**Biodiversity reporting by the South African food and mining sectors**

**Abstract**

This study examines to what extent South African companies listed on the local stock exchange in the mining and food producer and retail sectors are including biodiversity-related issues in their integrated and sustainability reports. Consistent with the findings of a special edition of ***Accounting, Auditing and Accountability Journal* (AAAJ), the research finds few examples of detailed reporting on biodiversity issues. This is despite the fact that South Africa has a well-established code of corporate governance, a long history of including non-financial information in corporate reports and has been an advocate of the integrated reporting movement. As such, the study calls into question the sincerity of companies in the two sectors under review when it comes to providing balanced accounts of their management of non-financial capital as recommended by the country’s codes on governance and the International Integrated Reporting Council. Identified weaknesses also beg the question: why are institutional investors, regulators and NGO’s not holding these organisations accountable for a lack of transparent reporting on very important environmental issues which pose a significant risk to corporate sustainability?**

**Key words**: biodiversity, food industry, integrated reporting, mining industry, South Africa, sustainability

**1: Introduction**

Species are becoming extinct 1000 times faster than indicated by the historical trends (Millennium Ecosystem Assessment, 2005; Rimmel and Jonäll, 2013) largely as a result of climate change and, interconnected with the this, human activity (van Liempd and Busch, 2013). A recently published special edition of *Accounting, Auditing and Accountability Journal* reiterates the massive risk posed by habitat loss, changing weather patterns and mass extinction of species (Jones and Solomon, 2013). Nevertheless, what little research has been done on how organisations are dealing with these challenges finds that many companies in some of the world’s leading economies are marginalising biodiversity reporting (Grabsch et al, 2012; Rimmel and Jonäll, 2013; van Liempd and Busch, 2013). This is true even after the release of scientific evidence pointing to environmental catastrophe (Intergovernmental Panel on Climate Change, 2013 [IPCC], 2013) and the inevitable social, economic and political turmoil which will result.

In this context, the objective of this research is to explore the extent of biodiversity reporting by two high-biodiversity risk sectors in South Africa. We concentrate specifically on this jurisdiction because, while there has been at least some work on biodiversity reporting in the E.U and New Zealand (for examples see Jones, 1996; Gray, 2006; Grabsch et al, 2012; Jones and Solomon, 2013; Samkin et al, 2014), there is nothing from a South African perspective. This is despite the fact that the country is dependent on its natural and environmental resources for economic growth and boasts one of the world’s richest collection of biomes (Department of Environmental Affairs et al, 2013). At the same time, South Africa’s codes of corporate governance are well-established (Solomon, 2010; Maroun et al, 2014) and deal specifically with the importance of non-financial reporting including environmental sustainability (Institute of Directors in Southern Africa [IOD], 2009). What is more, the country’s stock exchange was the first in the world to introduce in 2010 a requirement for listed companies to prepare an integrated report (which provides a balanced account of financial and non-financial metrics) or justify the reasons for not doing so (Johannesburg Stock Exchange [JSE], 2013; Solomon and Maroun, 2012). In this way, South Africa – despite being a developing economy – is an example of a jurisdiction where non-financial reporting and corporate governance is well developed (see, for example, de Villiers and Barnard, 2000; Integrated Reporting Committee of South Africa, 2011; Solomon and Maroun, 2012; Carels et al, 2013; Maroun et al, 2014) and where one may reasonably expect to find more emphasis on biodiversity reporting.

Examining biodiversity disclosures of some of South Africa’s largest organisations addresses the call for additional research from different settings to provide a better assessment of the international effort to report on significant environmental challenges (Jones and Solomon, 2013). At the same time, this study makes an important contribution by assessing critically the state of integrated reporting by South African organisations with a specific focus on biodiversity issues.

The remainder of this paper is structured as follows: Section 2 discusses biodiversity reporting, the relevance of biodiversity management in South Africa. The intention is not to provide a comprehensive assessment of accounting for biodiversity but to use some of the latest research to develop a disclosure matrix to analyse South African integrated and sustainability reports, as explained in Section 3. Section 4 discusses the method. Section 5 presents results and Section 6 provides an analysis of findings. Section 7 concludes.

**2: Biodiversity and biodiversity reporting**

According to the Global Reporting Initiative (GRI):

*Biodiversity is the variability among living organisms from all sources, including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part. This includes diversity within species, between species and of ecosystems* (2007, p. 11).

‘Biodiversity’ can be interpreted in multiple ways but a common feature in all definitions relates to the variety and variability of living organisms, their habitats and biological ecosystems (Kaennel, 1998; Grabsch et al, 2012; Rimmel and Jonäll, 2013). In essence, biodiversity can be simplified to describe the variety of life on earth (Global Reporting Initiative, 2007; Grabsch et al, 2012).

**2.1: Biodiversity in South Africa**

South Africa is considered to be the third most biologically diverse country in the world, accommodating between 250 000 to 1 000 000 species, many of which are unique to South Africa. In addition, the country boasts nine terrestrial biomes and is home to a great variety of ecosystems, including great diversity in marine and coastal systems (Wynberg, 2002; Turpie, 2003; South African National Biodiversity Institute, 2014). As result, the conservation of the country’s biodiversity is considered to be of international importance from a deep ecological perspective (Department of Environmental Affairs and Tourism, 1998; Wynberg, 2002)[[1]](#footnote-1). Furthermore, biodiversity an important factor in many of the key economic sectors, such as agriculture and mining (Department of Environmental Affairs and Tourism, 1998). It is estimated that the ecosystem services in South Africa generate approximately Rand 73[[2]](#footnote-2) billion per annum, which is equivalent to approximately 7% of the country’s GDP (Department of Environmental Affairs and Tourism, 2009).

In this context, the Department of Environmental Affairs and Tourism is primarily responsible for biodiversity management. The South African National Biodiversity Institute (SANBI), created as a public entity by the Department of Environmental Affairs to lead and co-ordinate research, assists with monitoring of and reporting on the state of biodiversity in South Africa (Wynberg, 2002; South African National Biodiversity Institute, 2014). SANBI’s mission is to promote the sustainable use, conservation and appreciation of the rich biodiversity of South Africa for the benefit of present and future generations (South African National Biodiversity Institute, 2010). South Africa is also one of the countries which signed the *Convention of Biological Diversity* which is dedicated to the development and sustainable use of biodiversity (Wynberg, 2002; Global Reporting Initiative, 2007). Nevertheless, South Africa’s biodiversity is under serious threat (Department of Environmental Affairs and Tourism, 1998).

Agricultural and industrial development has led to the transformation, fragmentation and degradation of natural habitats at an alarming rate. The increasing human population, as well as unsustainable rates of natural resource consumption, will continue to affect negatively the country’s biodiversity (Department of Environmental Affairs and Tourism, 1998; Department of Environmental Affairs and Tourism, 2009). It has been estimated that 15% of South Africa’s plant, 14% of bird, 24% of reptile, 18% of amphibian, 90% of mammal and 22% of butterfly species are classified as ‘threatened’ according to the South African Red Data Book (Department of Environmental Affairs and Tourism, 1998). Existing trends are not expected to improve as country continues to grapple with its social and economic challenges (Department of Environmental Affairs and Tourism, 1998; Department of Environmental Affairs and Tourism, 2009). This is particularly evident when considering that the local mining and food industries, both of which play an important economic role, and create major biodiversity challenges.

It is widely accepted that the operating activities of the South African mining houses have a significant environmental impact. Even where companies are adhering to best environmental practice, there is an inherent risk of habitat loss and release of pollutants into ecosystem (Department of Environmental Affairs et al, 2013; Endangered Wildlife Trust, 2015) with the result that the sector has come under increasing scrutiny from different stakeholders, including some institutional investors (International Council on Mining and Metals, 2006; Carels et al, 2013; Atkins and Maroun, 2014). In order to help mines manage their biodiversity risks, the International Council on Mining and Metals (ICMM), together with the International Union for Conservation of Nature (IUCN), developed a *Good Practice Guidance for Mining and Biodiversity*  to provide the mining sector with an outline of the steps required to improve and implement biodiversity management throughout the life cycle of a mine (International Council on Mining and Metals, 2006). In an attempt to balance economic and biodiversity considerations, the *Mining and Biodiversity Guideline: Mainstreaming Biodiversity Mining Sector* was jointly created by the SANBI, the Department of Environmental Affairs and the Chamber of Mines as a means to promote economic growth while minimising the effect of mining activities on the ecosystem (Department of Environmental Affairs et al, 2013). The guideline emphasises the value of a risk-based approach to biodiversity and encourages biodiversity risk to be assessed at every level of a mining project. The ultimate aim of the guideline is to integrate relevant biodiversity information into the decision-making process of the companies in the mining sector (Department of Environmental Affairs et al, 2013).

A similar approach has been adopted in the food industry. SANBI aims to promote sustainable farming practices and works with a number of organisations to promote biodiversity conservation (South African National Biodiversity Institute, 2015). For example, in conjunction with the WWF-SA, SANBI created the *Green Choice Living Farms Reference* which outlines generic principles and indicators for sustainable farm management in South Africa in order to aid farmers in the application of sustainable practices (Scotcher, 2009; SANBI, 2015). Recent projects include: the Conservation Farming Project, the Global Pollination Project and the Honeybee Forage Project, as well as retailer initiatives such as the Woolworths’ Farming for the Future programme (South African National Biodiversity Institute, 2015). These initiatives attempt to strike a balance between promoting an industry which makes a significant contribution to economic activity (and is at the heart of South Africa’s food security) and the need to protect against environmental degradation and mitigate biodiversity loss.

**2.2: Biodiversity reporting in South Africa**

Initial studies have reported an increase in the extent to which listed South African companies are including environmental, social and governance indicators in their primary reports to stakeholders (Hindley and Buys, 2012; Solomon and Maroun, 2012; Carels et al, 2013). This has gone hand-in-hand with the number of companies referring specifically to the GRI’s guidelines for reporting sustainability-related issues in their annual or integrated reports (Hindley and Buys, 2012; Rimmel and Jonäll, 2013). One aspect of the environmental section of the GRI sustainability-reporting framework relates to biodiversity. Although ‘biodiversity’ is a broad concept, with the result that it may be argued that many GRI reporting recommendations deal directly or indirectly with the subject, five indicators specifically relate to ‘biodiversity’ (Global Reporting Initiative, 2007; Rimmel and Jonäll, 2013). These are summarised in Table 1.

| **Table 1 GRI biodiversity indicators[[3]](#footnote-3)** | |
| --- | --- |
| **Indicator** | **Explanation** |
| EN11 (Core) | Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas |
| EN12 (Core) | Description of significant impacts of activities, products and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas |
| EN13 (Additional) | Habitats protected or restored |
| EN14 (Additional) | Strategies, current actions, and future plans for managing impacts on biodiversity |
| EN15 (Additional) | Number of IUCN Red List species and national conservation list species with habitats in areas affected by operations, by level of extinction risk. |

The extent to which companies have been incorporating the recommended core and additional performance indicators in their integrated, annual or sustainability reports is, however, unclear. The main challenge relating to biodiversity reporting is the uncertainty about the definition of ‘biodiversity’ and how it should be measured and communicated to stakeholders (Grabsch et al, 2012; Jones and Solomon, 2013). The GRI and *International Framework: Integrated Reporting* cover some aspects of biodiversity (IIRC, 2013; GRI, 2014) but there is no generally accepted basis for reporting on biodiversity-related issues (Grabsch et al, 2012). In addition, while there has been a fair amount of research on non-financial reporting by South African companies (for examples, see de Villiers and Barnard, 2000; de Klerk and de Villiers, 2012; Carels et al, 2013; de Villiers et al, 2014) biodiversity disclosure has been neglected. In this context, the emerging body of research dealing with reporting on biodiversity issues in a European setting is used to provide a frame of reference for analysing biodiversity disclosure by South African corporates.

**3: Prior research and development of the data collection instrument**

**3.1: Disclosure themes**

Grabsch et al (2012) developed theme codes to evaluate the extent of biodiversity disclosures. Biodiversity disclosures were divided into eight categories, namely, (1) scene-setting; (2) species-related; (3) social engagements; (4) stakeholder engagements; (5) performance evaluative data; (6) risk; (7) internal management; and (8) external reporting (Grabsch et al, 2012). Scene-setting encompasses the company’s definition of ‘biodiversity’ and how the company sets the scene for reporting on biodiversity. It is usually associated with a biodiversity mission statement (Grabsch et al, 2012; van Liempd and Busch, 2013). Disclosures relating to how many species are present, their types and the efforts made by a company to protect or maintain these species are included in the ‘species-related’ category (van Liempd and Busch, 2013).

Companies often form partnerships with non-profit organisations, universities or governments in their efforts to be regarded as good corporate citizens. Social engagements incorporate the extent of such affiliations and recognisable outcomes. Similarly, stakeholder engagements relate to any form of engagement a company has had with various stakeholder in terms of biodiversity issues (Grabsch et al, 2012). Companies are also expected to report on their biodiversity performance targets and to provide feedback on their ability to meet such expectation and the risks which are faced in terms of performance and biodiversity in general. This also forms part of the performance data and risk categories (Grabsch et al, 2012; van Liempd and Busch, 2013).

Finally, internal management and external reporting refer to the internal action plans of the company in relation to biodiversity and their internal processes to ensure such plans are executed and reported in an appropriate manner, ideally in accordance with accepted reporting frameworks, like the GRI (Grabsch et al, 2012; van Liempd and Busch, 2013). Each of these predetermined disclosure categories (shown below) serves as axial codes (disclosure theme categories) for the purpose of this study.

| **Table 2. Summary of disclosure themes** | |
| --- | --- |
| **Axial Codes** | **Elements** |
| 1. Scene – setting | * Definition * Mission Statement |
| 1. Species - related | * Site-specific * Specific species * Surveys * IUCN Red List |
| 1. Social Engagements | * Partnerships * Awards * Stakeholder engagements |
| 1. Performance Evaluations | * Target Performance * Costs |
| 1. Risk | * Risk * Risk Management * Incidents * Materiality |
| 1. Internal Management | * Biodiversity Action Plans * Biodiversity Officer |
| 1. External Reporting | * GRI and other frameworks |

**3.2: Prior research**

In recent studies conducted on the extent of biodiversity disclosures in Sweden, Denmark, England and Germany, it is was found that high environmental impact industries are more likely to include disclosures on biodiversity issues (Grabsch et al, 2012). Reporting is, however, relatively limited and generic (Grabsch et al, 2012; Rimmel and Jonäll, 2013; van Liempd and Busch, 2013). The most common disclosures relate to mission statements, partnerships and the GRI reporting (Grabsch et al, 2012; van Liempd and Busch, 2013). On the other hand, performance, internal management and external reporting disclosures were among the lowest scoring categories, suggesting that biodiversity reporting is still in its infancy for many companies. This is supported by the fact that mission statements are often vague and the respective annual or sustainability reports usually lack detailed disclosures which provide meaningful insights into how organisations are defining and managing their biodiversity-related risks (Jones and Solomon, 2013; van Liempd and Busch, 2013). Consequently, there is a lack of accountability and transparency when it comes to biodiversity in some of Europe’s leading economies, highlighting the need for change in the corporate reporting model.

The same may be applicable in a South African context. Although the country was the first to introduce formally a requirement for listed companies to prepare an integrated report (Section 2.2), there is no guarantee that this has resulted in dramatic change in corporate reporting practices (Carels et al, 2013; Atkins and Maroun, 2014) and that South African companies included in high environmental impact sectors are making better progress than their European counterparts.

**4: Method**

Thematic content analysis is used to determine the extent of biodiversity disclosures included in the integrated and sustainable reports of companies included in the JSE’s mining and food producer and retail sectors. In keeping with an interpretive approach, data collection and analysis required detailed involvement by the researcher with the result that the findings are subjective. Nevertheless, the chosen method is the most appropriate, given the limited research on biodiversity reporting and the need to process information which cannot be objectively measured on a relative scale (Merkl-Davies et al, 2011; Samkin et al, 2014).

The researchers concentrated on the food and mining industry due to their classification as red-zone sectors by the F&C Asset Management (2004) and the growing awareness of the importance of emerging environmental issues by organisations in these sectors (Section 2.1). The integrated and sustainability reports of the 10 largest companies (by market capitalisation) per sector were analysed representing 50% of the food producers and retailers and 19% of the mining companies listed on the JSE[[4]](#footnote-4). The sample was based on the assumption that larger organisations have a greater biodiversity impact, attract the most attention from stakeholders and have the resources and systems to provide detailed information on biodiversity-related matters[[5]](#footnote-5) (Rimmel and Jonäll, 2013; van Liempd and Busch, 2013; de Villiers et al, 2014).

The integrated and sustainability reports from 2011 to 2013 only were included in the analysis. The 2010 reports were not taken into account as this was the transitional year for the implementation of King-III which formally introduced the concept of ‘integrated reporting’ to South African corporate governance[[6]](#footnote-6). Furthermore, complementary information provided on company websites was not analysed. This was mainly due the inability to determine when information had been posted on the respective websites or last updated, making it impossible to track changes over time (Rimmel and Jonäll, 2013). Articles found in the financial or popular press were also excluded as these are not necessarily prepared by the organisations under review and were not produced as the primary means of communication with stakeholders under King-III (IOD, 2009), the IIRC (2013) and JSE (2013)[[7]](#footnote-7).

The study utilised pre-determined axial codes derived from the literature and GRI indicators and developed by Grabsch et al (2012) (as discussed in Section 3):

1. Scene-setting
2. Species-related
3. Social and stakeholder engagement[[8]](#footnote-8)
4. Performance evaluation
5. Risk
6. Internal management and
7. External reports

Using predetermined codes ensured that the study retained its focus and resonated with the prior literature (cf Leedy and Ormrod, 2013) but the ability of the research to explore the adequacy of the scope of biodiversity reporting frameworks is restricted. Following the approach adopted by Grabsch et al (2012) and van Liempd and Busch (2013), the lead researcher carried out an initial review of the reports of the sample of South African companies to gain a sense of their content and structure (Leedy and Ormrod, 2013) and the nature of biodiversity disclosures included in the respective documents. For this purpose, a broad definition of ‘biodiversity’ was applied to interpret companies’ reporting on ecosystems, habitats, ecosystem services, conservation, preservation, restoration and information on species (Grabsch et al, 2012; van Liempd and Busch, 2013). The reports were read and analysed interpretively. To ensure that all relevant disclosures were identified, the lead researcher also searched for keywords which are associated with genetic and eco-systemic biodiversity (adapted from van Liempd and Busch, 2013). These include, inter alia, ‘biodiversity’’ ‘habitat’, ‘eco-system’, ‘conservation’, ‘species’, ‘flora’, ‘fauna’, ‘wildlife’, ‘marine’ and ‘maritime’.

As per Samkin et al (2014, p. 538), ‘rather than being constrained by allocating meaning by word, sentence or paragraph, the “text unit” of analysis used in this study is at the level of the phrase, clause or theme’. Results were accumulated using theme register. A score of ‘0’ or ‘1’ was used to indicate the presence or absence of the respective biodiversity-disclosure metric. A frequency table was then generated to show the extent of biodiversity disclosures for each company for the chosen years. The frequency table also included disclosures per axial code per company for the integrated and sustainability reports. Due to the fact that there is no generally acceptable scale for assessing the quality of disclosure, this was not dealt with and is an inherent limitation of the research.

Small sample sizes negated the use of inferential statistics. Instead, disclosure frequencies were analysed using descriptive statistics (Grabsch et al, 2012; Rimmel and Jonäll, 2013; van Liempd and Busch, 2013). The frequency of the biodiversity disclosures per theme was recorded and the cumulative change in disclosure scores was calculated. Next, the researchers considered changes in the extent to which specific disclosure themes (Table 2) were being included in either the integrated or sustainability report. Finally, the researcher determined changes in disclosures frequencies after adjusting for repetition of the same themes. The approach followed was consistent with the method used by Solomon and Maroun (2012) and Carels et al (2013) and the intention of avoiding the impression that the researchers are ‘measuring’ biodiversity disclosures in a positivist sense.

**5: Results**

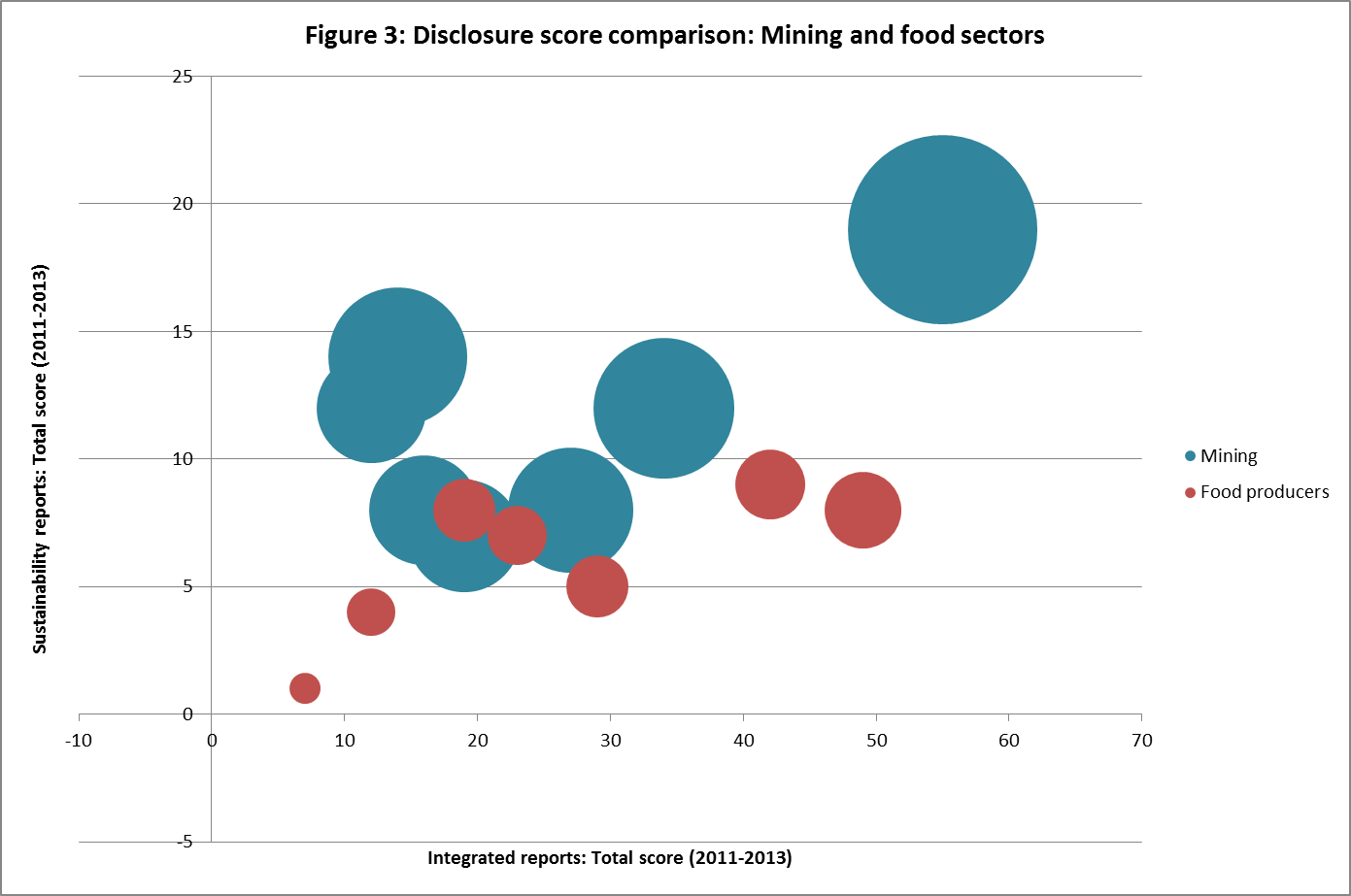
Figure 1 and 2 show the changes in the extent of biodiversity reporting in both integrated and sustainability reports from 2011 to 2013 disaggregated by axial code.

Per Figure 1, the disclosure score in the mining sector increases from 124 (2011) to 137 in 2012 followed by a decrease to 130 in 2013 or a net increase of just 5% from 2011 to 2013. Each disclosure theme shows a similar trend with no theme accounting for a significant portion of the change in disclosure scores over the three years. The risk theme accounts for the majority of disclosure (28%) followed by performance evaluation (16%) and species-related information (15%). Disclosure on social engagement (9%) and internal management (9%) were the least frequent.

Figure 2 shows a net 5% increase in disclosure from 74 in 2011 to 78 in 2013. Each theme’s disclosure score (with the exception of the scene-setting) decreases marginally from 2011 to 2012 (4%) followed by an increase in disclosure from 2012 to 2013 (10%). As with mining companies, risk disclosures are the most frequent (26%) but disclosure dealing with social engagement accounts for 23% of the total disclosure score. Internal management (7%) and performance evaluation (4%) are not dealt with in detail.

In total, the mining sector included more disclosure on biodiversity issues in the integrated or sustainability reports than the food industry. Figure 3 confirms this (as indicated by the relative area covered by the plots) but shows that mining companies concentrate their information, on average, in their sustainability reports (the y-axis). Food producers provide stakeholders with less information but there is more disclosure found in the integrated (the x-axis) than the sustainability reports (the y-axis).

**[[9]](#footnote-9)**



5

4

1

7

6

3

2

3

2

1

7

6

5

**6: Discussion and analysis**

In South Africa, an integrated report is the primary means of communicating formally with stakeholders (IOD, 2009; King, 2012; Atkins and Maroun, 2014) and ought to provide a comprehensive assessment of how the respective organisation is managing financial and non-financial metrics in order to generate sustainable returns (IRCSA, 2011). The disclosure score is, therefore, used as a proxy for the relative level of detail being provided by companies to their stakeholders. The extent to which information is included in the integrated report (rather than the sustainability report) is used as a surrogate for the relative emphasis on biodiversity issues (listed in Table 2). The data in Figure 3 is represented in the following matrix.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Table 3: Product market matrix[[10]](#footnote-10)** | | | | |
|  | | **Emphasis[[11]](#footnote-11)** | | |
| **High** | **Medium** | **Low** |
| **Detail[[12]](#footnote-12)** | **High** | **Risk**  **Social engagement** | **Risk** |  |
| **Above average** | **Performance evaluation**  **Scene-setting** |  | **Species-related** |
| **Below average** | **Scene-setting**  **Species-related**  **Performance evaluation**  **Internal management**  **External report** | **External reports** | **Social engagements**  **Internal management** |

Both the mining and food sectors placed a relatively high emphasis on risk-related disclosures with this axial code accounting for over 25% of the total disclosure score for each sector. These disclosures were also concentrated in the integrated report *initially* suggesting that the respective organisations are aware of the relevance of biodiversity-associated risks and the importance of providing information on these risks to stakeholders. Given the high inherent biodiversity risk for these industries at least some risk disclosure is expected. For the mining sector in particular, the content analysis showed that there was some effort to identify specific risks, particular environmental incidents and the materiality of the related biodiversity impact.

On average, however, biodiversity-related information is only reported 59 or 60 times, on average, in the integrated reports of companies in the mining and food industry, respectively, over the 3 years. Added to this is the fact that insufficient detail is provided to ensure adequate accountability. For example, Figure 1 and Figure 2 show that disclosures on internal management make one of the lowest contributions to the total disclosure score of the mining (9%) and food (7%) industry. Consequently, little is known about these companies’ specific actions and success or failures in terms of biodiversity management. In addition, Table 3 and Figure 3 show that the little information is provided by the former sector is often located in the sustainability reports, suggesting that mining companies are, on average, placing less emphasis on this type of disclosure.

Companies in the food industry may be placing most of their internal management information in integrated reports (Table 3) but specific biodiversity action plans are not apparent and there is no indication of a dedicated biodiversity officer for ensuring an integrated approach for managing biodiversity risk (see also Grabsch et al, 2012; van Liempd and Busch, 2013). Where references were made to specific plans for managing biodiversity, these were normally accompanied by an explanation of the relevant legislation or code of practice which required the initiative suggesting a compliance motive rather than a genuine interest in prudential biodiversity management (as indicated by the low level of detail per Figure 3 and Table 3).

Adding to this view is the nature of disclosure dealing with reporting guidelines. The food sector may be including external reporting disclosures in their integrated reports but the level of detail is low (Table 3; Figure 3). When it came to mining companies, there was little emphasis on external reporting in their integrated reports (Table 3; Figure 3) and what was included in the sustainability reports was not specific. The information being included in the integrated or sustainability reports in both sectors mostly addressed whether or not and the extent to which the relevant reporting frameworks were being applied. There was no indication that these were being used to create new lines of performance measurement and evaluation. Similarly, target performance and cost disclosure were generic. Some companies made reference to issues such climate change, pollution prevention, emission monitoring or biodiversity loss. This, however, constituted only 16% of biodiversity disclosures by mining companies and a mere 4% of the total disclosure score of the food sector. Contrary to the recommendations of the IIRC (2013), there were only isolated cases where key performance indicators dealt specifically with biodiversity loss and were clearly linked with the management of the different types of capital (including environmental and social variants) identified by the IIRC (2013).

Perhaps the clearest indicator of an inadequate approach to biodiversity management and integrated reporting is the fact that none of the companies under review provided a clear definition of ‘biodiversity’. This went hand-in-hand with below average disclosure of mission statements as per the plotting and size of the scene-setting axial code in Figure 3 for mining companies. Food producers and retailers included more scene-setting information, on average (Table 3), but all of this disclosure was limited to broad mission statements which were not entirely specific to biodiversity. Importantly, this type of disclosure only accounted for 15% of the already low total disclosure score for the sector (Figure 2). Possibly as a result of an unclear understanding of ‘biodiversity’, mining companies provided little on the specific species affected by their operations and de-emphasise this type of disclosure by limiting it mainly to the sustainability reports (Table 3; Figure 3). Similarly, although the food industry includes species-specific information mainly in the integrated reports (Table 3; Figure 3), this axial code included only 27 references in both types of reports over the three years under review. Finally, un-tabulated results revealed a net decrease in the frequency of total biodiversity disclosure in integrated reports when duplicate disclosures are removed showing that already low levels of disclosure are being overstated by repetition (cf Solomon and Maroun, 2012).

These findings are at odds with prior research showing that companies increase the extent of reporting in response to growing awareness of key environmental issues (Patten, 2002; de Villiers and van Staden, 2006; Loate et al, 2015). Limited understanding about biodiversity and absence of detailed guidelines for reporting on biodiversity-related issues provide one explanation for this (Grabsch et al, 2012; van Liempd and Busch, 2013). A more critical view is that large companies in the South African mining and food industry do not regard biodiversity management as a significant threat to their legitimacy, with the result that the ongoing debate on issues such as habitat loss and mass extinction does little to increase the emphasis being placed on these matters in integrated reports.

This interpretation provides a reasonable explanation for why the mining industry has, for example, decreased biodiversity disclosure in its integrated reports while continuing to emphasise the external reporting theme (Table 3; Figure 4). The sector is cognisant of the fact that its *general* environmental performance is regulated and subject to public scrutiny (Department of Environmental Affairs et al, 2013). For this reason, the industry has gone to great lengths to ensure compliance with the GRI’s guidelines on environmental reporting (Hindley and Buys, 2012); to increase the extent of information on generally expected environmental issues included in integrated reports (Carels et al, 2013) and to align the nature and extent of its environmental reporting with international benchmarks (de Villiers et al, 2014). If, however, the biodiversity debate has not focused the public’s attention on, for example, the importance of biodiversity action plans, impact assessments on specific species and incident reviews, a balance must be struck.

On the one hand, not reporting can be interpreted as an indicator that the industry is either completely unaware or uninterested, giving rise to criticism. In this context, all of the companies under review included at least some information on biodiversity management in their corporate reports. On the other hand, excessive disclosure enables accountability and can have the unintended effect of attracting adverse attention from stakeholders who, paradoxically, may never have been aware of the importance of biodiversity management (cf de Villiers and van Staden, 2006). In this light, most of the information on biodiversity is generic. Contemporaneously, case-specific information (such as internal management plans) are de-emphasised by mining companies by including the disclosure in the sustainability rather than the integrated report (Table 3; Figure 3).

When it comes to the food sector, managing organisational legitimacy remains relevant although a slightly different strategy is applied. As with mining companies, the sector must be cautious about over-reporting in the absence of an explicit threat to their existing credibility, once again explaining the low disclosure scores and very general information being included in the corporate reports per Section 5.1 (cf Suchman, 1995). Unlike the mining sector, however, outputs are less standardised, prices are not determined solely by the resources market and the sector is more focused on the general consumer. Consequently, biodiversity management can be used as part of a strategy to differentiate products, penetrate or defend market share and command a price premium[[13]](#footnote-13) (cf Botten, 2009). As such, companies in the food sector have more scene-setting and social engagement disclosures (Table 3) than their mining counterparts and are probably using this information to present themselves in a favourable light (see also Deegan et al, 2002; Solomon et al, 2013). Most of this information is also presented in integrated reports (Table 3) to ensure prominence. On closer examination, however, it is clear that most of the discussion on biodiversity management is generic and there is a considerable amount of repetition. In this way – and as with the mining companies – the intention is to create the appearance of active biodiversity reporting to win support or avoid criticism but without running the risk of inviting additional monitoring and review by stakeholders (cf de Villiers and van Staden, 2006).

**7: Conclusion**

Despite the South African mining and food industries being identified as having high environmental impacts, biodiversity disclosures are very limited. These findings are consistent with most recent international research on biodiversity reporting (Grabsch et al, 2012; van Liempd and Busch, 2013) but are inconsistent with the fact that South Africa boasts one of the most developed codes on corporate governance and has been advocating the preparation of integrated reports since 2010.

A possible explanation is that ‘biodiversity’ has not been clearly defined by the reporting frameworks being used by South African companies to prepare their integrated and sustainability reports (cf Grabsch et al, 2012; van Liempd and Busch, 2013). Furthermore, King-III (IOD, 2009), the IRCSA (2011) and IIRC (2013) focus on principles and do not provide specific guidance on the nature and extent of biodiversity-related information which should be included in corporate reports. It is, however, worrying if large listed companies are unable to appreciate the context in which they are doing business and conclude on the environmental issues which should be communicated to their stakeholders without reporting prescriptions. This raises questions about the extent to which they are committed to identifying and managing long-term environmental concerns and communicating this transparently to users of the integrated and sustainability reports.

Needless to say, additional research will be required to understand better the limited biodiversity reporting by the companies under review. Examining the disclosures provided by South African organisations using the ecological framework developed by Samkin et al (2014) will provide a clearer understanding of the focus of biodiversity reporting and be a useful starting point. This could be complemented by considering specifically the quality of information being included in the integrated and sustainability reports and how this varies among jurisdictions. To understand better the precise reasons for limited biodiversity reporting by corporates, engaging with key stakeholders on their understanding of important environmental issues and questioning companies on the reasons for limited biodiversity reporting will provide invaluable insights.

**References**

Atkins, J. & Maroun, W. 2014. South African institutional investors’ perceptions of integrated reporting. *In:* ACCA (ed.). London: The Association of Chartered Certified Accountants.

Botten, N. 2009. *Management Accounting Business Strategy, 2009 Edition,* Oxford, United Kingdom, CIMA Publishing.

Buzby, S. L. 1975. Company size, listed versus unlisted stocks, and the extent of financial disclosure. *Journal of Accounting Research***,** 16-37.

Carels, C., Maroun, W. & Padia, N. 2013. Integrated reporting in the South African mining sector. *Corporate Ownership and Control,* 11 (1)**,** 991-1005.

Cooke, T. E. 1992. The impact of size, stock market listing and industry type on disclosure in the annual reports of Japanese listed corporations. *Accounting and business research,* 22 (87)**,** 229-237.

de Klerk, M. & de Villiers, C. 2012. The value relevance of corporate responsibility reporting: South African evidence. *Meditari Accountancy Research,* 20 (1)**,** 21-38.

de Villiers, C., Low, M. & Samkin, G. 2014. The institutionalisation of mining company sustainability disclosures. *Journal of Cleaner Production,* 84**,** 51-58.

de Villiers, C. & van Staden, C. J. 2006. Can less environmental disclosure have a legitimising effect? Evidence from Africa. *Accounting, Organizations and Society,* 31 (8)**,** 763-781.

de Villiers, C. J. & Barnard, P. 2000. Environmental reporting in South Africa from 1994 to 1999: A research note. *Meditari Accountancy Research,* 8 (1)**,** 15-23.

Deegan, C., Rankin, M. & Tobin, J. 2002. An examination of the corporate social and environmental disclosures of BHP from 1983-1997. *Accounting, Auditing & Accountability Journal,* 15 (3)**,** 312-343.

Department of Environmental Affairs and Tourism 1998. Convention on Biological Diversity :South African National Report to the Fourth Conference of the Parties Department. *In:* TOURISM, D. O. E. A. A. (ed.). South Africa.

Department of Environmental Affairs and Tourism 2009. South Africa's fourth national report to the convention on biological diversity. *In:* DEPARTMENT OF ENVIRONMENTAL AFFAIRS AND TOURISM (ed.). Republic of South Africa.

Department of Environmental Affairs, D. o. M. R., Chamber of Mines, South African Mining and Biodiversity Forum & South African National Biodiversity Institute 2013. Mining and Biodiversity Guideline: Mainstreaming biodiversity into the mining sector. Pretoria.

Endangered Wildlife Trust 2015. Biodiversity and mining. *Mining Impacts.*

F&C Asset Management 2004. Is biodiversity a material risk for companies? An assessment of the expposure of FTSE sectors to biodiversity risk London: F&C Asset Management.

Global Reporting Initiative. 2007. Biodiversity: A GRI Reporting Resource. Available: http:/[www.globalreporting.org/resourcelibrary/Biodiversity-A-GRI-Resource-Document.pdf](http://www.globalreporting.org/resourcelibrary/Biodiversity-A-GRI-Resource-Document.pdf) [Accessed 13th August 2014].

Grabsch, C., Jones, M. J. & Solomon, J. F. 2012. Accounting for biodiversity in crisis: A European Perspective. working paper, Kings College, London.

Gray, R. 2006. Social, environmental and sustainability reporting and organisational value creation? *Accounting, Auditing & Accountability Journal,* 19 (6)**,** 793-819.

Gray, R. 2012. Integrated Reporting: Integrated with what and for whom? Available: <https://risweb.st-andrews.ac.uk/portal/en/researchoutput/integrated-reporting-integrated-with-what-and-for-whom(f9797689-51b2-4bb0-b158-e3a6ab0904ca).html> [Accessed 7 July 2014].

GRI. 2014. G4 Sustainability reporting guidelines. Available: <https://www.globalreporting.org/reporting/g4/Pages/default.aspx> [Accessed 10 February 2015].

Hindley, T. & Buys, P. 2012. Integrated Reporting Compliance With The Global Reporting Initiative Framework: An Analysis Of The South African Mining Industry. *International Business & Economics Research Journal,* 11 (11)**,** 1249-1260.

IIRC. 2013. The International Framework: Integrated Reporting. Available: <http://www.theiirc.org/wp-content/uploads/2013/12/13-12-08-THE-INTERNATIONAL-IR-FRAMEWORK-2-1.pdf> [Accessed 1 October 2013].

International Council on Mining and Metals 2006. Good practice Guidance for Mining and Biodiversity. London: International Council on Mining and Metals.

IOD 2009. *The King Code of Governance for South Africa (2009) and King Report on Governance for South Africa (2009) (King-III)*, Lexis Nexus South Africa, Johannesburg, South Africa.

IRCSA. 2011. Framework for Integrated Reporting and the Integrated Report. Available: [www.sustainabilitysa.org](http://www.sustainabilitysa.org) [Accessed 5 June 2012].

Jones, M. J. 1996. Accounting for biodiversity: A pilot study *The British Accounting Review,* 28 (4)**,** 281-303.

Jones, M. J. 2003. Accounting for biodiversity: operationalising environmental accounting. *Accounting, Auditing & Accountability Journal,* 16 (5)**,** 762-789.

Jones, M. J. 2010. Accounting for the environment: Towards a theoretical perspective for environmental accounting and reporting. *Accounting Forum,* 34 (2)**,** 123-138.

Jones, M. J. & Solomon, J. F. 2013. Problematising accounting for biodiversity. *Accounting, Auditing & Accountability Journal,* 26 (5)**,** 668-687.

JSE. 2013. JSE Listing Requirments. Available: <https://www.jse.co.za/content/JSEEducationItems/Service%20Issue%2017.pdf> [Accessed 20 February 2015].

Kaennel, M. 1998. Biodiversity: a diversity in definition. *Assessment of biodiversity for improved forest planning.* Springer.

King, M. 2012. Comments on: *Comments on: Integrated Reporting and the Integrated Report*PUBLIC LECTURE. International Corporate Governance Conference, Johannesburg, South Africa. 23 October

Leedy, P. D. & Ormrod, J. E. 2013. *Practical Research Planning and Design,* United States of America, Pearson Education Inc.

Loate, B., Padia, N. & Maroun, W. 2015. Acid mine drainage in South Africa: A test of legitimacy theory. *Journal of Governance and Regulation,* 4 (2)**,** 26-40.

Maroun, W., Coldwell, D. & Segal, M. 2014. SOX and the Transition from Apartheid to Democracy: South African Auditing Developments through the Lens of Modernity Theory. *International Journal of Auditing,* 18 (3)**,** 206-212.

Merkl-Davies, D., Brennan, N. & Vourvachis, P. 2011. Text analysis methodologies in corporate narrative reporting research. *In:*  23rd CSEAR International Colloquium. St Andrews, United Kingdom, 2011.

Millennium Ecosystem Assessment 2005. Chapter 4 : Biodiversity *Ecosystems and human well-being : Current state and trends.* Washington, DC.

Miller, T. & Graham, M. 2013. In pursuit of concise integrated reports. *Accounting Perspectives in Southern Africa,* 1 (1)**,** 2-8.

Patten, D. M. 2002. The relation between environmental performance and environmental disclosure: a research note. *Accounting, Organizations and Society,* 27 (8)**,** 763-773.

Rimmel, G. & Jonäll, K. 2013. Biodiversity reporting in Sweden: corporate disclosure and preparers' views. *Accounting, Auditing & Accountability Journal,* 26 (5)**,** 746-778.

Samkin, G., Schneider, A. & Tappin, D. 2014. Developing a reporting and evaluation framework for biodiversity. *Accounting, Auditing & Accountability Journal,* 27 (3)**,** 527-562.

SANBI. 2015. *Sustainable Agriculture* [Online]. South Africa. Available: <http://biodiversityadvisor.sanbi.org/industry-and-conservation/conservation-and-agriculture/sustainable-agriculture-2/> [Accessed 9th March 2015].

Scotcher, J. S. B. 2009. The Green Choice Living Farms Reference 2009/2010 version. *In:* GOLDBLATT, A. (ed.). World Wide Fund for Nature and Conservation International.

Solomon, J. 2010. *Corporate Governance and Accountability, Third Edition,* West Susex, United Kingdom, John Wiley and Sons Ltd.

Solomon, J. & Maroun, W. 2012. Integrated reporting: the new face of social, ethical and environmental reporting in South Africa? *In:* ACCA (ed.). London: The Association of Chartered Certified Accountants.

Solomon, J. F., Solomon, A., Joseph, N. L. & Norton, S. D. 2013. Impression management, myth creation and fabrication in private social and environmental reporting: Insights from Erving Goffman. *Accounting, Organizations and Society,* 38 (3)**,** 195-213.

South African National Biodiversity Institute 2010. Biodiversity Information Policy Document- Policy Series: Principle and Guidelines. South Africa.

South African National Biodiversity Institute. 2014. *SANBI Biodiversity for life* [Online]. Available: <http://www.sanbi.org/> [Accessed 15 August 2014].

South African National Biodiversity Institute. 2015. *Biodiversity and Agriculture* [Online]. Available: <http://biodiversityadvisor.sanbi.org/industry-and-conservation/conservation-and-agriculture/> [Accessed 27 January 2015].

Suchman, M. C. 1995. Managing Legitimacy: Strategic and Institutional Approaches. *The Academy of Management Review,* 20 (3)**,** 571-610.

Turpie, J. K. 2003. The existence value of biodiversity in South Africa: how interest, experience, knowledge, income and perceived level of threat influence local willingness to pay. *Ecological Economics,* 46 (2)**,** 199-216.

van Liempd, D. & Busch, J. 2013. Biodiversity reporting in Denmark. *Accounting, Auditing & Accountability Journal,* 26 (5)**,** 833-872.

Wynberg, R. 2002. A decade of biodiversity conservation and use in South Africa: tracking progress from the Rio Earth Summit to the Johannesburg World Summit on Sustainable Development: review article. *South African Journal of Science,* 98 (5 & 6)**,** p. 233-243.

1. *Global Biodiversity: Status of the Earth’s living resources*’ by the World Conservation Monitoring Centre in 1992. [↑](#footnote-ref-1)
2. Approximately USD7 billion [↑](#footnote-ref-2)
3. Core and additional performance indicators on biodiversity (GRI, 2007) [↑](#footnote-ref-3)
4. Companies in the food and mining industry included in the analysis represented 88.1% and 95.6% of the respective market capitalisations. [↑](#footnote-ref-4)
5. The size of the company is considered to affect significantly the extent of disclosures made: as the accumulation and distribution of information is costly, larger companies are deemed to have the resources to absorb such costs (Buzby, 1975; Cooke, 1992). [↑](#footnote-ref-5)
6. Nevertheless, the research is limited due to the fact that it does not provide a longitudinal review of biodiversity disclosure covering the period before and after the formal introduction of integrated reporting in South Africa. [↑](#footnote-ref-6)
7. The final sample of reports included in the results is not considered a threat to validity or reliability given the exploratory nature of the study and the fact that the intention is not to extrapolate results. [↑](#footnote-ref-7)
8. Note that social engagement and stakeholder engagement are treated as a single theme due to their similarity. [↑](#footnote-ref-8)
9. The numbers in each cell correspond with the disclosure theme (axial code) in Table 2 [↑](#footnote-ref-9)
10. Themes shaded in blue are for the mining industry. Those in red are for the food industry. [↑](#footnote-ref-10)
11. The emphasis is high if more than half of the disclosure is included in the integrated report. If approximately half of the disclosure is included in the integrated report, the emphasis is reported as moderate. When less than half of the disclosure is in the integrated report, the emphasis is low. [↑](#footnote-ref-11)
12. The detail indicates if the disclosure score per theme is above or below the quotient of the total disclosure score and number of axial codes. In addition, those axial codes which contributed more than 20% of the total score are identified as ‘high detail’ disclosures. [↑](#footnote-ref-12)
13. Further analysis of precisely how biodiversity management or - more general - environmental, social and governance disclosures are used strategically by organisations is not specifically within the scope of this research. [↑](#footnote-ref-13)