peru	* Yanacocha	6,800	498,000

(Source: Newmont, 2015)

Regarding the types of information sustainability reports contain, there is substantial evidence that they contain both qualitative information, in narratives, and quantitative measures of economic, environmental and social performance (de Villiers and Alexander, 2014; de Villiers et al., 2014; Maroun, 2015). Quantitative information may be expressed in monetary or physical terms. Monetary sustainability information includes environmentrelated costs, earnings and savings. Physical information includes the use, flows and destinations of energy, water and materials, including waste (International Federation of Accountants, 2005).

Concerning the mining sector, de Villiers and Alexander (2014) conclude that even though there are common trends in corporate social responsibility reporting in diverse settings, differences exist in the content of corporate social responsibility reports at a more detailed level. They attribute these to isomorphic pressure on reporting corporations and suggest “normative isomorphism to be important in shaping contemporary CSRR [corporate social responsibility reporting], while mimicry and coercive processes are also still prevalent” (p. 209).

Perez and Sanchez (2009) discovered that “all companies [have] improved their sustainability reports in terms of form, comprehensiveness and depth” and that “there is a general trend toward improvement and adherence to best practices of reporting guidelines” (p. 10). Jenkins and Yakovleva (2006) report that while there is evidence of increasing sophistication in the development of social and environmental disclosure in the global mining industry, the maturity of reporting content and styles vary considerably. Guenther et al. (2006) reviewed GRI-style reports of 29 mining firms, discovering that only three elements of the GRI (water use, noncompliance and direct energy use) are completely reported. Indicators of air emissions, spills, indirect energy use for products, greenhouse gas emissions and total amount of land use are included in more than 50 per cent of the reviewed reports.

Murguía and Böhling (2013) carried out a content analysis of sustainability reporting on large-scale mining conflicts assessments, revealing that environmental and economic indicators are the most contentious and least reported. Fonseca (2010) and Fonseca et al. (2014) outline specific changes that should be promoted in mining corporations’ frameworks if their reports are to provide meaningful and accurate information about sustainability progress. The authors recommend a more systematic consideration of items such as site-level performance, scenario building and legacy effects.

These studies on the contents of mining corporations’ sustainability reports correspond with other findings attesting to extreme diversity and lack of comparability among environmental reports, as they are currently produced (Ball, 2006; de Franco et al., 2011; Fifka and Idowu, 2013; Kolk, 2005; Kothari, 2001). This corresponds to sustainability disclosure being generally unregulated and discretionary, resulting in inconsistency and lack of comparability and quality of the contents of these reports, both over time and between companies (Beets and Souther, 1999). Our argument for framing our findings as we do (i.e. as a basis for developing templates and measures to raise the standard and comprehensiveness of reports) is that if regulated, these inadequacies might be reduced (Beets and Souther, 1999; de Villiers and van Staden, 2010; Deegan and Rankin, 1997; Healy and Palepu, 2001; Fifka and Drabble, 2012).

## **2.2    *Motivators of sustainability reporting***

The question of why corporations might want to report about sustainability is pertinent to developing the aforementioned templates and measures. On this question, KPMG (2015, p. 30) claims that “the main driver for CR [corporate responsibility] reporting continues to be

legislative: there is a growing trend of regulations requiring companies to publish non-financial information". However, alongside the doubts related above about report contents probably differing from what is actually happening, Cho et al. (2012, p. 23) argue that "the higher levels of environmental disclosure appear to mediate the potential negative effects of poorer performance on environmental reputation". Other studies, on the other hand, suggest that the level of sustainability disclosure is partly attributed to cultural issues surrounding a company (Fifka, 2013).

Carels et al. (2013, p. 957) show how sustainability reporting serves as a device for managing stakeholder expectations and conclude that corporate governance developments and the "integrated reporting project have gone hand-in-hand with an increase in the level of disclosures and the extent to which these disclosures are integrated in corporate reports". Maroun (2015) discovered that in different jurisdictions, the sustainability reporting levels are affected by the importance of corporate governance systems, differing accounting standards, the use of fair value measures and the relevance to the users of corporate reports.

Studies taking a different approach have started from a desire to understand the growth of sustainability reporting in terms of the characteristics of companies and of their settings. Some found geography, history, the political and legal system and the business climate to influence reporting (Albelda, 2011; Buhr and Freedman, 2001; de Villiers et al., 2011; Doorasamy and Garbharran, 2015); KPMG (2015) confirm that reporting is to a certain extent country- and industry-variant. Thus, Buhr and Freedman (2001, p. 312) argue that "the greater extent of mandatory (i.e. legal/cost) disclosure in the USA is due to the litigious environment". The authors further claim that such an "environment encourages companies to make fuller disclosure of mandatory items in order to avoid any litigation due to omission of information".

Others claim that company size is significant. Bouma and Wolters (1998) found that smaller firms are less likely than larger firms to use accounting information for measuring accomplishment of environmental targets. Bigger firms need to comply with regulations more than small- and medium-sized companies, and larger companies cause greater impacts, are more visible and therefore face greater stakeholder scrutiny and pressure (Gallo and Christensen, 2011; Ross and Kovachev, 2009). However, others have questioned this, arguing that implementing sustainability accounting and reporting is more to do with the type of industry a company is in than to size (Choi, 1998; Frost and Wilmshurst, 1998; Ferreira et al., 2010).

### **3      Institutional isomorphism**

It is generally understood that corporations rival each other on various fronts, including for resources, customers, power and legitimacy. Isomorphism is the notion that corporations in similar positions in a field encounter similar circumstances, and so they often construct similar responses to each other on these fronts. Their responses on these fronts can be distinguished as competitive and institutional (DiMaggio and Powell, 1983).

Various pressures are imposed on corporations that can culminate in the adoption of rules and systems to strengthen legitimacy to sustain access to resources (Deephouse, 1996; DiMaggio and Powell, 1983). Institutional isomorphism is the phenomenon of corporations tending to adopt comparable rules and structures to respond to or to mitigate such pressures (de Villiers et al., 2014; Heugens and Lander, 2009). This isomorphism is described as institutional because it derives from the concept of institutionalisation, that is, the process “by which structures, including schemas, rules, norms, and routines, become established as authoritative guidelines for social behavior” (Scott, 2004, p. 2). Thus, a particular way of doing things can be regarded as institutionalised if deviations from the accepted way are likely to result in social sanctions or loss of legitimacy (Streeck and Thelen, 2005). In responding to possibilities of social sanctions and loss of legitimacy, corporations become isomorphic with their environment (de Villiers et al., 2014).

DiMaggio and Powell (1983) describe three institutional isomorphic forces: coercive, mimetic and normative. Coercive isomorphism refers to companies being forced into a course of action. DiMaggio and Powell (1991, p. 67) state that:

[...] coercive isomorphism results from both the formal and informal pressures exerted by other organizations on which an organization may be dependent, as well as cultural expectations in which the organizations operate.

Coercive isomorphism results from political influence and problems of legitimacy. It is useful in explaining the magnitude of sustainability reporting (Carpenter and Feroz, 1992; Joseph et al., 2014).

International and country-specific legislation relating to mining company practices and disclosures are sources of coercive pressure (de Villiers and Alexander, 2014). Mining laws cover issues such as rehabilitation of disturbed lands, pollution prevention, employees’ health and safety, as well as societal welfare. Irrespective of global location, mining companies generally disclose past events and future provisions for rehabilitation, pollution and

employees' and societal welfare, as well as health and safety liabilities, in their financial reports. Thus, there are common categories in the reporting of mining corporations. On the other hand, pressures from different stakeholders in the various locations of mining firms may create variations in reporting.

Mimetic isomorphism is a response in which corporations imitate other firms that are viewed as more legitimate and successful (DiMaggio, 1988; DiMaggio and Powell, 1983). In such situations, companies follow early adopters from the same sector if they are uncertain about new technology, often resulting in adoption as a “fashion” (Xiao et al., 2004). For instance, most mining firms are now conforming to the reporting requirements of the GRI voluntarily (de Villiers and Alexander, 2014; KPMG, 2013), which might be seen as a fashion. Mining firms could be emulating what older and experienced firms have been reporting if those mining companies are regarded as market leaders.

Normative isomorphism refers to the professionalisation of norms (Haveman, 1993; Mizruchi and Fein, 1999; Suddaby and Viale, 2011; Walls and Hoffman, 2013) by the setting of standards and homogenous organisational routines to be followed (Xiao et al., 2004). DiMaggio and Powell (1983) explain that there are two features of professionalisation: through formal education (e.g. in universities and polytechnics), which advocates the adoption of innovation, and through the establishment and expansion of professional networks (e.g. GRI and UNDSD), across which new models might diffuse rapidly (Bogdan et al., 2009). Consultants support companies with the form, content and assurance of their sustainability reports, and sustainability disclosure is now widely incorporated in university curricula. It is currently a subject of extensive academic research creating “a growing consensus that sustainability disclosure is the right thing to do” (de Villiers et al., 2014, p. 54).

De Villiers et al. (2014) and Delmas (2002) suggest that emerging trends in technology and operations, such as the adoption of GRI and UNDSD frameworks in the mining sector, usually create much innovation and uncertainty, and that convergence tends to commence when companies emulate others in responding to such situations, that is, when mimetic isomorphism occurs. However, the expectations of stakeholders, such as regulators and society, on issues such as rehabilitation may lead to coercive isomorphism. At the same time, with growth in a sector, normative isomorphism through professionalisation of norms also can be found (de Villiers et al., 2014; Suddaby and Viale, 2011). De Villiers and Alexander (2014) claim that the field of sustainability disclosure has reached a stage where normative

isomorphism predominates, but elements of mimetic and coercive isomorphism are also to be found.

## 4 Method

In this section, we describe and explain the method we used to collect and analyse data. We start with an overview of Newmont Mining Corporation to prove, among other things, its credentials as a source of data for the type of study we are conducting. We then explain content analysis and describe and justify how we collected data and analysed them.

### 4.1 *Overview of Newmont Mining Corporation*

Newmont was chosen for this study out of the several multinational mining firms because it has extensive mining interests and experience and a reputation for sustainability. In 2007, Newmont became the first gold mining company to be selected to join the Dow Jones Sustainability World Index, which is based on a rigorous analysis of corporate economic, environmental and social performance (The Herald Team, 2013; Newmont Mining Corporation, 2015). As a member of the International Council on Mining and Metals and to maintain inclusion on the Dow Jones sustainability index, the Newmont Mining Corporation parent company reports on sustainability in accordance with a number of voluntary initiatives, including the GRI. Newmont was founded in 1916 as a holding company for private acquisitions in oil and gas, mining and minerals enterprises and has been traded publicly on the New York Stock Exchange since 1940 (Newmont Mining Corporation, 2015). Now headquartered in Denver, it has approximately 28,000 employees and contractors in five countries in different continents (Ghana in Africa, Indonesia in Asia, Australia, the USA in North America and Peru in South America). It has primarily been involved in mining gold, silver, lead, zinc, lithium, copper, uranium, coal and nickel, as well as developing oil and gas (Newmont Mining Corporation, 2015); currently, it is the world's second largest gold miner in terms of output (4.85 million attributable ounces of gold in 2014). Table 1 gives the locations and approximate output of Newmont Mining Corporation operational plants as at December 2014.

All nine plants that Newmont operates worldwide are listed in Table 1. The plants chosen for this study are the regional headquarters on each continent; they are indicated with an asterisk in the table.

## **4.2 Content analysis**

The technique of content analysis is used in this study to determine the extent to which the elements of sustainability performance are being reported online by the selected plants. Content analysis is a research method for analysing written, verbal or visual communication messages to build up a model, a conceptual system, a conceptual map or categories and/or to describe the phenomenon under consideration (Bebbington et al., 2014; Krippendorff, 1980; Lodhia 2014; Vaismoradi et al., 2013). Parker (2005) found content analysis to be the dominant research method for collecting empirical evidence on accounting reporting.

A directed approach to content analysis was applied, that is, starting with relevant research findings as guidance for initial codes (Hsieh and Shannon, 2005). Thus, the researchers developed broad categories of sustainability activities, based on the elements of the UNDSD and GRI indices, and divided into triple bottom line categories, namely, economic, environmental and social issues, as in some prior research (Font et al., 2012; Holcomb et al., 2007). The reasons for using two indices in combination are as follows. The UNDSD framework covers only the environmental (ecological) aspect of sustainability and recommends that two main types of sustainability information should be reported: physical and monetary (Appendix 1). The guidelines developed by the GRI (2015) – its newest revised version, known as “G4” – focus on techniques for quantifying environmental expenditures or costs as a basis for the development of national sustainability accounting guidelines and frameworks (Appendix 2).

According to the GRI, the economic aspect of sustainability covers economic performance, market presence, indirect economic impacts and procurement practices. Environmental performance covers product and non-product inputs and outputs. Material inputs include water, energy, raw materials, auxiliary materials, operating materials and packaging. Product output consists of the finished and by-products (including packaging). The non-product output comprises solid waste, hazardous waste, wastewater, air emissions, noise emissions, biodiversity, compliance, transport, supplier environmental assessment and environmental grievance mechanisms. The social aspect covers how the corporations relate with their communities and employees. It can be divided into four aspects, namely, labour practices, human rights, societal and product responsibility.

We are not the first to use the GRI as a basis for content analysis of sustainability reports. However, the prior studies to have done so (Carels et al., 2013; Clarkson et al., 2008; Daub,

2007; de Villiers and Alexander, 2014; de Villiers and van Staden, 2011; Font et al., 2012; Hughes et al., 2001; Morhardt, 2010; Neu et al., 1998; Papaspyropoulos et al., 2010) used different summative approaches; to test the quantity and quality of sustainability reporting, they assigned weights to categories and topics of the GRI, thus deriving a “final mark” for each report. Our approach is dichotomous not polychotomous (Coy and Dixon, 2004), and so simpler, but not necessarily inferior, given the restricted take up and formative stages at which sustainability reporting is still.

This is the second time to use content analysis based on these indices; it was used to examine the reports from Newmont’s two plants in Ghana (paper by authors). In that study, it was found that the contents of the sustainability reports differ, even though similar headings are used to sectionalise the two websites. For the present study, we noted whether an aspect is reported somewhere on the website and include aspects from the UNDSD and the GRI framework. That is, there was no attempt to count or score the presence of sustainability information on the websites. Rather, what was reported in each plant was indicated using a checklist identifying the presence or absence of social responsibility information (Patten, 2002; Purushothaman et al., 2000).

The analysis of the content of sustainability reports was not meant to be comprehensive or exhaustive, or to measure quantitatively environmental citizenship reporting contents. Rather, the review sought to illustrate the diversity and scope of a multinational corporation’s sustainability reports and documents at the plant level. To capture differences in narrative, physical and monetary disclosures, the content of each sentence on the web pages was read (Hughes et al., 2001; Darrell and Schwartz, 1997). Documents downloaded from the websites of the selected plant were also read, and the presence of sustainability contents was noted and highlighted.

#### **4.3 Data**

On our data collection from the websites, we followed links from the parent’s website to “operations and projects”. This page links to each region and each plant’s website. We followed all links under each plant’s website pages that address the economic, social and environmental issues in our disclosure checklist. The plants’ websites were not structured strictly based on the GRI and the UNDSD format. Although most of the web pages had both written and visual messages, and only written data, both quantitative and qualitative, were

collected and used for this study because of the interpretative subjectivism of visual data (Steenkamp and Northcott, 2007).

The disclosures were then categorised according to the disclosure checklist comprising the elements of the UNDSD and the GRI models. The headings on the plants' websites are as follows: overview, operation facts, health and safety, environment, community, careers, reports, news and contact. In total, about 150 web pages and 95 documents were examined. The contents of these websites were then compared to the elements in the UNDSD and the GRI. We also searched for evidence of the three types of isomorphic forces in the disclosures on the plants' websites. This was done by conducting a cross comparison of the variations and similarities in the disclosures found on the websites (Table 5). We followed this method because sustainability reporting contents and patterns are legitimisation mechanisms in response to the societal and institutional pressures experienced by companies (de Villiers and Alexander, 2014).

Studies involving disclosures made on corporations' websites have the inherent challenge of websites changing frequently (van Staden and Hooks, 2007), necessitating rapid collection of data (Purushothaman et al., 2000). Consequently, all the websites were accessed in the short period from 11 September to 27 November 2015.

## 5 Results

We present most of our findings in this section in a tabular form, with each table presenting an element, category or sub-category of sustainability data (economic, environmental or social). This allows easy comparison and benchmarking. Each table has four main columnar sections with details in this order: aspects that fall under that category and whether information on sustainability was found in the narrative or in physical or monetary measures (Tables 2-4d below). The elements of sustainability recommended by the UNDSD and the GRI combined are in the “aspects” columns. If an aspect of sustainability was found on any page of the website or in the documents accessed, be it in narrative, physical or monetary form, the appropriate cell was shaded for African, Asian, Australian, North American and South American plants. To ascertain the extent of variations in disclosure, we did a cross comparison of all the regions using the shaded and unshaded areas under each aspect. Thus, the more shaded columns of aspects under a region, the more disclosures made by the plant in that region.

The economic aspect of sustainability covers economic performance, market presence, indirect economic impacts and procurement practices (Table 2). All plants reported on economic performance, market presence and indirect economic impacts of operations in both the narrative sections of their websites and in physical measures. All plants reported on economic performance in monetary terms. Plants in Africa, Australia and North America provided monetary measures of indirect economic impacts on the environment. Only the plants in Africa and Australia mentioned procurement activities, and these only in narratives.

Table 3a reports environmental aspects of material inputs. Material inputs include raw, auxiliary, packaging and operating materials, plus water and energy. With the exception of the South American plant, all the plants had narrative comments on raw materials, auxiliary materials, operating materials and water and energy consumption. The South American plant mentioned packaging materials and water inputs in their narratives. Physical measures were given for water inputs by all plants; for operating material inputs by all, except the South American site; for raw material inputs and energy usage by all, except the North American site; and for auxiliary material by the plants in Africa, Asia and Australia. None of the plants reported on raw material inputs in monetary terms.

On finished products, there were detailed reports by all plants in narrative, physical and monetary terms (Table 3b). Furthermore, narrative reports were available on by-products (such as copper and silver). The African, Asian and Australian plants provided physical measures of by-products. None of the plants reported monetary measures of the by-products.

**Table 2: Economic aspects reported**

Aspects	Narrative					Physical					Monetary				
	Africa	Asia	Austr.	N.Am.	S.Am.	Africa	Asia	Austr.	N.Am.	S.Am.	Africa	Asia	Austr.	N.Am.	S.Am.
Economic performance	██████	████	████		██████	██████	████	████		██████	██████	████	████		██████
Market presence	██████	████			██████	██████	████	████		██████	████				
Indirect economic impacts	██████	████	████		██████	██████	████	████		██████	██████	████	████		
Procurement practices	██████		████												

**Table 3a: Environmental aspects reported – Material Inputs**

Aspects	Narrative					Physical					Monetary				
	Africa	Asia	Austr.	N.Am.	S.Am.	Africa	Asia	Austr.	N.Am.	S.Am.	Africa	Asia	Austr.	N.Am.	S.Am.
Raw materials															
Auxiliary materials															
Packaging materials															
Operating materials															
Water															
Energy															

**Table 3b: Environmental aspects reported – Material Outputs (product)**

Aspects	Narrative					Physical					Monetary				
	Africa	Asia	Austr.	N.Am.	S.Am.	Africa	Asia	Austr.	N.Am.	S.Am.	Africa	Asia	Austr.	N.Am.	S.Am.
Products (including packaging)															
By-products (including packaging)															

Non-product outputs are listed in Table 3c. All plants reported narratively on solid waste, hazardous waste, wastewater, compliance, biodiversity and environmental grievance mechanisms. On air and noise emissions, all plants reported narratively, except the Asian site. All, except the Asian plant, reported in physical measures on solid waste and biodiversity. Some of the plants gave physical measures for hazardous waste, wastewater, air emissions, noise emissions and transport. The Asian plant did not report any physical measures. Apart from the South American site, which provided monetary reports on biodiversity and transport, no monetary reports on waste and emissions were found.

Labour practices include aspects listed in Table 4a. All plants reported on occupational health and safety and on training and education in narrative sections. All, except the North American plant, also reported narratively on employment, labour/management relations, diversity and equal opportunity, equal remuneration for women and men and labour practices grievance mechanisms. Only the South American plant reported on the supplier assessment for labour practices, both in the narratives and in physical measures. The South American plant reported in physical measures on all aspects of labour practices, and the Australian plant on all, except supplier assessment for labour practices and labour practices grievance mechanisms. The other plants had few physical measures. For reports in monetary terms, the Australian plant reported on four aspects; the Africa and American plants on one or two, respectively; and the Asian plant on none.

Social aspects to do with human rights are listed in Table 4b. In narrative reports, the Australian and the South American plants reported on all the aspects of human rights in the GRI, and the African plant on all, except supplier human rights assessment. The Asian plant also reported narratively on many of the human rights aspects, but the North American plant only mentioned investment in human rights in the narratives. The Asian and North American plants did not produce physical measures of human rights, and the other plants had few physical measures. All, except the Asian plant, provided monetary measures of investment in human rights.

**Table 3c: Environmental aspects reported – Non-product Outputs**

Aspects	Narrative					Physical					Monetary				
	Africa	Asia	Austr.	N.Am.	S.Am.	Africa	Asia	Austr.	N.Am.	S.Am.	Africa	Asia	Austr.	N.Am.	S.Am.
Solid waste															
Hazardous waste															
Wastewater															
Air emissions															
Noise emissions															
Biodiversity															■
Compliance															
Transport															■
Supplier environmental assessment															
Environmental grievance mechanisms	■	■	■	■	■					■					

**Table 4a: Social aspects reported – Labour practices reported**

Aspects	Narrative					Physical					Monetary				
	Africa	Asia	Austr.	N.Am.	S.Am.	Africa	Asia	Austr.	N.Am.	S.Am.	Africa	Asia	Austr.	N.Am.	S.Am.
Employment															
Labour/management relations															
Occupational health and safety															
Training and education															
Diversity and equal opportunity															
Equal remuneration for women and men															
Supplier assessment for labour practices															
Labour practices grievance mechanisms															

**Table 4b: Social aspects reported – Human rights reported**

Aspects	Narrative					Physical					Monetary				
	Africa	Asia	Austr.	N.Am.	S.Am.	Africa	Asia	Austr.	N.Am.	S.Am.	Africa	Asia	Austr.	N.Am.	S.Am.
Investment															
Non-discrimination															
Freedom of association and collective bargaining															
Child labour															
Forced or compulsory labour															
Security practices															
Indigenous rights assessment															
Supplier human rights assessment															
Human rights grievance mechanisms															

Social aspects to do with the communities in which mining firms are operating are listed in Table 4c. All plants reported narratively on local communities, public policy, compliance and emergency preparedness, and all, except the North American plant, reported on grievance mechanisms for impacts on society. However, no plant reported on anti-competitive behaviour and artisanal and small-scale mining, and only the African plant reported on resettlement. With the exception of the Asian site, all the plants reported physical and monetary measures of investment in local communities. There were few other physical and monetary measures found.

Social aspects to do with products and customers are listed in Table 4d. Only compliance was mentioned by all plants, and it was only in narratives. Product and service labelling were also mentioned in narrative sections of the African reports. No other product related social aspects were reported.

## **6 Theoretical and other implications**

We related in Section 3 that normative isomorphism takes place when companies incorporate the norms derived from the professionalisation of a field (DiMaggio and Powell, 1983; Mizruchi and Fein, 1999; Suddaby and Viale, 2011) and of inter-organisational networks. Norms developed during education are introduced to corporations, such as the encouragement of companies, to seek professional sustainability reporting guidance in the form of consultants and guidelines (de Villiers and Alexander, 2014).

Normative isomorphism is seen in this study, as all plants, except the Asian, disclosed that they voluntarily subscribe to international standards such as ISO 14001 and OHSAS 18001(Table 5). Again, all plants reported on most of the elements in the GRI and the UNDSD (Table 5), implying their adoption of global standards (KPMG, 2013; Mizruchi and Fein, 1999; Xiao et al., 2004). It could also be that, as a mining company that subscribes to international standard setting bodies, such as the GRI, the International Council on Mining and Metals and the Dow Jones Sustainability Index, the parent company has adopted accounting rules and corporate governance provisions that encourage all plants to report on elements of these standard setting groups as appropriate. Also, normative pressures from the GRI, ISO 14001 and other global sustainability guidelines may influence this convergence in sustainability reporting patterns (de Villiers and Alexander, 2014) among plants from different countries.

**Table 4c: Social aspects reported – Societal reporting**

Aspects	Narrative					Physical					Monetary				
	Africa	Asia	Austr.	N.Am.	S.Am.	Africa	Asia	Austr.	N.Am.	S.Am.	Africa	Asia	Austr.	N.Am.	S.Am.
Local communities	#	##	##	##	#			##	##	#			##	##	#
Anti-corruption		##	##		#										
Public policy	#	##	##	##	#										
Anti-competitive behaviour															
Compliance	#	##	##	##	#										#
Supplier assessment for impacts on society			##	##	#			##		#			##	##	
Grievance mechanisms for impacts on society	#	##	##	##	#					#					
Emergency preparedness	#	##	##	##	#										
Artisanal and small-scale mining															
Resettlement	#					#					#				
Closure planning	#		##	##	#			##				##	##		

**Table 4d: Social aspects reported – Product**

Aspects	Narrative					Physical					Monetary				
	Africa	Asia	Austr.	N.Am.	S.Am.	Africa	Asia	Austr.	N.Am.	S.Am.	Africa	Asia	Austr.	N.Am.	S.Am.
Customer health and safety															
Product and service labelling															
Marketing communications															
Customer privacy															
Compliance															
Materials stewardship															

Divisions of large corporate bodies are subject to a level of central control by the head office, which usually cuts across all subsidiaries (Boussebaa, 2015; de Jong et al., 2015). If the parent company is listed, the pressure increases as there are statutory requirements for specific disclosures to be available for investors (Khlif et al., 2015b; Maroun, 2015; Ross and Kovachev, 2009). In the case of Newmont Mining Corporation, each plant has website headings similar to those of the head office in North America (Table 5), although, as shown above, what is reported under those headings differs markedly among plants. All plants reported on economic performance, expressing it in narratives, physical measures and monetary terms on their websites (Table 2). This comprehensive reporting on economic aspects may be because the parent firm is listed on the New York Stock Exchange and thus must measure and report on economic performance for investors who will be most interested in that information (Milne and Gray, 2013; Ioannou and Serafeim, 2014). This is evidence of coercive isomorphism.

We reported in Section 3 that coercive isomorphism also plays a role by way of accounting and corporate governance rules in different countries (de Villiers and van Staden, 2011; de Villiers and Alexander, 2014; Maroun, 2015). The variability in reporting emphases as illustrated in Tables 2-4d above could indicate variations in legal requirements and accounting rules among the various countries reported (Bogdan et al., 2009; DiMaggio and Powell, 1983; DiMaggio, 1988). These variations could also arise from managerial discretion at each plant over the contents of sustainability reporting (de Villiers and van Staden, 2010, 2011).

As set out in Section 3, extant theory would lead us to believe that the amount of social and environmental disclosure has increased over the years, and this increased reporting is often qualitative, not quantitative (Adams and Parmenter, 1995; Jenkins and Yakovleva, 2006; Maroun, 2015). Similarly, most of the elements reported in this research were in the narratives, with some physical measures of the UNDSD and GRI elements (Tables 2-4d). There was little monetary information on sustainability aspects in the reports available on the websites. The most comprehensive reports, with narrative and both physical and monetary measures, were the economic reports on the websites (Table 2). Environmental reports were moderately comprehensive with mostly narratives and some physical measures (Tables 3a-c). Social aspects were reported mostly in narratives (Tables 4a-d). Many studies (de Villiers and Alexander, 2014; Guidry and Patten, 2012) attribute the volume of non-financial reporting to the extent to which preparers feel compelled to adhere to reporting standards as a result of

underlying isomorphic pressures and the need to create and manage stakeholder impressions (Atkins et al., 2015; Guidry and Patten, 2012; Maroun, 2015).

As presented in Section 3, extant theory would lead us to believe that companies benchmark their activities and disclosures with companies within their industry that are seen as demonstrating best practices (de Villiers and Alexander, 2014). Mimetic isomorphism is expected among companies that benchmark and endeavour to emulate the best practice disclosure of leading companies that they deem to be more legitimate and successful (DiMaggio and Powell, 1983). However, the company whose reporting we examined, Newmont Mining Corporation, is a global mining company. Its individual plants would seem less likely to be doing this type of benchmarking, but rather, the performance of each plant will be evaluated and they will be benchmarked against each other at the end of each year. Mimetic isomorphism may be seen between plants in relation to the plants' websites headings: each plant has similar website headings to the largest plant and head office (North America). However, the evidence of mimetic isomorphism was very limited as some plants have very little disclosure and do not replicate what others are doing under these similar headings. This contradicts the more detailed corporate social responsibility reporting strategy identified by de Villiers et al. (2014) in their inter-firm analysis of annual reports.

### ***6.1 Further implications***

As shown in Section 3, extant theory would lead us to believe that companies will report more and in more detail if managers feel under isomorphic pressure from external interest groups, such as shareholders (de Villiers and Alexander, 2014; de Villiers and van Staden, 2010; Frost and Wilmshurst, 1998; Tilt, 1994; Khlif et al., 2015a; Ross and Kovachev, 2009). For example, integrated reporting has resulted in both more disclosure and more integration between disclosure and corporate financial reports (Carels et al., 2013). In Newmont Mining's case, pressure to comply and conform has resulted in full disclosure (integrated reporting) at the parent company level, but this pressure was not evident at the plant level. Like any other multinational corporation, Newmont Mining Corporation's plants are subsidiaries and do not prepare comprehensive environmental reports on their own. Rather, they gather sustainability data and pass them onto the parent company for final reports to be created. Therefore, the subsidiaries only reported on selected issues relevant to their particular location, as countries have different rules, laws and stakeholders (Table 5). Consequently, there were variations in the contents of the reports among the plants.

The largest plant (in North America) was found to be the one with the least reporting on the triple bottom line elements. This could be because of the North American litigious environment (Buhr and Freedman, 2001). Thus, extant studies have shown that not just size affects sustainability reporting but “a litigious environment also reduces the amount of voluntary disclosure provided as certain information can provide fuel for a lawsuit” (p. 312). This contradicts other studies (Gallo and Christensen, 2011; Ross and Kovachev, 2009) that associate sustainability reporting only with the size of a company. In the case of subsidiaries of one large corporation, sustainability reporting may be less related to size than to the geography, political and legal systems (coercive pressure) at the plant level.

Some aspects of the UNDSD and GRI measures were repeated in different documents. As suggested by Waddock (2004) and Morsing et al. (2008), these repetitions could be because aspects of sustainability sometimes overlap. For instance, there were several reports on an agricultural project for community development in Africa, Asia and South America (see Table 5). Such projects could also result in biodiversity issues and vice versa, making it both a social and a community sustainability project. Consequently, documents and websites reporting on such matters would include it in both community and social aspects.

Prior studies have shown that the cultural set up of the individual countries in which an organisation is located affects the contents of sustainability reporting (Fifka, 2013, Khelif et al., 2015a). For instance, in our study, while health and safety issues on malaria and malnutrition were reported by plants in developing countries such as Ghana, Peru and Indonesia, such reports were not found on websites of advanced economies such as Australia and the USA, which do not have challenges with malaria and malnutrition (Table 5). Consequently, we establish that even within the same organisation, there is heterogeneity in the content of reports at the level of operations in different countries.

**Table 5: Evidence of institutional isomorphism in sustainability disclosures on plants' websites**

Type of Isomorphism	Africa	Asia	Australasia	North America	South America
<b>Coercive Location-specific environmental regulations</b>	“The Ahafo Mine adheres to all legal requirements, environmental standards, policies and procedures. We work closely with government agencies, including the Environmental Protection Agency (EPA) and WRC to develop, implement and audit environmental programmes”.	“Batu Hijau is one of the largest copper mines in the world and has a strong commitment to safety. Throughout the mine life, PTNNT’s safety performance has received a number of awards and recognition from the Indonesian government”.	“Whether it is management of water, cyanide, energy, noise, or dust emissions, our systems and processes at Boddington ensure we meet or exceed government regulations...”	“All of Newmont’s Nevada sites, facilities and projects are subject to environmental regulations.” “...submitted an exploration Plan of Operations to the Bureau of Land Management (BLM) and Nevada Division of Environmental Protection (NDEP).”	“We comply with all laws and regulations applicable to the mining sector and work with the Ministry of Energy and Mines (MEM), Ministry of Health (Digesa), Ministry of Education through the National Institute of Culture (INC) and the Ministry of Agriculture.”
<b>Coercive Foundations and programmes established to meet the needs of individual communities</b>	“...we established the Newmont Ahafo Development Foundation (NADef) to support local sustainable community development projects in the 10 communities near the mine...” “...we also distribute treated mosquito nets, insecticide spray and repellents.” “... we assist impacted farmers to acquire new lands and then provide free farm inputs and professional agricultural extension services.”	“PTNNT’s community development programs are based on several core principles...” “...Some of the many programs that Batu Hijau has in place include: Malaria control, Agribusiness development including rice and cash crops, fisheries, livestock and irrigation development...”	“The Asthma Foundation provides education, support and training throughout Western Australia...” “As part of our strong relationship and commitment with the Aboriginal People of Australia, and in recognition of their native title rights...”	“The Newmont Legacy Fund, a 501 (c) (3) tax-exempt organization, was formed to create long-term community sustainability across northern Nevada.”	“Yanacocha created ALAC, an organization that promotes sustainable development in the Cajamarca region, in line with Yanacocha’s principles of social responsibility. ...We also have funded programs to reduce malnutrition and increase food production”.

<b>Normative</b> Voluntary commitment to international standards	“Ahafo has been OSHAS 18001 certified since 2010. We were recertified in June, 2013”.	“PTNNT is committed to meeting and/ or exceeding Indonesian and global occupational safety requirements including ISO 14001 and OHSAS 18001 standards”.	“Other initiatives and leading sustainability organisations we voluntarily commit to include: ISO 14001 and OHSAS 18001.”	<i>No specific international safety standards were mentioned on this website</i>	“Yanacocha became the first large-scale mine to receive ISO 14001 international certification for our entire mining operation.”
<b>Normative / Coercive / Mimetic</b> Similar headings that conform with the elements of the GRI and the UNDSD index	overview, operation facts, health and safety, environment, community, careers, reports, news and contact	overview, operation facts, health and safety, environment, community, careers, news and contact	overview, operation facts, health and safety, environment, community, careers, reports and contact	overview, operation facts, history, health and safety, environment, community, careers, reports, news and contact	overview, operation facts, health and safety, environment, community, careers, reports, news and contact

## **7      Conclusions**

This study examined the contents of sustainability reporting information publicly available at a more detailed level (websites of individual plants) of a multi-national mining firm operating in five continents: Africa, Asia, Australia, North America and South America. Narrative, physical and monetary reporting on sustainability found on these websites was benchmarked against each other using the UNDSD, and the GRI reporting elements and findings were analysed using institutional theory.

We argued that activities in the mining sector affect every sustainability aspect: economic, social and environmental. Thus, sustainability disclosure, i.e. reporting information about companies' interactions with the environment and affected societies, serves as a critical instrument of communication between business and society. We found that the plants in Australia, South America and Africa reported on more aspects than the Asian and North American plants. Most of the reports were in narratives, with some physical measures and very limited monetary information. Although all the plant websites had the same website headings, the contents of the reports differed. All the websites reported comprehensively on the economic aspects of the GRI. This implies that at the subsidiary level, specific characteristics, such as managerial discretion, social and environmental context, do influence sustainability reporting contents.

Institutional isomorphism provides an explanation for such similarities in patterns but variations in sustainability contents at the detailed level. The variations in contents of the social and environmental aspects are because of differences in individual country legislation, managerial discretion and cultural interests. As evidence of coercive isomorphism, pressure from the parent company influences the economic reporting contents and the overall categories of the reports while pressure from stakeholders close to the plants creates variations in reporting contents.

There are times when companies follow early adopters from the same sector if they are uncertain about new technology. Most mining firms are now conforming to the reporting requirements of the GRI voluntarily, which might be seen as a fashion. In this study, all plants had similar headings to those of the company headquarters in North America, an evidence of mimetic isomorphism.

When there is diversity among environmental reports across and within multinationals, it leads to lack of comparability; this makes it difficult for top-level managers, shareholders and

investors to determine which companies or subsidiaries are more environmentally responsive. This is because such disparities have bearings on managerial and investment decisions. Even though recommendations from professional groups such as the GRI and the UNDSD have been of immense help, there is still more to be done. For example, professionals could collaborate with managers responsible for preparing sustainability reports and who work essentially as sustainability accountants to develop templates, measures and other standards that can be used in overcoming these diversities.

The conclusions above are based on the findings from the websites, interpreted using institutional theory and compared to the literature reviewed for this study. However, such theories and assumptions are vulnerable to misinterpretation as the real situation could be different. Consequently, there is the need for researchers to get closer to have a look empirically at reasons why there are disparities in sustainability reporting between plants belonging to one mining firm. Furthermore, the researchers recommend that further studies be conducted to find out why mining firms prepare sustainability reports, for whom they compile the reports, how the reports are used and by whom and how sustainability reporting could be enhanced.

## References

- Adams, P.D. and Parmenter, B.R. (1995), "An applied general equilibrium analysis of the economic effects of tourism in a quite small, quite open economy", *Applied Economics*, Vol. 27 No. 10, pp. 985-994.
- Adelopo, I., Cea Moure, R., Vargas Preciado, L. and Obalola, M. (2012), "Determinants of web-accessibility of corporate social responsibility communications", *Journal of Global Responsibility*, Vol. 3 No. 2, pp. 235-247.
- Albelda, E. (2011), "The role of management accounting practices as facilitators of the environmental management: evidence from EMAS organisations", *Sustainability Accounting, Management and Policy Journal*, Vol. 2 No. 1, pp. 76-100.
- Atkins, J.F., Solomon, A., Norton, S., and Joseph, N.L. (2015), "The emergence of integrated private reporting", *Meditari Accountancy Research*, Vol. 23 No.1, pp. 28-61.
- Azapagic, A., Perdan, S. and Clift, R. (2004), *Sustainable Development in Practice: Case Studies for Engineers and Scientists*, Wiley, E-book.

- Ball, R. (2006), "International Financial Reporting Standards (IFRS): pros and cons for investors", *Accounting and Business Research*, Vol. 36 No. 1, pp. 5-27.
- Bebbington, A., Hinojosa, L., Bebbington, D.H., Burneo, M.L. and Warnaars, X. (2008), "Contention and ambiguity: mining and the possibilities of development", *Development and Change*, Vol. 39 No. 6, pp. 887-914.
- Bebbington, J., Unerman, J. and O'Dwyer, B. (2014), *Sustainability Accounting and Accountability*, 2nd ed., Routledge, London.
- Beets, S.D., and Souther, C.C. (1999), "Corporate environmental reports: the need for standards and an environmental assurance service", *Accounting Horizons*, Vol. 13 No. 2, pp. 129-145.
- Bland, A. (2014), "The environmental disaster that is the gold industry", available at: <http://www.smithsonianmag.com/science-nature/environmental-disaster-gold-industry-180949762/#Vv0OG8oq2PcxGpl3.99> (accessed 8 July 2015).
- Bogdan, V., Pop, C.M., Popa, D.N., and Scorte, C. (2009), "Voluntary internet financial reporting and disclosure: a new challenge for Romanian companies", *Annals of the University of Oradea, Economic Science Series*, Vol. 18 No. 3, pp. 770-778.
- Bouma, J.J. and Wolters, T. (1998), *Management Accounting and Environmental Management: A Survey among 84 European Companies*, Erasmus Centre for Environmental Studies, Rotterdam.
- Boussebaa, M. (2015), "Control in the multinational enterprise: The polycentric case of global professional service firms", *Journal of World Business*, Vol. 50 No. 4, pp. 696-703.
- Buhr, N. and Freedman, M. (2001), "Culture, institutional factors and differences in environmental disclosure between Canada and the United States", *Critical Perspectives on Accounting*, Vol. 12 No. 3, pp. 293-322.
- Carels, C., Maroun, W., and Padia, N. (2013), "Integrated reporting in the South African mining sector", *Corporate Ownership and Control*, Vol. 11 No. 1, pp. 991-1005.
- Carpenter, V.L. and Feroz, E.H. (1992), "GAAP as a symbol of legitimacy: New York State's decision to adopt generally accepted accounting principles", *Accounting, Organizations and Society*, Vol. 17 No. 7, pp. 613-643.

- Chapman, R. and Milne, M.J. (2004), "The triple bottom line: how New Zealand companies measure up", *International Journal for Sustainable Business*, Vol. 11 No. 2, pp. 237-250.
- Cho, C.H., Guidry, R.P., Hageman, A.M. and Patten, D.M. (2012), "Do actions speak louder than words? An empirical investigation of corporate environmental reputation", *Accounting, Organizations and Society*, Vol. 37 No. 1, pp. 14-25.
- Choi, J.S. (1998), "An investigation of the initial voluntary environmental disclosure made in Korean semi-annual financial reports", Paper presented at 2nd Asia Pacific Interdisciplinary Research in Accounting Conference, Osaka, Japan, 4-6 August.
- Clarkson, P.M., Li, Y., Richardson, G.D. and Vasvari, F.P. (2008), "Revisiting the relation between environmental performance and environmental disclosure: an empirical analysis", *Accounting, Organizations and Society*, Vol. 33 No. 4, pp. 303-327.
- Cooper, S.M. and Owen, D.L. (2007), "Corporate social reporting and stakeholder accountability: the missing link", *Accounting, Organizations and Society*, Vol. 32 No. 7, pp. 649-667.
- Cormier, D. and Magnan, M. (2004), "The impact of the web on information and communication modes: the case of corporate environmental disclosure", *International Journal of Technology Management*, Vol. 27 No. 4, pp. 393-416.
- Coy, D. and Dixon, K. (2004). "The public accountability index: crafting a parametric disclosure index for annual reports", *The British Accounting Review*, Vol. 36 No. 1, 79-106.
- Darrell, W. and Schwartz, B.N. (1997), "Environmental disclosures and public policy pressure", *Journal of Accounting and Public Policy*, Vol. 16 No. 2, pp. 125-154.
- Daub, C-H. (2007), "Assessing the quality of sustainability reporting: an alternative methodological approach", *Journal of Cleaner Production*, Vol. 15 No. 1, pp. 75-85.
- De Franco, G., Kothari, S.P., and Verdi, R.S. (2011), "The benefits of financial statement comparability", *Journal of Accounting Research*, Vol. 49 No. 4, pp. 895-931.
- De Jong, G., van Dut, V., Jindra, B. and Marek, P. (2015), "Does country context distance determine subsidiary decision-making autonomy? Theory and evidence from European transition economies", *International Business Review*, Vol. 24 No. 5, pp. 874-889.

- De Villiers, C. and Alexander, D. (2014), “The institutionalisation of corporate social responsibility reporting”, *The British Accounting Review*, Vol. 46 No. 2, pp. 198-212.
- De Villiers, C. and van Staden, C.J. (2010), “Shareholders' requirements for corporate environmental disclosures: a cross country comparison”, *British Accounting Review*, Vol. 42 No. 4, pp. 227–240.
- De Villiers, C. and van Staden, C.J. (2011), “Where firms choose to disclose voluntary environmental information”, *Journal of Accounting and Public Policy*, Vol. 30 No. 6, pp. 504-525.
- De Villiers, C., Low, M. and Samkin, G. (2014), “The institutionalisation of mining company sustainability disclosures”, *Journal of Cleaner Production*, Vol. 84, pp.51-58.
- De Villiers, C., Naiker, V. and Van Staden, C.J. (2011), “The effect of board characteristics on firm environmental performance”, *Journal of Management*, Vol. 37 No. 6, pp. 1636–1663.
- Deegan, C. and Rankin, M. (1997), “The materiality of environmental information to users of annual reports”, *Accounting, Auditing and Accountability Journal*, Vol. 10 No. 4, pp. 562-583.
- Deephouse, D.L. (1996), “Does isomorphism legitimate?”, *Academy of Management Journal*, Vol. 39 No. 4, pp. 1024-1039.
- Delmas, M.A. (2002), “The diffusion of environmental management standards in Europe and in the United States: an institutional perspective”, *Policy Sciences*, Vol. 35 No. 1, pp. 91-119.
- DiMaggio, P.J. (1988), “Interest and agency in institutional theory”, in Zucker, L.G. (Ed.), *Institutional Patterns and Organizations*, Ballinger, Cambridge, MA, pp. 3-22.
- DiMaggio, P.J. and Powell, W.W. (1983), “The iron cage revisited: institutional isomorphism and collective rationality in organizational fields”, *American Sociological Review*, Vol. 48, pp.147-160
- DiMaggio, P.J. and Powell, W.W. (Eds.). (1991), “Introduction”, in *The New Institutionalism in Organizational Analysis*, University of Chicago Press, Chicago, pp. 1-38.
- Doorasamy, M. and Garbharran, H. (2015), “The role of environmental management accounting as a tool to calculate environmental costs and identify their impact on a

company's environmental performance", *Asian Journal of Business and Management*, Vol. 3 No. 1, pp. 8-30.

Elkington, J. (1997), *Cannibals with Forks: The Triple Bottom Line of 21st Century Business*, Capstone Publishing Ltd, Oxford.

Ferreira, A., Moulang, C. and Hendro, B. (2010), "Environmental management accounting and innovation: an exploratory analysis", *Accounting, Auditing and Accountability Journal*, Vol. 23 No. 7, pp. 920-948.

Fifka, M.S. (2013), "Corporate responsibility reporting and its determinants in comparative perspective: a review of the empirical literature and a meta-analysis", *Business Strategy and the Environment*, Vol. 22 No. 1, pp. 1-35.

Fifka, M.S. and Drabble, M. (2012), "Focus and standardization of sustainability reporting: a comparative study of the United Kingdom and Finland", *Business Strategy and the Environment*, Vol. 21, No. 7, pp. 455-474.

Fifka, M.S. and Idowu, S.O. (2013), "Sustainability and social innovation", in *Social Innovation: Solution for Sustainable Future*, Berlin: Springer, pp. 309-315

Fonseca, A. (2010), "How credible are mining corporations' sustainability reports? A critical analysis of external assurance under the requirements of the international council on mining and metals", *Corporate Social Responsibility and Environmental Management*, Vol. 17 No. 6, pp. 355-370.

Fonseca, A., Macdonald, A., Dandy, E. and Valenti, P. (2011), "The state of sustainability reporting at Canadian universities", *International Journal of Sustainability in Higher Education*, Vol. 12 No. 1, pp. 22-40.

Fonseca, A., McAllister, M.L. and Fitzpatrick, P. (2014), "Sustainability reporting among mining corporations: a constructive critique of the GRI approach", *Journal of Cleaner Production*, Vol. 84, pp. 70-83.

Font, X., Walmsley, A., Cogotti, S., McCombes, L. and Häusler, N. (2012), "Corporate social responsibility: the disclosure–performance gap", *Tourism Management*, Vol. 33 No. 6, pp. 1544-1553.

Frost, G.R. and Wilmshurst, T.D. (1998), "Evidence of environmental accounting in Australian Companies", *Asian Review of Accounting*, Vol. 6 No. 2, pp. 163-180.

Gallo, P.J. and Christensen, L.J. (2011), “Firm size matters: an empirical investigation of organizational size and ownership on sustainability-related behaviors”, *Business and Society*, Vol. 50 No. 2, pp. 315-349.

Global Reporting Initiative (GRI) (2015) “Sustainability reporting guidelines”, available at <https://www.globalreporting.org/resourcelibrary/GRIG4-Part1-Reporting-Principles-and-Standard-Disclosures.pdf> (retrieved on 29 June 2015).

Guenther, E., Hoppe, H. and Poser, C. (2006), “Environmental corporate social responsibility of firms in the mining and oil and gas industries”, *Greener Management International*, Vol. 2006 No. 53, pp. 6-25.

Guidry, R.P. and Patten, D.M. (2012), “Voluntary disclosure theory and financial control variables: an assessment of recent environmental disclosure research”, *Accounting Forum*, Vol. 36 No. 2, pp. 81-90.

Haveman, H.A. (1993), “Follow the leader: mimetic isomorphism and entry into new markets”, *Administrative Science Quarterly*, Vol. 38 No.4, pp. 593-627.

Healy, P.M., and Palepu, K.G. (2001), “Information asymmetry, corporate disclosure, and the capital markets: a review of the empirical disclosure literature”, *Journal of Accounting and Economics*, Vol. 31 No.1, pp. 405-440.

Heugens, P.P. and Lander, M.W. (2009), “Structure! Agency! (and other quarrels): a meta-analysis of institutional theories of organization”, *Academy of Management Journal*, Vol. 52 No. 1, pp. 61-85.

Holcomb, J.L., Upchurch, R.S. and Okumus, F. (2007), “Corporate social responsibility: what are top hotel companies reporting?”, *International Journal of Contemporary Hospitality Management*, Vol. 19, No. 6, pp. 461-475.

Hsieh, H.F. and Shannon, S.E. (2005), “Three approaches to qualitative content analysis”, *Qualitative Health Research*, Vol. 15 No. 9, pp.1277-1288.

Hughes, S.B., Anderson, A. and Golden, S. (2001), “Corporate environmental disclosures: are they useful in determining environmental performance?”, *Journal of Accounting and Public Policy*, Vol. 20 No. 3, pp. 217-240.

International Federation of Accountants. (2005), “*International Guidance Document: Environmental Management Accounting*”, available at:

<https://www.ifac.org/publications-resources/international-guidance-document-environmental-management-accounting> (accessed 10 November 2016).

Ioannou, I. and Serafeim, G. (2014), “The consequences of mandatory corporate sustainability reporting: evidence from four countries”, *Harvard Business School Research Working Paper* (11-100).

Jaskoski, M. (2011), *Resource Conflicts: Emerging Struggles over Strategic Commodities in Latin America*, Center on Contemporary Conflict, Monterey, CA.

Jenkins, H. and Yakovleva, N. (2006), “Corporate social responsibility in the mining industry: exploring trends in social and environmental disclosure”, *Journal of Cleaner Production*, Vol. 14 No. 3, pp. 271-284.

Joseph, C., Pilcher, R. and Taplin, R. (2014), “Malaysian local government internet sustainability reporting”, *Pacific Accounting Review*, Vol. 26 No. 1/2, pp. 75-93.

Khelif, H., Guidara, A. and Souissi, M. (2015a), “Corporate social and environmental disclosure and corporate performance: evidence from South Africa and Morocco”, *Journal of Accounting in Emerging Economies*, Vol. 5 No.1, pp. 51-69.

Khelif, H., Hussainey, K. and Achek, I. (2015b), “The effect of national culture on the association between profitability and corporate social and environmental disclosure: a meta-analysis”, *Meditari Accountancy Research*, Vol. 23 No. 3, pp. 296-321.

Kolk, A. (2003), “Trends in sustainability reporting by the Fortune Global 250”, *Business Strategy and the Environment*, Vol. 12, No. 5, pp. 279-291.

Kolk, A. (2005), “Environmental reporting by multinationals from the Triad: convergence or divergence?”, *Management International Review*, Vol. 45 No. 1, pp. 145-166.

Kothari, S.P. (2001), “Capital markets research in accounting”, *Journal of Accounting and Economics*, Vol. 31 No. 1-3, pp. 105-231.

KPMG (2013), *The KPMG Survey of Corporate Responsibility Reporting 2013*, KPMG International Global Sustainability Services, Amsterdam.

KPMG (2015), *Currents of Change: The KPMG Survey of Corporate Responsibility Reporting 2015*, KPMG International Global Sustainability Services, Amsterdam.

Krippendorff, K. (1980), *Content Analysis: An Introduction to its Methodology*, Sage, Beverly Hills, CA.

- Lodhia, S. (2014), "Factors influencing the use of the World Wide Web for sustainability communication: an Australian mining perspective", *Journal of Cleaner Production*, Vol. 84 No. 2014, pp. 142-154.
- Marimon, F., del Mar Alonso-Almeida, M., del Pilar Rodríguez, M. and Alejandro, K.A.C. (2012), "The worldwide diffusion of the global reporting initiative: what is the point?", *Journal of Cleaner Production*, Vol. 33, pp. 132-144.
- Maroun, W. (2015), "Culture, profitability, non-financial reporting and a meta-analysis: Comments and observations", *Meditari Accountancy Research*, Vol. 23 No.3, pp. 322-330.
- Milne, M.J. and Gray, R. (2013), "W(h)ither ecology? The triple bottom line, the global reporting initiative, and corporate sustainability reporting", *Journal of Business Ethics*, Vol. 118 No. 1, pp. 13-29.
- Mizruchi, M.S. and Fein, L.C. (1999), "The social construction of organizational knowledge: a study of the uses of coercive, mimetic, and normative isomorphism", *Administrative Science Quarterly*, Vol. 44 No. 4, pp. 653-683.
- Moneva, J.M., Archel, P. and Correa, C. (2006), "GRI and the camouflaging of corporate unsustainability", *Accounting Forum*, Vol. 30 No. 2, pp. 121-137.
- Morhardt, J.E. (2010), "Corporate social responsibility and sustainability reporting on the internet", *Business Strategy and the Environment*, Vol. 19 No. 7, pp. 436-452.
- Morhardt, J.E., Baird, S. and Freeman, K. (2002), "Scoring corporate environmental and sustainability reports using GRI 2000, ISO 14031 and other criteria", *Corporate Social Responsibility and Environmental Management*, Vol. 9 No. 4, pp. 215-233.
- Mori Junior, R., Best, P.J. and Cotter, J. (2014), "Sustainability reporting and assurance: a historical analysis on a world-wide phenomenon", *Journal of Business Ethics*, Vol. 120 No. 1, pp. 1-11.
- Morsing, M., Schultz, M. and Nielsen, K.U. (2008), "The 'Catch 22' of communicating CSR: findings from a Danish study", *Journal of Marketing Communications*, Vol. 14 No. 2, pp. 97-111.
- Murguía, D.I. and Böhling, K. (2013), "Sustainability reporting on large-scale mining conflicts: the case of Bajo de la Alumbrera, Argentina", *Journal of Cleaner Production*, Vol. 41, pp. 202-209.

Neu, D., Warsame, H. and Pedwell, K. (1998), “Managing public impressions: environmental disclosures in annual reports”, *Accounting, Organizations and Society*, Vol. 23 No. 3, pp. 265-282.

Newmont Mining Corporation (2015), “Operations and projects”, available at: <http://www.newmont.com/operations-and-projects/africa/default.aspx> (accessed 31 August 2015).

Papaspypopoulos, K.G., Blioumis, V., and Christodoulou, A.S. (2010), “Environmental reporting in Greece: the Athens stock exchange”, *African Journal of Business Management*, Vol. 4 No. 13, pp. 2693-2704.

Parker, L.D. (2005), “Social and environmental accountability research: a view from the commentary box”, *Accounting, Auditing and Accountability Journal*, Vol. 18 No. 6, pp. 842-860.

Patten, D.M. (2002), “Give or take on the internet: an examination of the disclosure practices of insurance firm web innovators”, *Journal of Business Ethics*, Vol. 36 No. 3, pp. 247-259.

Pellegrino, C. and Lodhia, S. (2012), “Climate change accounting and the Australian mining industry: exploring the links between corporate disclosure and the generation of legitimacy”, *Journal of Cleaner Production*, Vol. 36, pp. 68-82.

Perego, P. (2009), “Causes and consequences of choosing different assurance providers: an international study of sustainability reporting”, *International Journal of Management*, Vol. 26 No. 3, pp. 412-425.

Perez, F. and Sanchez, L.E. (2009), “Assessing the evolution of sustainability reporting in the mining sector”, *Environmental Management*, Vol. 43 No. 6, pp. 949-961.

Purushothaman, M., Tower, G., Hancock, R. and Taplin, R. (2000), “Determinants of corporate social reporting practices of listed Singapore companies”, *Pacific Accounting Review*, Vol. 12 No. 2, pp. 101-133.

Ross, L. and Kovachev, I. (2009), *Management Accounting Tools for Today and Tomorrow*, CIMA, London.

Santos, S., Rodrigues, L.L., and Branco, M.C. (2016), “Online sustainability communication practices of European seaports”, *Journal of Cleaner Production*, Vol. 112 No. 4, pp. 2935-2942.

- Schmidheiny, S. (2006), “A view of corporate citizenship in Latin America”, *The Journal of Corporate Citizenship*, Vol. 21, pp. 21-25.
- Schueler, V., Kuemmerle, T. and Schröder, H. (2011), “Impacts of surface gold mining on land use systems in Western Ghana”, *Ambio*, Vol. 40 No. 5, pp. 528-539.
- Scott, W.R. (2004), “Institutional theory: contributing to a theoretical research program”, in Smith, K.G. and Hitt, M.A. (Eds), *Great Minds in Management: The Process of Theory Development*, Oxford University Press, Oxford, pp. 1-47.
- Sigrah, K.R. and King, S.M. (2001), *Te Rii ni Banaba*, Suva: Institute of South Pacific Studies, University of the South Pacific.
- Sinclair, P. and Walton, J. (2003), “Environmental reporting within the forest and paper industry”, *Business Strategy and the Environment*, Vol. 12 No. 5, pp. 326-337.
- Steenkamp, N. and Northcott, D. (2007), “Content analysis in accounting research: the practical challenges”, *Australian Accounting Review*, Vol. 17 No. 3, pp. 12-25.
- Streeck, W. and Thelen, K.A. (2005), “Introduction: institutional change in advanced political economies”, in *Beyond Continuity*, Oxford University Press, Oxford, pp. 1-39.
- Suddaby, R. and Viale, T. (2011), “Professionals and field-level change: institutional work and the professional project”, *Current Sociology*, Vol. 59 No. 4, pp. 423-442.
- Tagesson, T., Blank, V., Broberg, P. and Collin, S.O. (2009), “What explains the extent and content of social and environmental disclosures on corporate websites: a study of social and environmental reporting in Swedish listed corporations”, *Corporate Social Responsibility and Environmental Management*, Vol. 16 No. 6, pp. 352-364.
- The Herald Team (2013), “Newmont selected to Dow Jones Sustainability world index”, available at: <http://theheraldghana.com/newmont-selected-dow-jones-sustainability-world-index/> (accessed 1 November, 2015).
- Tilt, C.A. (1994), “The influence of external pressure groups on corporate social disclosure: some empirical evidence”, *Accounting, Auditing and Accountability*, Vol. 7 No. 4, pp. 47-72.
- United Nations Division for Sustainable Development (UNDSD) (2001), “Environmental management accounting: Procedures and principles”, available at:

<http://www.un.org/esa/sustdev/sdissues/technology/estema1.htm> (accessed 10 May 2015).

Vaismoradi, M., Turunen, H. and Bondas, T. (2013), “Content analysis and thematic analysis: implications for conducting a qualitative descriptive study”, *Nursing & Health Sciences*, Vol. 15 No. 3, pp. 398-405.

Van Berkel, R. (2000), “Integrating the environmental and sustainable development agendas into minerals education”, *Journal of Cleaner Production*, Vol. 8, No. 5, pp. 413-423.

Van Staden, C.J. and Hooks, J. (2007), “A comprehensive comparison of corporate environmental reporting and responsiveness”, *The British Accounting Review*, Vol. 39 No. 3, pp. 197-210.

Waddock, S. (2004), “Creating corporate accountability: foundational principles to make corporate citizenship real”, *Journal of Business Ethics*, Vol. 50 No. 4, pp. 313-327.

Walls, J.L. and Hoffman, A.J. (2013), “Exceptional boards: environmental experience and positive deviance from institutional norms”, *Journal of Organizational Behavior*, Vol. 34 No. 2, pp. 253-271.

Wanderley, L.S.O., Lucian, R., Farache, F. and de Sousa Filho, J.M. (2008), “CSR information disclosure on the web: a context-based approach analysing the influence of country of origin and industry sector”, *Journal of Business Ethics*, Vol. 82 No. 2, pp. 369-378.

Warhurst, A. (2001), “Corporate citizenship and corporate social investment”, *Journal of Corporate Citizenship*, Vol. 2001 No. 1, pp. 57-73.

Weeramantry, C.G. (1992). *Nauru: Environmental Damage under International Trusteeship*. Oxford University Press, Melbourne.

World Bank Group Mining Department (2002), *Treasure or Trouble? Mining in Developing Countries*, World Bank Group, Washington, DC, available at: <http://siteresources.worldbank.org/INTOGMC/Resources/treasureortrouble.pdf> (accessed 14 June 2015)

Xiao, T., Guha, J., Boyle, D., Liu, C.Q. and Chen, J. (2004), “Environmental concerns related to high thallium levels in soils and thallium uptake by plants in southwest Guizhou, China”, *Science of the Total Environment*, Vol. 318 No. 1, pp. 223-244.

## Appendix 1: United Nations Division for Sustainable Development Index

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

(Source: UNDSD, 2001)

## Appendix 2: Global Reporting Initiative Index – Mining and Metals Sector

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

(Source: GRI, 2015)