Biodiversity reporting in South Africa: Corporate disclosures in the Mining and Food sectors

A research report submitted by

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ABSTRACT

Biodiversity is facing mass extinction and this is recognised as an increasingly important issue worldwide. Factors such as industrial activities, overpopulation, urbanisation and global warming contribute significantly to the increasing dangers. Many companies operate in the world's most biodiverse regions, yet a lack in regulatory frameworks and knowledge of biodiversity has introduced significantly high biodiversity-related risks for these companies. Despite the increasing importance of the issue, corporations are shying away from accountability for their impact on biodiversity.

In this thesis, the integrated and sustainability reports of the top 10 companies listed on the Johannesburg Stock Exchange from the mining and food sectors are analysed. These reports are analysed in order to determine the location and extent of biodiversity disclosures, as well as to illustrate the nature of biodiversity disclosures presented.

It was found that biodiversity-related disclosures are minimal and where such disclosures are available, they are vague and refrain from holding the corporations accountable. In addition, there is an increasing trend of biodiversity-related disclosures in the sustainability reports. The study also takes a closer look at the nature of biodiversity disclosure.

This research contributes to a small body of existing research in the field and is the first study to examine biodiversity disclosures in South Africa.

DECLARATION

I hereby declare that this research report is my own unaided work. It is submitted in partial fulfilment of the degree of Master of Commerce by Coursework and Research Report at the University of the Witwatersrand, Johannesburg. It has not been submitted elsewhere for the purpose of being awarded another degree or for examination purposes at any other university.

Signature:

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Hafsa Mansoor

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II. List of abbreviations and acronyms

Abbreviations/ Acronyms	Description
ACCA	Association of Chartered Certified Accountants
BAP	Biodiversity Action Plan
CCOT	Cumulative Change over Time
CSR	Corporate Social Responsibility
GDP	Gross Domestic Profit
GRI	Global Reporting Initiative
ICMM	International Council on Mining and metals
ISO14001	International Organisation for Standardisation: Environmental management systems
IUCN	International Union for Conservation of Nature
JSE	Johannesburg Stock Exchange
King-III	The King Report and Code of Governance for South Africa (2009)
NGO	Non-Government Organisation
NSRI	National Sea Rescue Institute
RFA	Responsible Fisheries Alliance
SAICA	South African Institute of Chartered Accountants
SANBI	South Africa National Biodiversity Institute
SANCCOB	Southern African Foundation for the Conservation of Coastal Birds
SASSI	Southern African Sustainable Seafood Initiative
WWF	World Wildlife Fund
WWF-SA	World Wildlife Fund South Africa

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1. Introduction

1.1 Purpose and context of this study

Biodiversity is an essential component in sustainability (F&C Asset Management, 2004; Jones & Solomon, 2013; Rimmel & Jonäll, 2013). Recently, the effect of human activity on the worlds' biodiversity mass has come under increased scrutiny and is generally recognised as one of the greatest threats to our planet (F&C Asset Management, 2004; Jones, 2010; Jones & Solomon, 2013; van Liempd & Busch, 2013). Species are currently facing mass extinction at an estimated rate of 1000 times faster than the historical trends (Millennium Ecosystem Assessment, 2005; Rimmel & Jonäll, 2013). These extinctions have been amplified by environmental issues such as global climate change but also by the activities undertaken by corporations (TEEB (2010) cited in van Liempd & Busch, 2013). It is vital that action to be taken if biodiversity is to be preserved at all (Jones, 2010). In spite of this, corporate disclosures in the area have been limited (Grabsch, Jones, & Solomon, 2012; Rimmel & Jonäll, 2013; van Liempd & Busch, 2013).

Since the 1970's, there has been a gradual increase in social and environmental reporting, underlined by the belief that reporting on such issues could transform corporate behaviour (Jones & Solomon, 2013). In the same way, it is believed that reporting on biodiversity issues could increase awareness of the importance of environmental responsibility, potentially encouraging companies to manage and mitigate their biodiversity impact (Jones & Solomon, 2013).

This is especially important given that globalisation has added significantly to biodiversity risk (F&C Asset Management, 2004). Many companies now have operations in multiple developing countries, many of which are the world's most biodiverse regions (F&C Asset Management, 2004). The lack of clear regulatory frameworks and knowledge of biodiversity leads to unusually high biodiversity-related risks for these companies (F&C Asset Management, 2004). This, unfortunately, seems to have been overlooked in corporate reports in leading European economies where an emerging body of research is exploring the extent of biodiversity reporting in annual reports (Grabsch et al., 2012; Jones & Solomon, 2013).

Contemporaneously, many developing countries are suffering devastating deterioration of their natural resources which is not being brought to the attention of various stakeholder groups, despite the efforts at encouraging stakeholder-centric models of doing business (Edwards & Abivardi, 1998; F&C Asset Management, 2004). This may be particularly

relevant in a South African context. The country is well known for its vast unspoiled landscapes with several biodiversity regions regarded as among the most important on the planet[1] (Turpie, 2003; Wynberg, 2002). At the same time, the country boasts one of the largest economies on the Continent with several industries, particularly mining and food production, contributing significantly to South Africa's Gross Domestic Profit (hereafter referred to as GDP) (de Villiers, Low, & Samkin, 2014; Statistics South Africa, 2014; The World Bank, 2014). Unfortunately, many of these commercial activities pose significant environmental risks, including threats to biodiversity (de Villiers et al., 2014; F&C Asset Management, 2004). Understanding the extent to which biodiversity-related disclosures are being included in the integrated reports of companies in these high environmental impact industries is, therefore, important, given the recent emphasis on integrated reporting coupled with the acceleration of biodiversity loss (Consider Grabsch et al., 2012; Khan, 2014; Rimmel & Jonäll, 2013; van Liempd & Busch, 2013).

1.2 Research question

What is the extent of biodiversity disclosures by South African companies listed on the Johannesburg Stock Exchange (JSE) in the mining and food producers and retail sectors?

1.3 Contribution and significance of the research

Prior research on environmental issues has focused on overall corporate environmental reporting and disclosure, with specific focus being placed on corporate social responsibility (CSR) (Grabsch et al., 2012; Siddiqui, 2013; van Liempd & Busch, 2013). Despite the increasing importance of biodiversity, corporate disclosure fails to address adequately the importance of the subject (F&C Asset Management, 2004). To date, there have been few attempts to assess the extent to which organisations are 'accounting' for biodiversity[2] (Grabsch et al., 2012; Jones & Solomon, 2013; van Liempd & Busch, 2013).

Two recent studies performed by van Liempd and Busch (2013) and Rimmel and Jonäll (2013) provide initial views based on content analysis of biodiversity reporting in Denmark and Sweden respectively. In general, the findings highlight the lack of disclosures being made by corporations in terms of biodiversity (Rimmel & Jonäll, 2013; van Liempd & Busch,

[1] South Africa contains seven major terrestrial biomes. The Fynbos in the Western Cape is one of the major terrestrial biomes which stands out in terms of its richness in species and levels of endemism. The Fynbos biome is classified as one of the world's 'hottest biodiversity hotspots' (Turpie, 2003).

[2] 'Accounting' means recording and disclosing information on biodiversity (Jones & Solomon, 2013). Developing a financial reporting framework for the recognition and measurement of biodiversity mass in financial statements is beyond the scope of this research.

2013). The findings in these studies are consistent with a similar study conducted on English and German companies (Grabsch et al., 2012; Jones & Solomon, 2013). In this context, this study makes an important contribution by adding to the literature on biodiversity reporting. The sustainable conservation and management of biodiversity is vital to South Africa's economic growth and development, directly affecting the quality of human life (South African National Biodiversity Institute, 2010). It is essential to know the status of the country's biodiversity and, in order to accomplish this task, access to such information is crucial (South African National Biodiversity Institute, 2010). In this regard, this report aims to provide the first insights into the extent of corporate reporting on biodiversity management in South Africa. The research should also be relevant for academics and practitioners in the areas of CSR (Laine, 2015).

Corporations are considered to be key players in the degradation of biodiversity but appear to have standardised reporting on environmental issues, often overlooking this potentially significant risk in their annual reports (Bebbington (2010) cited in Grabsch et al., 2012; van Liempd & Busch, 2013). Critical research has pointed out that corporations tend to pursue sustainable practices that are in the organisations' self-interest, as opposed to protecting natural capital (Passetti, Cinquini, Marelli, & Tenucci, 2014). This is inconsistent with the emphasis being placed on stakeholder-centric reporting, which provides a holistic account of an organisation's ability to create and sustain value in the short-, medium- and long-term (International Integrated Reporting Committee, 2011; The Institute of Directors in Southern Africa, 2009). Disclosures regarding eco-balances and an organisations' ecological footprint could possibly have an important function in helping countries navigate away from the destructive relationship they share with the environment (Gray, 2013). Examining the extent of biodiversity reporting by companies included in the JSE's mining and food sectors will, therefore, either highlight how South African companies are cognisant of their broader environmental responsibilities or identify a significant risk area which is not being given adequate attention in communication with stakeholders (Grabsch et al., 2012).

Finally, the difficulty with biodiversity reporting is deciding what should be disclosed and how it should be presented to users (Jones & Solomon, 2013). It is impossible to make recommendations about biodiversity disclosures without appreciating current practices (Jones & Solomon, 2013). By exploring the extent to which different biodiversity information is being included in South African integrated reports, this research will make an important contribution for practitioners by highlighting the type of information being communicated. This is not only useful for comparing integrated reports at a point in time but also

summarising the nature of biodiversity disclosures formalises the present state of biodiversity disclosure and can inform normative debate on the need for change (Jones & Solomon, 2013). The mining, food sectors have been chosen for the study as these sectors are considered significant in both a South African context and from a risk perspective (refer to section 3.3 for more detail) (F&C Asset Management, 2004; Statistics South Africa, 2014).

1.4 Limitations and delimitations of the study

Firstly, the research adopts a broad view on biodiversity reporting. No effort is made to explore tensions between anthropocentric and deep ecological theorisations of biodiversity and its implications for corporate reporting (Jones & Solomon, 2013).

Secondly, this research will use integrated and sustainability reports as the only source of data, consistent with the view that the integrated report is the primary form of communication with stakeholders (International Integrated Reporting Committee, 2011). The research will not consider data from websites, news announcements and press releases as they may contain misleading information or interpretations by individuals other than the duly appointed agents of the respective companies (Guthrie & Parker, 1989; van Liempd & Busch, 2013). Furthermore, no effort will be made to analyse the quality of biodiversity disclosures in the integrated reports. The embryonic state of research on biodiversity reporting means that there is no generally accepted 'scale' for assessing the quality of biodiversity reporting. Due to the fact that this is the first South African study to examine biodiversity reporting, only the extent of the disclosures will be examined.

It should be noted that this research is exploratory and descriptive in nature. The research in the area is limited and the study is the first of its kind in South Africa. As a result, the study takes a practical stance and does not necessarily look at the development or application of the theoretical aspects regarding biodiversity. The tone of the study is normative and aims to provide some recommendations regarding biodiversity disclosures.

2. Theoretical framework

This section is subdivided into two parts: firstly, the report will provide a brief discussion regarding the nature of biodiversity and the importance of biodiversity from a South African perspective. Secondly, a brief overview of the academic literature on biodiversity reporting will be presented.

2.1 Nature of biodiversity

> *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* (Global Reporting Initiative, 2007, p. 11).

'Biodiversity' is a concept which has been subject to a number of different interpretations but a common feature in all definitions relates to the variety and variability of living organisms, their habitats and biological ecosystems (Grabsch et al., 2012; Kaennel, 1998; Rimmel & Jonäll, 2013). In essence, biodiversity can be simplified to describe the variety of life on earth (Global Reporting Initiative, 2007; Grabsch et al., 2012).

Biodiversity has evolved from the historical ethical and emotional construct to encompass the cost of biodiversity loss to society and the global economy (Grabsch et al., 2012; Wynberg, 2002). Historically, organisations adopted an anthropocentric view of biodiversity in terms of which the value of the different species was derived from the contribution and usefulness of the ecosystems' usefulness to human life (Grabsch et al., 2012; Jones & Solomon, 2013). Human kind is intricately dependent on nature for clean air, water, food as well as for trade and, as a result, the anthropocentric view has dominated much of the Western world as biodiversity provides a wide variety of utilitarian values (Jones, 2010). A significant alternate perspective is the deep ecology view in terms of which the value of biodiversity is not considered only according to its contribution to humanity but also from a moral and ethical standpoint (Grabsch et al., 2012; Jones & Solomon, 2013). Advocates of this theory argue that human beings have a moral obligation to preserve species and maintain the integrity of natural communities (Jones, 2010). This alternate view is consistent with the approach to sustainability advanced by Gray (2010): that natural capital should dominate human-related capital (Grabsch et al., 2012). Ultimately, anthropocentrism and non-anthropocentrism both encourage the protection and conservation and maintenance of biodiversity (Jones, 1996, 2010).

2.2 Biodiversity in South Africa

South Africa is considered to be the third most biologically diverse country in the world, accommodating between 250 000 to a 1000 000 species, many of which are unique to South Africa, and as a result, the country is of great importance for the conservation of

biodiversity (Department of Environmental Affairs and Tourism, 1998; Wynberg, 2002)[3]. South Africa contains nine terrestrial biomes and is home to a spectacular variety of ecosystems, including great diversity in marine and coastal systems (South African National Biodiversity Institute, 2014; Turpie, 2003; Wynberg, 2002). Biodiversity is closely interwoven in South African society and is 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 R73 billion rand per annum, which is equivalent to approximately 7% of the country's GDP (Department of Environmental Affairs and Tourism, 2009).This diversity supports the livelihoods of millions of South Africans and significantly contributes to the country's economy, yet South Africa's biodiversity is one of most threatened in the world (Wynberg, 2002).

The democratic election in 1994 was a catalyst for a series of fundamental changes to South African legislation, policy and institutional frameworks in respect of biodiversity management (Wynberg, 2002). The Department of Environmental Affairs and Tourism is the leading institution responsible for biodiversity management and the South African National biodiversity Institute (SANBI), created as a public entity by the Department of Environmental Affairs to lead and co-ordinate research, assist with monitoring of and reporting on the state of biodiversity in South Africa (South African National Biodiversity Institute, 2014; Wynberg, 2002). 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 was also one of the countries which signed the *Convention of Biological Diversity* which is dedicated to the development and sustainable use of biodiversity (Global Reporting Initiative, 2007; Wynberg, 2002).

South Africa's biodiversity is under great threat (Department of Environmental Affairs and Tourism, 1998). Human activity, agricultural and industrial development have led to the transformation and degradation of natural habitats at an alarming rate, and the increasing growth of the human population, as well as unsustainable rates of resource consumption, will continue to negatively affect the country's biodiversity (Department of Environmental Affairs and Tourism, 1998, 2009). It has been estimated that 15% of South Africa's plant species, 14% of bird species, 24% of reptile species, 18% of amphibian species, 90% of mammal species and 22% of butterfly species are listed on the South African Red Data

[3] *Global Biodiversity: Status of the Earth's living resources*' by the World Conservation Monitoring Centre in 1992.

Book, indicating that these are threatened species (Department of Environmental Affairs and Tourism, 1998). Furthermore, ecosystems and many ecological processes have been degraded through fragmentation which has resulted from many aspects of human activity (Department of Environmental Affairs and Tourism, 1998). The department of Environmental Affairs and Tourism have also noted that existing trends indicate that the current situation is not improving and that growing human populations and unsustainable rates of resource consumption work as a catalyst for increasing the negative impacts on biodiversity (Department of Environmental Affairs and Tourism, 1998, 2009).

The next sections provide information relating to specific considerations in terms of biodiversity and the mining and food sectors.

2.2.1: Biodiversity and mining

Mining plays a vital role in South Africa's economy, however, mining practices are often not performed in a sustainable way, having a negative effect on biodiversity, such as loss or degradation of habitats leading to the loss in species; pollution and the introduction of invasive alien species (Department of Environmental Affairs, Chamber of Mines, South African Mining and Biodiversity Forum, & South African National Biodiversity Institute, 2013; Endangered Wildlife Trust, 2015). The mining sector's biodiversity conservation performance is under increasing scrutiny from a number of stakeholders, including financial analysts, as a result of growing awareness ,as well as the fact that these operations usually occur in environmentally sensitive areas (International Council on Mining and Metals, 2006).

Sustainable practices could limit the extent of mining activities and, thus, a trade-off exists between encouraging economic growth and sustaining ecological and environmental resources (Department of Environmental Affairs et al., 2013). Mining has the potential to damage biodiversity throughout its entire life cycle (International Council on Mining and Metals, 2006). 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). It is believed that opportunity for biodiversity enhancement exists at various stages throughout a mine's life-cycle (International Council on Mining and Metals, 2006). In South Africa the operations of mines are limited by the biodiversity constraints for biodiversity priority areas, as the loss of these areas would be difficult to compensate or offset and so, mining in these areas is legally prohibited (Department of Environmental

Affairs et al., 2013). In an attempt to find balance, 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 facilitate economic growth whilst minimising the effect of mining activities on biodiversity and ecosystem services (Department of Environmental Affairs et al., 2013).The Guideline emphasizes the value of a risk-based approach to biodiversity and encourages biodiversity risk to be assessed at every level of a mining project, as failing to consider the interdependencies that exist between biodiversity mining and society could affect a range of ecosystem service which will ultimately translate into negative implications for the well-being of the human race (Department of Environmental Affairs et al., 2013). The ultimate aim of the guideline is to integrate relevant biodiversity information into the decision-making process of the companies in the mining sector.

2.2.2: Biodiversity and the Food sector

The food producer and retail sectors are major sectors in South Africa that contribute significantly to the country's GDP, job creation and food security (South African National Biodiversity Institute, 2015). These sectors depend on biodiversity and healthy ecosystems in a variety of ways in order to provide food (Kok et al., 2014). Despite the inter-dependent relationship, approximately 60% of global terrestrial biodiversity loss is caused by the food sectors (Kok et al., 2014). Furthermore, the expansion and intensification of agriculture due to the rising demands of the world's population have been putting a further strain on biodiversity (Pagiola, Kellenberg, Vidaeus, & Srivastava, 1998). The increasing demand for food production, however, should not come at the cost of environmental degradation (Riffel, Dietzen, Künast, Day, & Schiansky, 2010). It is important to find a balance between modern agriculture and biodiversity protection (Riffel et al., 2010).

In South Africa, the focus of the SANBI is to promote sustainable farming practices and continue to work together with other affected parties in order to promote biodiversity conservation (South African National Biodiversity Institute, 2015). The SANBI, in conjunction with the WWF-SA, 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 (SANBI, 2015; Scotcher, 2009).

Recent projects include the Conservation Farming Project with the goal of evolution conservation practices in regions of South Africa that have significant biodiversity value globally; 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).

2.2.3: Biodiversity reporting in South Africa

In terms of biodiversity reporting, efforts have been made internationally through the Global Reporting Initiative (hereafter referred to as the GRI) and Integrated Reporting Project to cover some aspects of biodiversity (Jones & Solomon, 2013). Companies listed on the JSE are required to comply with King-III, effective from March 2010[4], making the JSE the first exchange in the world to mandate ,indirectly, the compliance with the King Code (Solomon & Maroun, 2012; South African Institute of Chartered Accountants, 2013). King-III advocates the compilation of integrated reports and recommends the use of the Global Initiative reporting guidelines on sustainability issues (The Institute of Directors in Southern Africa, 2009).

Integrated reporting is a means of providing a holistic view which is intended to enable stakeholders to gain an understanding of the true performance of an entity (Druckman & Fries, 2010). South Africa is considered to be a pioneer in promoting corporate governance due to the introduction of stakeholder-oriented style of reporting in the first King report (Solomon & Maroun, 2012). The shift to the integrated report gives companies the opportunity to incorporate social and environmental issues into one corporate reporting tool and, as a result, the integrated report should replace all other corporate reporting vehicles (International Integrated Reporting Committee, 2011; Solomon & Maroun, 2012). The integrated report is considered to be the primary vehicle of communication to all stakeholders (International Integrated Reporting Committee, 2011).

King-III encourages sustainability reporting and explicitly states that sustainability includes environmental, social and governance (ESG) disclosures (Carels, Maroun, & Padia, 2013; The Institute of Directors in Southern Africa, 2009). In a study performed by Solomon and Maroun (2012), the introduction and adoption of King-III has resulted in a greater presence of ESG disclosures. King III, together with other ESG initiatives, aids in informing the content of integrated reports (Carels et al., 2013; Integrated Reporting

[4] King-III follows an 'apply or explain' approach. All entities are expected to apply the principles of the Code and should explain how the principles have been applied or have not been applied (The Institute of Directors in Southern Africa, 2009)

South Africa, 2015). This is supported by a recent study performed over the disclosures of mining companies in South Africa, which identified that the King-III report and the integrated reporting project, have collectively caused the increase in the level of social, environmental and ethical disclosures (Carels et al., 2013).

An increasing number of South African companies has also begun to apply the GRI reporting framework in reporting sustainability issues to stakeholders (Rimmel & Jonäll, 2013). One aspect of the environmental section of the GRI sustainability-reporting framework relates to biodiversity and five indicators specifically relates to the concept of biodiversity. Nevertheless, because biodiversity is not a stand-alone issue, there may be other indicators which also relate to biodiversity (Global Reporting Initiative, 2007; Rimmel & Jonäll, 2013). The indicators relating to biodiversity are summarised in Table 2.2

Table 2.2: GRI Biodiversity Indicators	
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.

Core and additional performance indicators on biodiversity (Global Reporting Initiative, 2007).

It should be noted that as important as biodiversity is, it is not always explicitly addressed in the sustainability disclosures (Global Reporting Initiative, 2007). At the minimum, organisations can be seen as being accountable to their stakeholders for their management of and stewardship towards environmental assets (Jones, 2010). Prior research with respect

to biodiversity have been limited (Jones & Solomon, 2013). The next section takes a closer look at prior research that has been conducted in the field.

2.3 Biodiversity disclosure themes: Axial codes from the prior research

Biodiversity is considered to be a neglected area of corporate governance research (Jones & Solomon, 2013). The main challenge relating to biodiversity reporting is the uncertainty about the definition of 'biodiversity' and how it should be measured (Grabsch et al., 2012). The GRI and Integrated Reporting Frameworks (International Integrated Reporting Committee, 2011) tend to cover some aspects of biodiversity but there is a lack of a generally acceptable framework for biodiversity reporting (Grabsch et al., 2012). In light of the above, the study will consider prior literature in relation to the main biodiversity themes.

Grabsch et al. (2012) developed disclosure codes which evaluate the extent of biodiversity disclosures and these were later used by van Liempd and Busch (2013). Biodiversity disclosures were divided into eight categories, namely, scene-setting; species-related; social engagements; stakeholder engagements; performance evaluative data; risk; internal management; and 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 & Busch, 2013). Disclosures relating to how many species are present, the types of species present and the efforts made by a company to protect or maintain these species are encompassed by the 'species-related' category (van Liempd & 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 with respect to biodiversity and recognisable outcomes as a result of such partnerships (Grabsch et al., 2012). On the other hand, stakeholder engagements relate to any form of engagement a company has had with various stakeholder in terms of biodiversity issues, which could be represented by the provision of training for employees, amongst other examples (Grabsch et al., 2012). Companies are also expected to report on their biodiversity performance targets and to provide feedback in relation with the company's ability to meet such expectation and the risks that the company faces in terms of performance and biodiversity in general. This forms part of the performance data and risk categories (Grabsch et al., 2012; van Liempd & Busch, 2013). 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 & Busch, 2013).

Each of these predetermined disclosure categories (shown below) form the axial codes for this research. Thematic content analysis is used to analyse a sample of integrated and sustainability reports. The reports were analysed and specific disclosures were identified and aggregated, per industry under these axial codes (refer to section 3.4 for more detail) (van Liempd & Busch, 2013).

Table 2.3.1 : Summary of Disclosure Themes

1. Scene – setting	• Definition • Mission Statement
2. Species - related	• Site-specific • Specific species • Surveys • IUCN Red List
3. Social Engagements	• Partnerships • Awards • Stakeholder engagements
4. Performance Evaluations	• Target Performance • Costs
5. Risk	• Risk • Risk Management • Incidents • Materiality
6. Internal Management	• Biodiversity Action Plans • Biodiversity Officer
7. External Reporting	• GRI and other frameworks

In recent studies conducted on the extent of biodiversity disclosures in Sweden, Denmark, England and Germany, it is evident that the overall level of biodiversity disclosures made by companies is very poor (Grabsch et al., 2012; Rimmel & Jonäll, 2013; van Liempd & Busch, 2013). In addition, the disclosures that related to biodiversity were often indirect and were of a low quality (van Liempd & Busch, 2013). The most common disclosures found in Danish companies relate to mission statements, partnerships and the GRI reporting (van Liempd & Busch, 2013). On the other hand, performance, internal management and external reporting disclosures were among the lowest scoring categories, supporting the view that biodiversity disclosures are a new concept to most companies, evident by the presence of vague mission statements which are easy to generate and a lack of more detailed disclosures, which are more challenging to create (van Liempd & Busch, 2013). A similar result was

found in England and Germany, where biodiversity disclosures relating to risk, risk management and materiality was very poor (Grabsch et al., 2012). Most of the biodiversity disclosures in England and Germany were made by companies in the mining sector and the mining sector was considered to be the leader in biodiversity disclosures, being the industry with the highest quantity of disclosures as well as the most number of companies reporting within a sector (Grabsch et al., 2012). Furthermore, Grabsch et al. (2012) found that a correlation exists between 'high risk' environmental sectors and the tendency to report on biodiversity elements. Overall, both studies demonstrate the lack of accountability and transparency by companies with respect to biodiversity (Grabsch et al., 2012; van Liempd & Busch, 2013).

These results demonstrate that there is an urgent need for change in the corporate reporting model with respect to biodiversity reporting, and this change needs to be supported by further research in the field (Grabsch et al., 2012; van Liempd & Busch, 2013). South Africa is a country with great biodiversity value, which underlines the supports of millions of South Africans, as well as the economic development of the country (Department of Environmental Affairs and Tourism, 2009; Wynberg, 2002). The aim of the study is to examine the extent of biodiversity disclosures in the South African mining and food sectors. This is explained further in Section 3.

3. Methodology

3.1 Research paradigm

Positivist research is mainly grounded in empirical data and entails the use of empirical techniques to study a phenomenon (Leedy & Ormrod, 2013). This allows the researcher the prospect of avoiding judgements and theoretical speculations, allowing the study to be conducted with objectivity and for results to be extrapolated (Leedy & Ormrod, 2013; Ryan, Scapens, & Theobald, 2002). An interpretive methodology is underlined by the idea that qualitative research should aim to reveal multiple realities, as opposed to a search for one objective state (Guest, Namey, & Mitchell, 2013). Interpretive research methodologies are heavily reliant on naturalistic methods which often incorporate interviews, observations and analysis of existing texts (Cohen & Crabtree, 2006). As a result, interpretive research tends to be more subjective (Maroun, 2012). Although positivist methods have achieved great success in the past, it is argued that these methods are unable to explain fully the social implications of corporate reporting (Baker & Bettner, 1997), especially when dealing with

emerging research areas, including biodiversity reporting[5] (Jones & Solomon, 2013). As a result, this research is grounded in an interpretive epistemology.

3.2 Method

Thematic content analysis was 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. Content analysis has been used widely in accounting research (Steenkamp & Northcott, 2007) and can be described as a systematic technique for coding and categorising textual data in order to determine trends, patterns and frequencies (Steenkamp & Northcott, 2007; Vaismoradi, Turunen, & Bondas, 2013). Content analysis incorporates a number of different strategies to analyse textual data and allows the researcher to utilise a qualitative and quantitative approach simultaneously when analysing data (Vaismoradi et al., 2013).

Thematic analysis is regarded as the most useful type of analysis for highlighting the complexities associated with meanings in the textual data set and involves the description of both implicit and explicit ideas within the data which are identified as themes (Guest, MacQueen, & Namey, 2011). This methodology is inspired by grounded theory in the sense that it is reliant on inductive data collection and analytic methods (Guest et al., 2013), however, thematic content analysis may not produce a new theoretical model (Guest et al., 2011).

Following a social constructivist view, thematic content analysis entails detailed involvement by the researcher in the data collection and analysis phase of the study (Carels et al., 2013; Steenkamp & Northcott, 2007). As a result, the research paradigm is dependent upon the judgements of the researcher but this should not be seen as a weakness. Instead, the chosen method offers a greater potential to contribute to the understanding of accounting and CSR disclosures (Steenkamp & Northcott, 2007).

3.3 Sample size

The extent of biodiversity disclosure was examined in the integrated and sustainability reports of companies in the mining and food producer and retail sectors of the JSE. The selected industries have been classified as red-zone sectors by the F&C Asset Management (2004). The risk of each sector is determined as a result of interaction between the two

[5] For further details, refer to the Accounting, Auditing & Accountability Journal Vol.26 No.5, 2013

dimensions of risk, namely the proportion of companies in the sector which are likely to be exposed to biodiversity risk and the significance of the risk likely to be faced by individual companies in the sector (F&C Asset Management, 2004). As a consequence of the red-zone classification, most companies in the selected industries are likely to be exposed to significant biodiversity risks (F&C Asset Management, 2004). Furthermore, companies in the extractive sectors are generally regarded as being impacted by biodiversity issues and, as a result, the issues are likely to be well recognised by leading companies in the respective industry[6] (F&C Asset Management, 2004; Grabsch et al., 2012).

A sample of ten companies per sector was chosen for the study (refer to Tables 3.3.1 and 3.3.2 below). The largest ten companies (by market capitalisation) were selected, based on the fact that these companies are expected to have the largest impact on biodiversity and, thus, have the greatest need for accountability to various stakeholders. Being the largest organisations per sector, they tend to attract greater attention of a broader readership (de Villiers et al., 2014; Rimmel & Jonäll, 2013; van Liempd & Busch, 2013). Having more resources available for reporting to stakeholders, these companies are also more likely than smaller companies to include disclosures not specifically referred to in existing reporting frameworks (Rimmel & Jonäll, 2013; van Liempd & Busch, 2013)[7]. Tables 3.3.1 and 3.3.2 show the companies included in the analysis.

[6] The study seeks to examine the extent of biodiversity-information being included in integrated and sustainability reports. The intention is not to quantify results or extrapolate the findings. Instead, the research is exploratory and aims to highlight the nature and extent of biodiversity information in integrated and sustainability reports. As such, purposeful selection of high impact studies is not a threat to validity and reliability of the study.

[7] 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).

Table 3.3.1: Companies selected for the mining industry		
Company Name	**Sector**	**Market Capitalisation**
Glencore plc	Mining	773 599 902 449
BHP Billiton plc	Mining	642 885 012 381
Anglo American plc	Mining	343 299 574 598
Anglo American Platinum Ltd	Mining	103 018 480 452
Impala Platinum Holding Ltd	Mining	52 574 939 192
Anglogold Ashanti Ltd	Mining	42 974 594 885
Exxaro Resources Ltd	Mining	42 490 404 668
Gold Fields Ltd	Mining	31 431 011 698
Assore Ltd	Mining	30 695 391 090
African Rainbow Min Ltd	Mining	30 222 290 091
TOTAL		**2 093 191 601 506**

Table 3.3.2: Companies selected for the Food Producer and retail sector		
Company Name	**Sector**	**Market Capitalisation**
Shoprite Holdings Ltd	Food & Drug Retailers	94 117 134 308
Tiger Brands Ltd	Food Producers	66 222 152 460
Pioneer Foods Group Ltd	Food Producers	29 540 714 828
Pick n Pay Stores Ltd	Food & Drug Retailers	25 438 225 156
AVI Ltd	Food Producers	24 639 024 351
The Spar Group Ltd	Food & Drug Retailers	22 416 838 814
Tongaat Hulett Ltd	Food Producers	20 435 766 533
RCL Foods Limited	Food Producers	14 873 619 216
Illovo Sugar Ltd	Food Producers	12 025 067 538
Oceana Group Ltd	Food Producers	10 217 095 900
TOTAL		**319 925 639 105**

The companies that were selected in the sample represent 95.6% of the market capitalisation in the mining sector and 88.1% of the market capitalisation of the food producer and retail sector. The selected sample only focuses on the sectors that are classified as red-zone and, as a result, an inherent disadvantage is that the findings of this study are not generalizable across other sectors. In addition, as the largest companies are chosen, the findings could create the impression of more active disclosures than exist in the average company. This is an inherent limitation of the research but not a significant threat to validity and reliability of the findings. Importantly, the companies selected represent the largest and most established in the respective sectors and are likely to give a reasonable basis for understanding the extent of biodiversity disclosure by local corporates. The JSE is also a relatively small market with the result that companies not included in the analysis tend to be smaller or emerging operations and, as such, are unlikely to have a significant biodiversity impact.

It should be noted that Pick and Pay Holdings Limited and Pick and Pay Stores Limited are both listed on the JSE and originally formed part of the sample selected per market capitalisation. Pick and Pay Holdings Limited was, however, excluded from the sample as only one set of reports is prepared for both Pick and Pay Stores Limited and Pick and Pay Holding Limited. The Clicks Group was excluded from the sample as their primary focus is providing healthcare and cosmetic products and as a result, the group is classified as a pharmaceutical retailer. (Clicks Group Limited, 2014). This study is specifically focused on the mining and food sectors

Sixty (60) integrated reports were analysed, but only twenty-nine (29) sustainability reports were available and so the analysis only included twenty-nine sustainability reports (Refer to Table 3.3). The integrated and sustainability reports were analysed for the 2011, 2012 and 2013 financial years (refer to section 3.4 for an explanation regarding the period chosen for review).

Table 3.3: List of integrated and sustainability reports analysed

Name of Company	2011		2012		2013	
	Integrated report	Sustainability report	Integrated report	Sustainability report	Integrated report	Sustainability report
*Glencore Plc	✓	✓	✓	✓	✓	✓
*BHP Billiton	✓	✓	✓	✓	✓	✓
* Anglo American PLC	✓	✓	✓	✓	✓	✓
*Anglo American Platinum	✓	×	✓	✓	✓	✓
* Impala Platinum Limited	✓	✓	✓	✓	✓	✓
* AngloGold Ashanti	✓	✓	✓	✓	✓	✓
* Exxaro Resources	✓	×	✓	×	✓	✓
* Gold Fields Limited	✓	×	✓	×	✓	×
* Assore Limited	✓	×	✓	×	✓	×
* African Rainbow Minerals	✓	✓	✓	✓	✓	✓
*Tiger Brands Limited	✓	×	✓	×	✓	×
* Pioneer Foods Group Limited	✓	×	✓	×	✓	×
* AVI Limited	✓	×	✓	×	✓	×
* Tongaat Hulett Limited	✓	×	✓	×	✓	×
* Shoprite Holding Limited	✓	×	✓	✓	✓	✓
* Pick n Pay Stores Limited	✓	✓	✓	✓	✓	✓
* Spar Group Limited	✓	×	✓	×	✓	×
* RCL Food Limited	✓	✓	✓	✓	✓	✓
* Oceana Group Limited	✓	×	✓	×	✓	×
* Illovo Sugar Limited	✓	×	✓	×	✓	×

Note: Some companies did not produce sustainability reports for all the relevant years. This has been indicated with the × symbol. 21 Relate to the mining sector and 8 to the Food sector.

It is important to note that relatively small sample sizes are an inherent characteristic of textual data analysis (Merkl-Davies, Brennan, & Vourvachis, 2011; Solomon & Maroun, 2012). Social constructivist text analyses are viewed as being labour intensive, and as a result can only be productively applied to a small sample of texts (Merkl-Davies et al., 2011). This is supported by the views of Guest et al. (2013) in the sense that thematic content analysis often makes use of predetermined samples that are temporarily separate from the analysis and are revised once the analysis begins.

3.4: Data collection

The integrated and sustainable reports of the selected companies were extracted from the companies' websites for the 2011, 2012 and 2013 financial years. The 2010 reports were not analysed as it was the transitional year for the implementation of the King-III requirements for integrated reporting (Carels et al., 2013; South African Institute of Chartered Accountants, 2013). King-II referred to the importance of 'triple-bottom line reporting'[8], however this was considered to be insufficient and a change was needed in the way companies and directors organise themselves (Carels et al., 2013; The Institute of Directors in Southern Africa, 2009). As a response, King-III introduced the principles of integrated reporting and was mandated by the JSE in 2010 through its listing requirements[9] and many companies produced their first integrated reports in 2010 (Carels et al., 2013; Solomon & Maroun, 2012). As discussed in Section 3.3 a total of 60 integrated and 29 sustainability reports were included in the final analysis.

The analysis in this study was restricted to the integrated and sustainability reports of the companies' selected and complementary information provided on their website was not analysed. The study examines the extent of biodiversity disclosures and the change of such disclosures over the 3 year period, and as a result information provided on websites was excluded as the change of disclosure over time cannot be measured over this medium (Rimmel & Jonäll, 2013). The focus of the study is on integrated reports as these reports are considered as the primary form of communication with stakeholders (International Integrated Reporting Committee, 2011). As mentioned in Section 1.4, press releases have been excluded as they may contain missing or misleading information or interpretations by individuals other than the duly appointed agents of the respective companies (Guthrie & Parker, 1989; van Liempd & Busch, 2013).

[8] Triple Bottom Line reporting refers to corporations reporting on their environmental and social performance, in addition to disclosing their financial performance. It is viewed that all three of these components are interdependent and a deficiency in the one will affect the others (Norman & MacDonald, 2004).

[9] One of the JSE listing requirements includes the application of the King Code. Companies have to communicate how they have applied the Code or explain why they have not (Institute of Directors in Southern Africa, 2013). King-III became effective from 1 March 2010 and companies were required to produce an integrated report (SAICA, 2013)

3.4 Data analysis

This study made use of axial codes in the analysis of the integrated and sustainability reports. This study utilised pre-determined axial codes which have been derived from existing literature and GRI indicators developed by Grabsch et al. (2012) (as discussed in Section 2.3). The axial codes include:

1. Scene-setting
2. Species-related
3. Social engagement
4. Stakeholder engagements
5. Performance evaluation
6. Risk
7. Internal management and
8. External reports

The reliance on predetermined codes (axial codes) was important for ensuring that the study retained its focus and resonated with the prior literature (Carels et al., 2013; Leedy & Ormrod, 2013).

This method is similar to the methodology used by van Liempd and Busch (2013) to analyse the extent of biodiversity reporting in Denmark and by Grabsch et al. (2012) in their study of biodiversity disclosures of listed English and German companies, providing additional assurance on the validity and reliability of the results. Grabsch et al. (2012) investigated the incidence of biodiversity reporting within two major European Union States by selecting the sustainability reports of the leading hundred companies in the United Kingdom and Germany. These reports were searched for biodiversity-related narratives and codes/themes were derived after a careful study of the data (Grabsch et al., 2012). These themes were then used to ascertain the quantity of biodiversity-related disclosures (Grabsch et al., 2012). In order to determine the extent of biodiversity reporting in Denmark, van Liempd and Busch (2013) examined all narratives of the largest Danish companies based on market capitalisation and used the disclosure themes developed by Grabsch et al. (2012) in order to determine the extent of biodiversity disclosures in Denmark.

Following a similar approach, an initial content analysis of the reports was carried out in order to gain a sense of the content and structure of the integrated and sustainability reports (Leedy & Ormrod, 2013). The reports were analysed to gain an understanding of the nature of biodiversity disclosures that have been included in these reports and where these have been disclosed.

A broad definition of 'biodiversity' was applied to represent companies' mention of ecosystems, habitats, ecosystem services, conservation, preservation, restoration and information on species (Grabsch et al., 2012; van Liempd & Busch, 2013). In order to identify the narratives relating to biodiversity (Grabsch et al., 2012), reports was searched for keywords which are associated with genetic and eco-systemic biodiversity (adapted from van Liempd & Busch, 2013). These, inter alia, include: 'biodiversity'' 'habitat', 'eco-system', 'conservation', 'species', 'flora', 'fauna', 'wildlife', 'marine' and 'maritime'.

Each company's integrated report and sustainability report was analysed using a theme register, as discussed above (see Appendix 8.1 and 8.2). The reports were read and analysed interpretively drawing out items of biodiversity information that was reported by the companies (adapted from Solomon & Maroun, 2012). A score of '0' and '1' was used in the analysis to indicate the presence or absence of the respective biodiversity-disclosure metric. The aggregation will show the number of companies in the sector that include a specific biodiversity disclosure item per year. As mentioned in Section 1.4, the qualities of such disclosures have not been considered as there is no generally acceptable scale or metric that can be used to determine the quality of biodiversity disclosures.

Using the biodiversity-disclosures scores, a frequency table was generated in order to show the extent of biodiversity disclosures for each company for the chosen years (Leedy & Ormrod, 2013). Various descriptive statistics were used to identify trends in the disclosure levels over the three-year period for each company as well as across the mining and food sectors. The descriptive statistics, such as the mean, were used to carry out the above analysis. In addition, examples extracted from the integrated reports and sustainability reports of the sample companies were used to describe the nature of such disclosures made (Grabsch et al., 2012). Due to the limited sample size and exploratory nature of the research, detailed inferential statistical analysis (including modelling techniques or correlation analyses) was not conducted, consistent with prior comparable studies (Grabsch et al., 2012; Rimmel & Jonäll, 2013; van Liempd & Busch, 2013).

The analysis was expanded to measure the degree of integration of the biodiversity disclosures within the integrated reports and sustainability reports. In order to carry out such analysis, the integrated reports and sustainability reports were disaggregated into common sections (Appendix 8.3 and 8.4). The sections of the integrated report used for this analysis were consistent with those employed by Solomon and Maroun (2012) and Carels et al. (2013). For the sustainability reports, as the reports were in the process of being read and analysed, an initial basic report outline was developed in order to gain a sense of the

common sections in the sustainability reports (adapted from Carels et al., 2013). This basic outline was then developed to map the main sections of the sustainability reports and these were subsequently refined after the readings of several sustainability reports. The frequency of the extent of biodiversity disclosures per section was recorded (Carels et al., 2013).

To measure the extent of integration of the data, the cumulative change in the frequency of biodiversity disclosures per section of the integrated and sustainability reports was calculated over the three-year period (adapted from Carels et al., 2013; Solomon & Maroun, 2012). This avoids a positivist method of counting the words or sentences, (Solomon & Maroun, 2012) and provides a clearer reflection of how effectively biodiversity disclosures are integrated into the report as a whole. The integrated report is meant to facilitate integrated thinking, providing for a more holistic view of the organisation for decision making purposes (The Institute of Directors in Southern Africa, 2009).This is consistent with the view that the 'act' of corporate reporting could potentially transform corporate behaviour (Solomon & Maroun, 2012). The degree of integration is examined in order to ascertain if biodiversity related disclosures exist throughout the reports or are restricted to specific sections.

The study does not make use of any human participation and, as a result, there are no related ethical considerations. Due to the nature of the study, the identities of the companies have been kept anonymous in the discussion section of the study. In addition, the study has been assessed by peers to ensure that there have been no ethical violations in the research.

It should be noted that the researcher was an integral part of the data analysis but this should not be seen as a threat to validity and reliability and this is an inherent characteristic of interpretive research (Creswell, 2009; Merkl-Davies et al., 2011).

4. Results

This section outlines results of the study per the pre-determined axial codes. A sectorial analysis, as well as a year on year comparison, is outlined below. The results are split into an analysis of the disclosures per the integrated report and the sustainable reports.

The following sections present the presence of biodiversity disclosures in the integrated and sustainability report per disclosure theme.

4.1 Scene-setting disclosures

Companies overall scene-setting in relation to biodiversity can be investigated by the definition adopted by the company as well as their mission statements and vision in relation to biodiversity (Grabsch et al., 2012; van Liempd & Busch, 2013).

Table 4.1.1: Scene-setting disclosures per the Integrated Reports

Scene-Setting	2011		2012		2013	
	Mines	Food Producers and Retailers	Mines	Food Producers and Retailers	Mines	Food Producers and Retailers
Definition	0	0	0	0	0	0
Mission statement	9	9	9	10	9	10

Figure 4.1.1: Total Scene-setting disclosures per the integrated report.

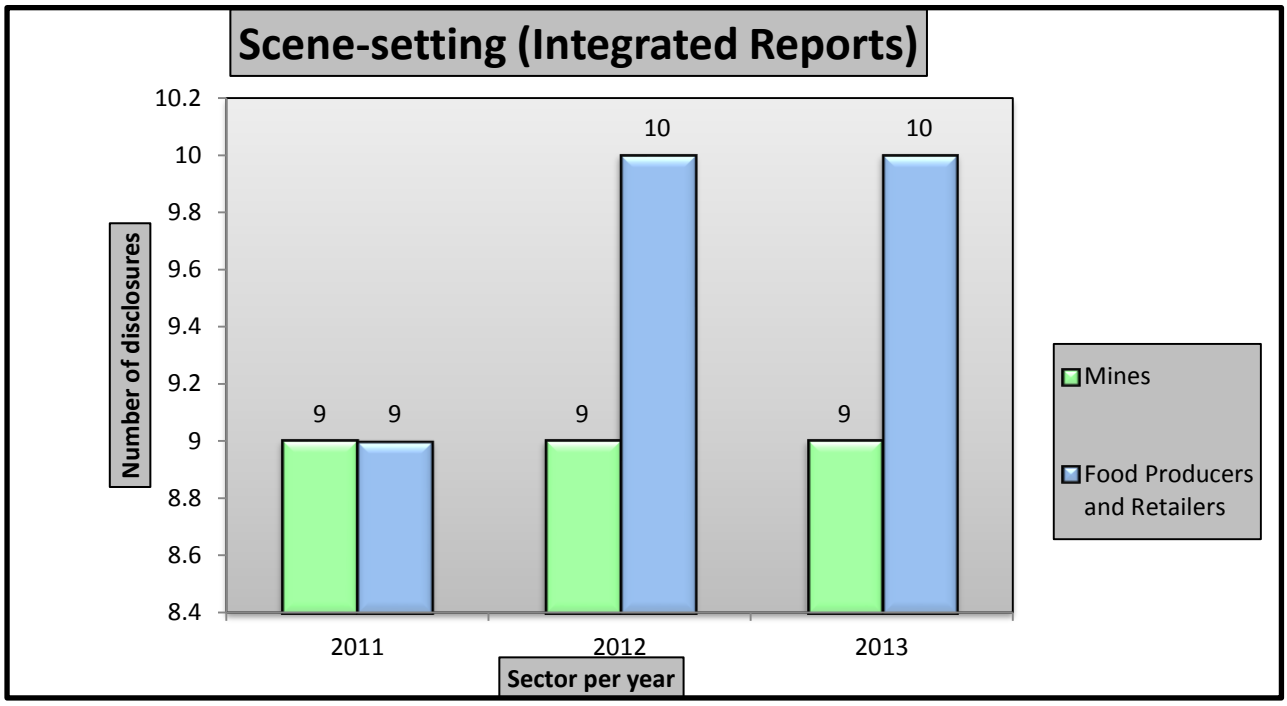


Table 4.1.1 shows that none of the sampled mining or food producer/retailer companies stated clearly their definition of 'biodiversity' in their integrated reports. There is no improvement over the three-year period. In contrast, Figure 4.1.1, shows that most companies had an overall mission statement in their integrated reports. It can be seen that 90% of the selected mining companies outlined their mission statements but no movement

was noticed in the sector for these disclosures over the three-year period. In the food sector, a 100% of the companies disclosed a mission statement, with an increase of 11% being recorded in 2012.

Table 4.1.2: Scene setting disclosures per the Sustainability Reports

Scene-Setting	2011		2012		2013	
	Mines	Food Producers and Retailers	Mines	Food Producers and Retailers	Mines	Food Producers and Retailers
Definition	1	0	0	0	0	0
Mission statement	5	1	7	2	8	2

Figure 4.1.2: Total Scene-setting disclosures per the sustainability report.

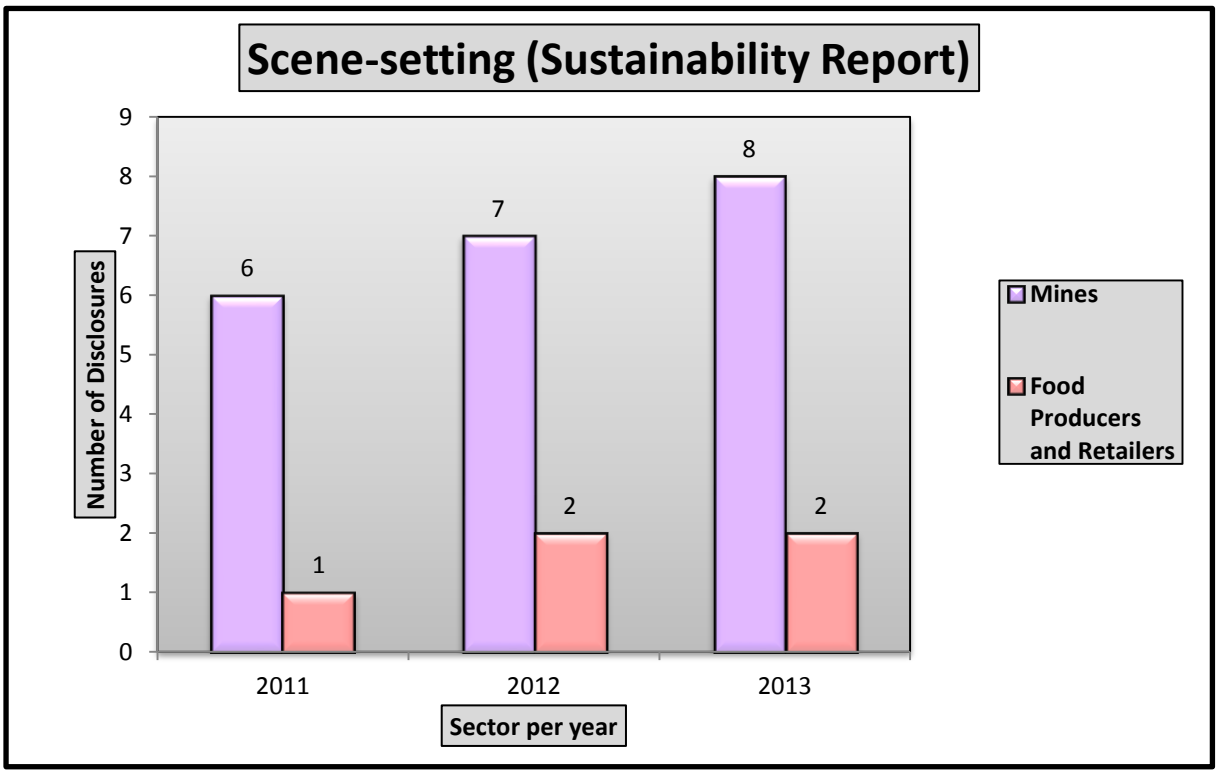


Figure 4.1.2 shows an increasing trend in scene-setting-related disclosures found in the sustainability reports of the mining sector with a 33% increase over the three years. From Table 4.1.2, it is evident that the increases are related to additional disclosures of mission

statements. The disclosure of definitions for biodiversity in sustainability reports is often non-existent, similar to the results noticed in the integrated reports (Table 4.1.1). Figure 4.1.2 further shows that the disclosures in the food sector have increased by 100% over the three-year period but, despite the increase, the mining sector appears to be disclosing more scene-setting information than the food producer sector.

4.2. Species-related disclosures

Species-related disclosures consist of site-specific disclosures, mention of specific species affected by or related to the companies operation, surveys conducted regarding species affected by the company's operations and mention/ consideration of IUCN-red list species (Grabsch et al., 2012; van Liempd & Busch, 2013).

Table 4.2.1: Species-related disclosures per the Integrated Report

	2011		2012		2013	
SPECIES RELATED	Mines	Food Producers and Retailers	Mines	Food Producers and Retailers	Mines	Food Producers and Retailers
Site-specific	2	3	3	1	2	3
Specific species	1	3	2	2	0	1
Surveys	1	1	1	2	0	2
IUCN Red list	0	1	2	0	0	0

Figure 4.2.1: Total Species-related disclosures per the integrated report.

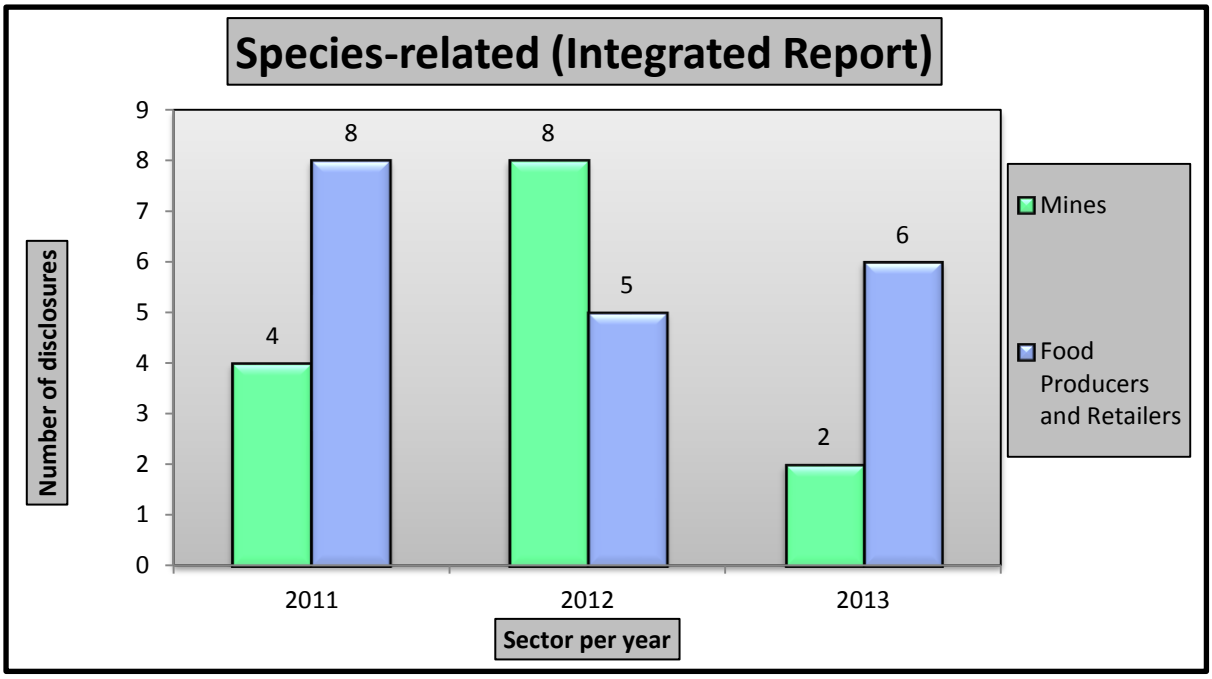


Figure 4.2.1 above shows that the number of species-related disclosures appears to be volatile over the three-year period across both industries, with no visible trend being apparent. On average, it appears that more companies in the food producer and retailer sector disclose information relating to specific species as opposed to mining companies. Overall species-related disclosures have decreased over the three-year period, with the mining sector experiencing a 50% decrease and the food sector a 25% decrease.

Table 4.2.2: Species-related disclosures per the Sustainability Reports

	2011		2012		2013	
SPECIES RELATED	Mines	Food Producers and Retailers	Mines	Food Producers and Retailers	Mines	Food Producers and Retailers
Site-specific	4	0	6	1	7	3
Specific species	4	0	4	1	2	1
Surveys	2	0	3	0	1	2
IUCN Red list	4	0	4	0	4	0

Figure 4.2.2: Total Species-related disclosures per the Sustainability report.

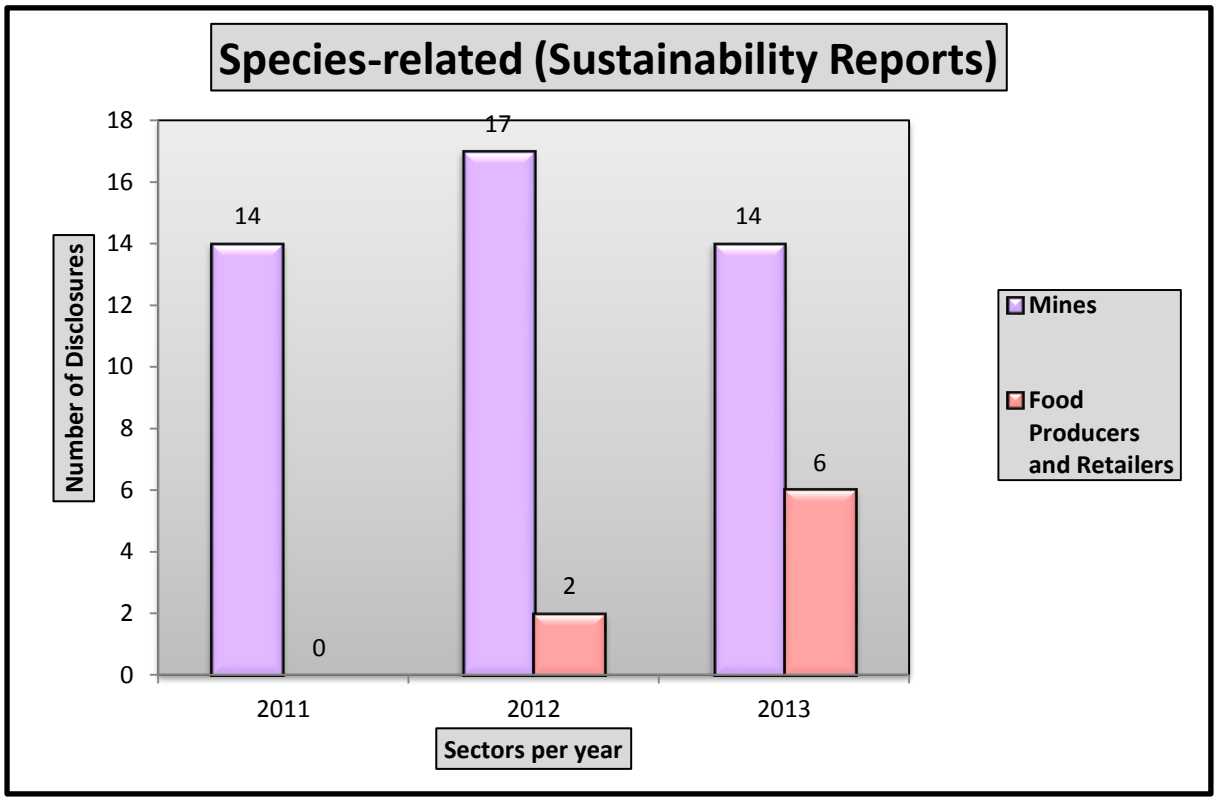


Figure 4.2.2 shows an increasing trend of disclosures in the food sectors with a 200% increase over the three-year period. From Table 4.2.2 it is evident that the 200% increase is due to increased disclosures regarding specific species in the sector. There has been a 0% change in the disclosures of the mining sector over the three-year period but the number of disclosures is relatively high. The overall results differ from those in the integrated report as the disclosures in the sustainability reports appear to be more stable than in the integrated report.

4.3. Social engagements disclosures

Social engagements relate to partnerships and alliances formed with stakeholders and government and non-profit organisations in order to preserve and protect biodiversity. Furthermore, disclosures regarding awards that companies obtain with respect to biodiversity provide further information about the companies' social engagements regarding biodiversity (Grabsch et al., 2012; van Liempd & Busch, 2013).

Table 4.3.1: Social engagement disclosures per the Integrated Reports

SOCIAL ENGAGEMENTS	2011		2012		2013	
	Mines	Food Producers and Retailers	Mines	Food Producers and Retailers	Mines	Food Producers and Retailers
Partnerships	4	8	3	7	2	7
Awards	0	2	0	2	0	1
Stakeholder engagements	1	7	2	4	0	4

Figure 4.3.1: Total Social Engagement disclosures per the integrated report

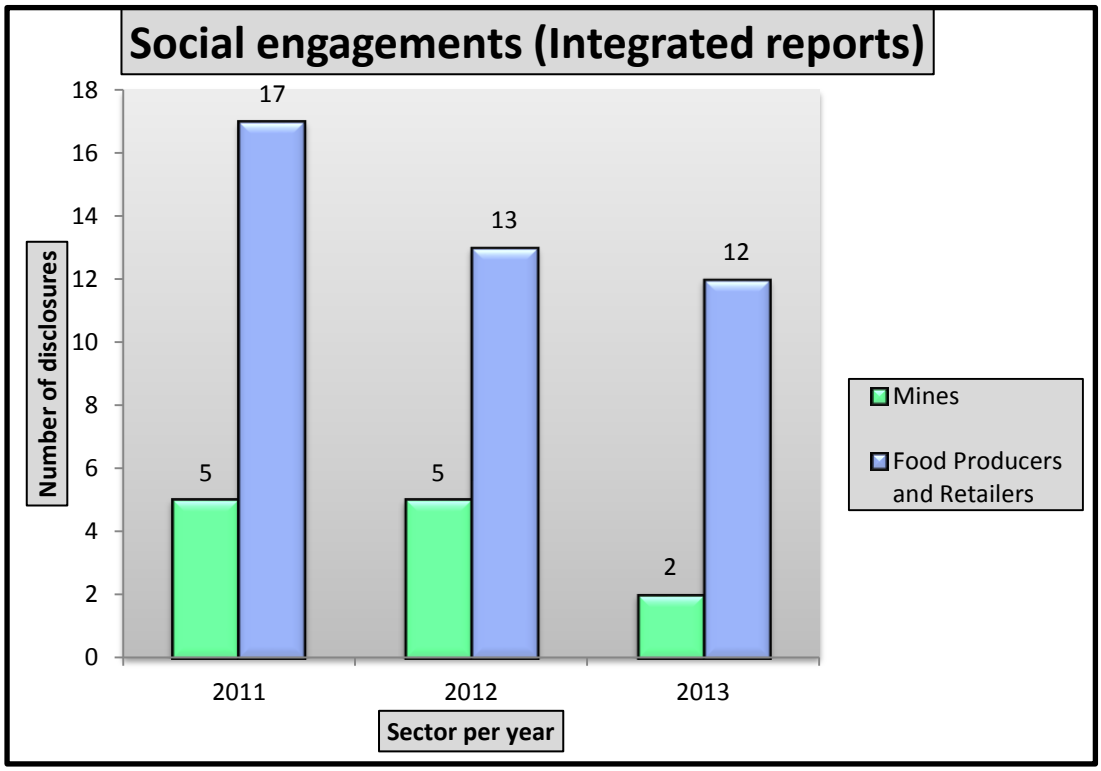


Figure 4.3.1 above shows us that companies in the food sectors tend to engage more with their stakeholders regarding the preservation and protection of biodiversity then the mining sector. Figure 4.3.1, in addition, clearly shows a downward trend in the number of disclosures relating to social engagements across both sectors, with the food sectors decreasing by 29% over the three-year period and the mining sector by 60% over the same period.

Table 4.3.2: Social engagement disclosures per the Sustainability Reports						
	2011		2012		2013	
SOCIAL ENGAGEMENTS	Mines	Food Producers and Retailers	Mines	Food Producers and Retailers	Mines	Food Producers and Retailers
Partnerships	4	2	5	2	7	2
Awards	0	1	1	0	1	0
Stakeholder engagements	0	0	3	1	4	1

Figure 4.3.2: Total Social engagement disclosures per the sustainability report

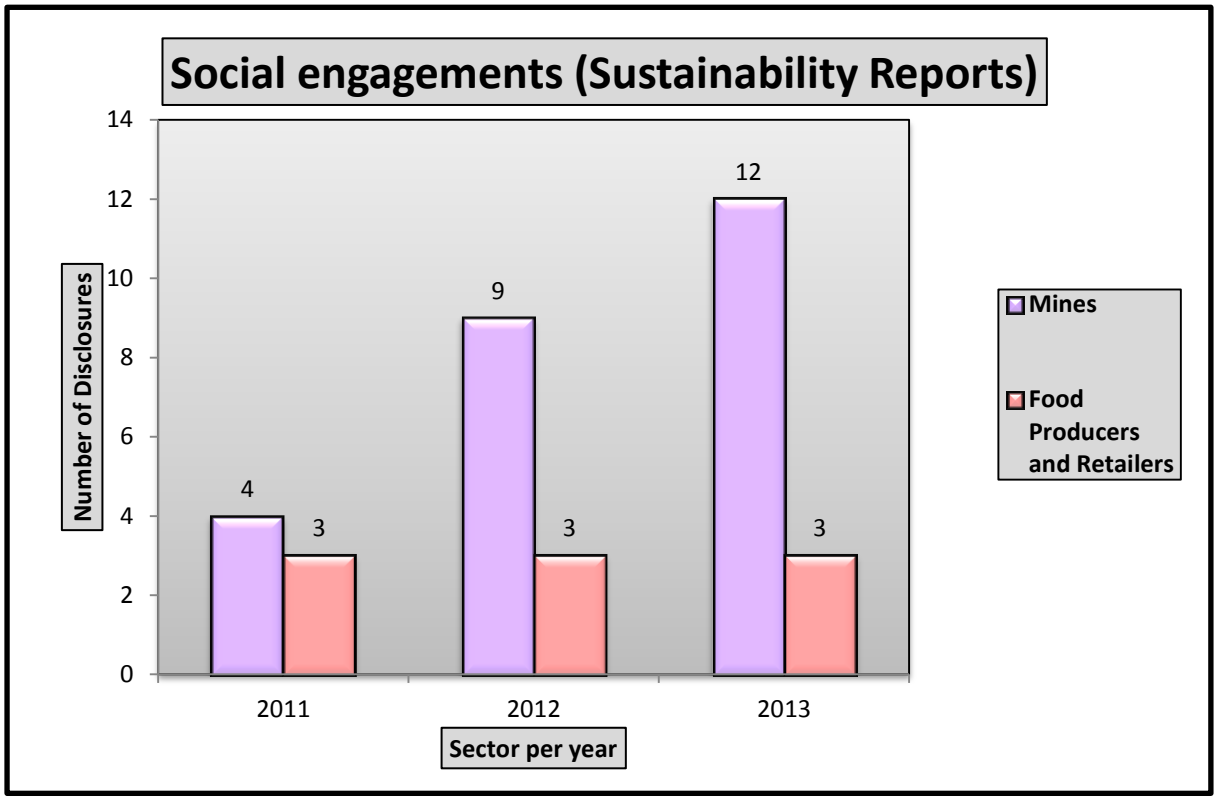


Figure 4.3.2 depicts an upward trend in the mining sector's disclosure with an increase of 200% over the three-year period. This result is in contrast with the downward trend in the sector's disclosures per the integrated reports. The food sectors' disclosures have remained stable with a 0% change over the three-year period. This can be considered an improvement from the decreasing trend in the sector per the integrated report.

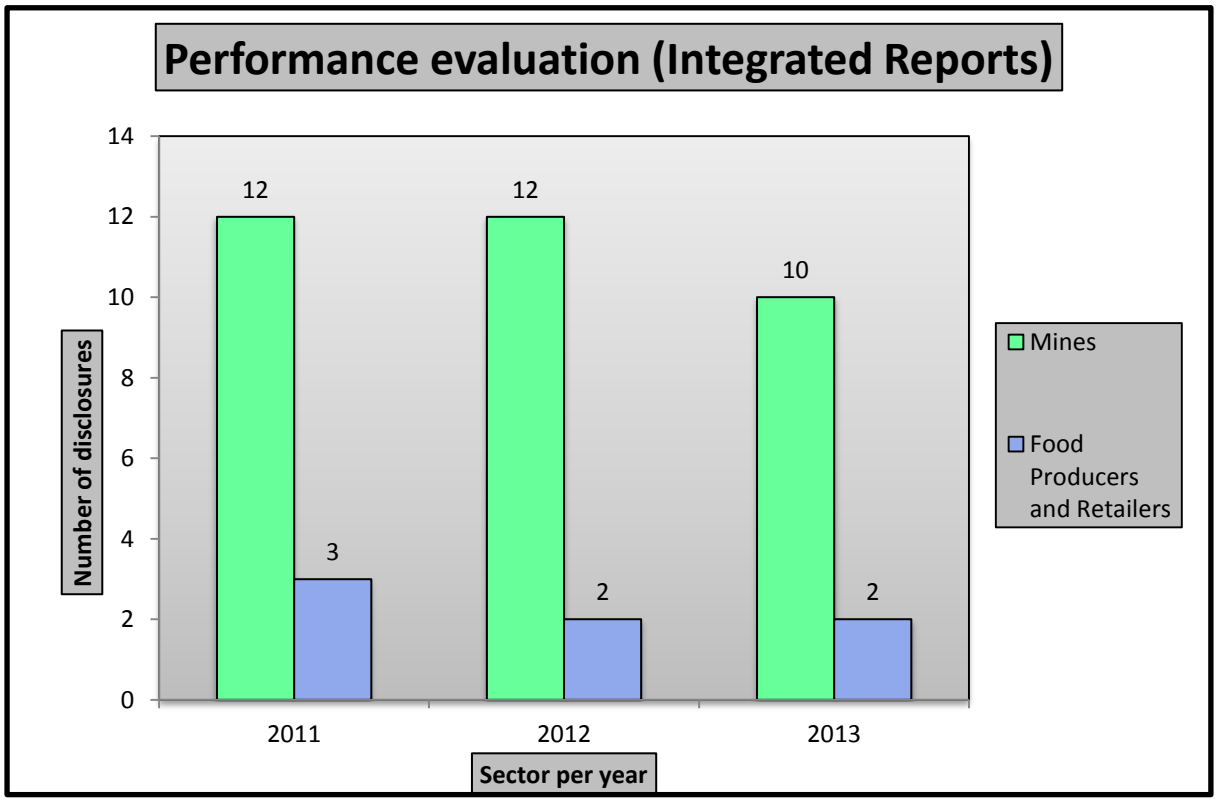
4.4 Performance evaluation disclosures

This section evaluates the disclosures made by companies about their performance with regards to biodiversity. These include disclosures regarding a company's target performance and the costs that are related to these initiatives (Grabsch et al., 2012; van Liempd & Busch, 2013).

Table 4.4.1: Performance evaluation disclosures per the integrated report

Performance Evaluation	2011		2012		2013	
	Mines	Food Producers and Retailers	Mines	Food Producers and Retailers	Mines	Food Producers and Retailers
Target Performance	4	1	5	1	4	2
Costs	8	2	7	1	6	0

Figure 4.4.1: Total performance evaluation disclosures per the integrated report



From Figure 4.4.1 above, it is evident that performance evaluation disclosures are more prominent in the mining sector, with the food producer/retailer sector rarely disclosing such information. From Table 4.4.1, most of the disclosures are related to the costs associated

with biodiversity projects as opposed to disclosing their targets and how they have performed relative to their targets. Overall, a decreasing trend is observed for both sectors, with the mining sector decreasing by 17% over the three-year period and the food sectors by 33% over the same period.

Table 4.4.2: Performance evaluation disclosures per the sustainability report

Performance Evaluation	2011		2012		2013	
	Mines	Food Producers and Retailers	Mines	Food Producers and Retailers	Mines	Food Producers and Retailers
Target Performance	5	0	4	0	6	1
Costs	2	0	4	0	6	0

Figure 4.4.2: Total performance evaluation disclosures per the sustainability report

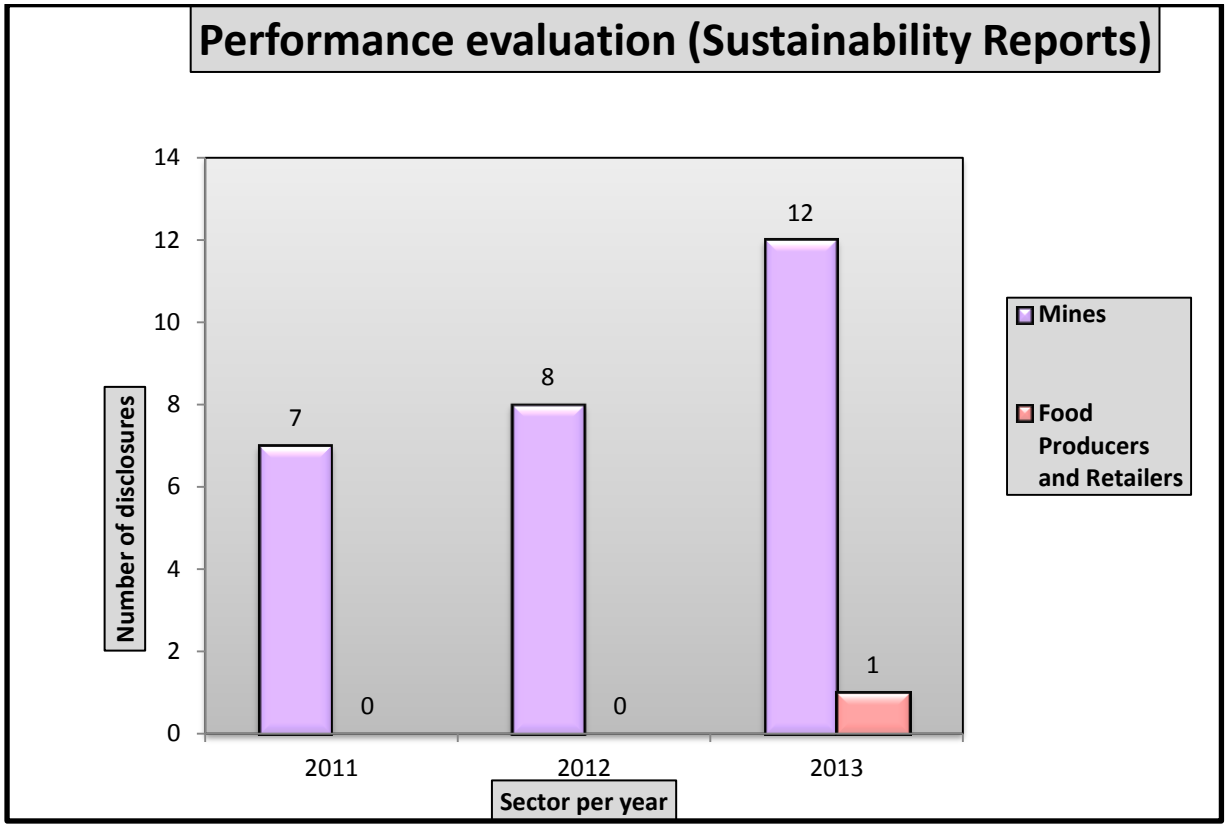


Figure 4.4.2 illustrates an increasing trend over both sectors, with the mining sector and food sectors increasing by 71% and 100% respectively over the three-year period, which is in contrast to the decreasing trend noticeable in the sectors per the integrated reports. Per Table 4.4.2, more disclosures relate to targets and their performance in line with the targets

providing a contrasting result from that found in the integrated report where the majority of the disclosures were cost-related.

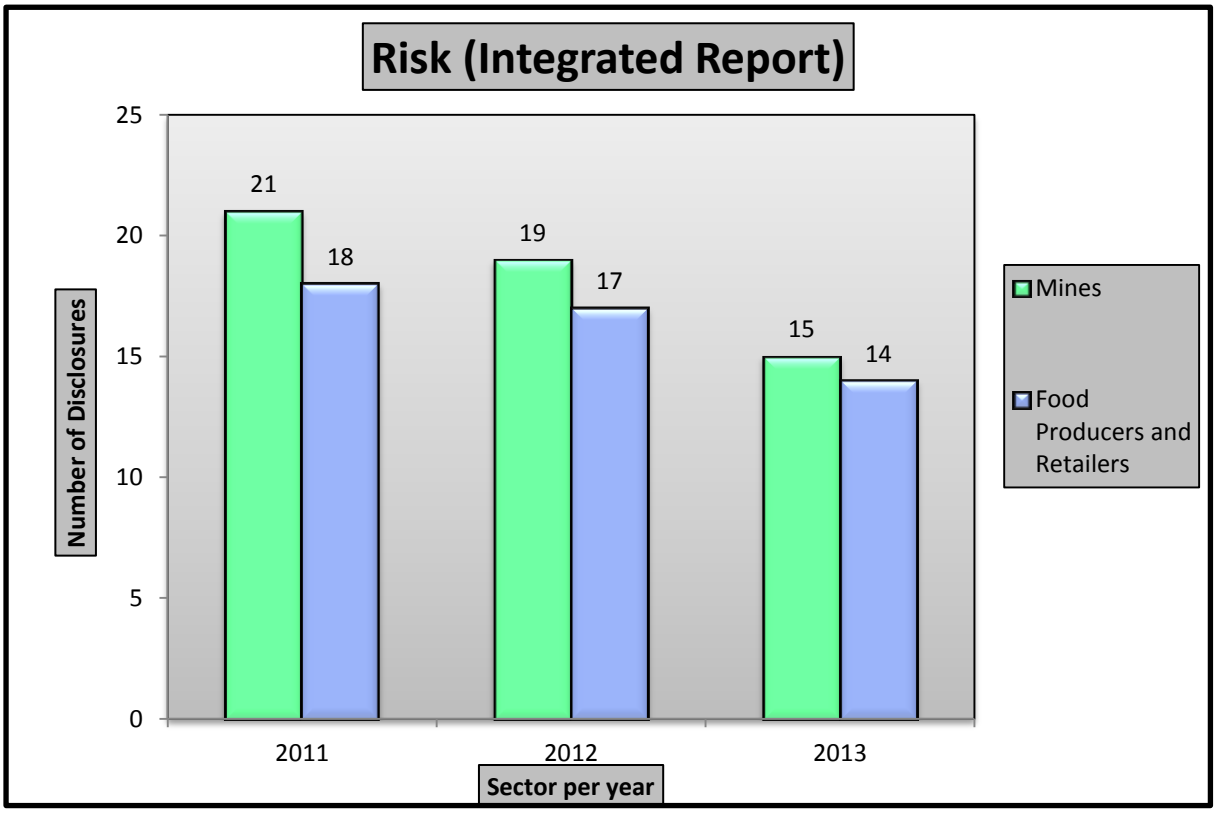
4.5. Risk disclosures

This section relates to disclosures by which companies identify their risks in relation to biodiversity, assess the materiality of such risks and document how they intend to manage this risk. Disclosure regarding incidents affecting biodiversity also relates to risk disclosures (Grabsch et al., 2012; van Liempd & Busch, 2013).

Table 4.5.1: Risk disclosures per the integrated report

	2011		2012		2013	
Risk	Mines	Food Producers and Retailers	Mines	Food Producers and Retailers	Mines	Food Producers and Retailers
Risk	6	7	6	6	3	7
Risk management	6	7	5	5	4	5
Incidents	6	1	5	2	7	1
Materiality	3	3	3	4	1	1

Figure 4.5.1: Total risk disclosures per the integrated report



From Figure 4.5.1 above, there seems to be very little differences in the total disclosures for risk between the sectors. What is noticeable, however, is that there is a decreasing trend in the disclosures in both sectors. The disclosures in the mining and food sectors have decreased by 29% and 22% respectively, over the three-year period. Table 4.5.1 shows us that disclosures are concentrated in the identification and management biodiversity risks.

Table 4.5.2: Risk disclosures per the sustainability report

	2011		2012		2013	
Risk	Mines	Food Producers and Retailers	Mines	Food Producers and Retailers	Mines	Food Producers and Retailers
Risk	6	1	6	1	5	2
Risk management	5	1	6	1	4	2
Incidents	4	0	4	0	6	0
Materiality	2	0	3	0	4	0

Figure 4.5.2: Total risk disclosures per the sustainability report

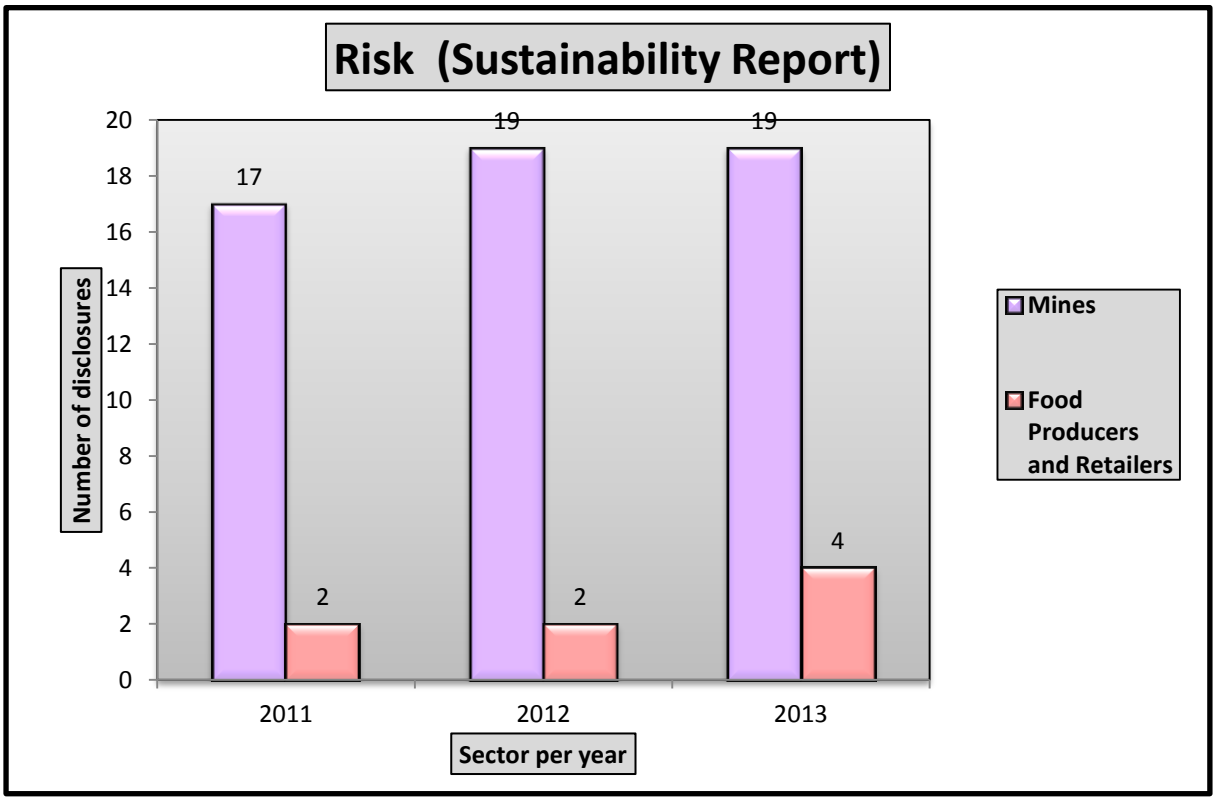


Figure 4.5.2 provides contrasting results with Figure 4.5.1. Disclosures per the sustainability reports appear to be increasing year-on-year, with disclosures in the mining sector increasing by 12 % and in the food sectors by 100% over the three-year period. Aside from the different trends noticeable in disclosures per the integrated report and sustainability repot, disclosures in both reports appear to be concentrated in the identification and mitigation of biodiversity-related risks (Table 4.5.2).

4.6. Internal management disclosures

Internal management refers to a company's internal management structure. Disclosures include action plans created and implemented by a company, as well as management who are dedicated to biodiversity-related issues (Grabsch et al., 2012; van Liempd & Busch, 2013).

Table 4.6.1: Internal management disclosures per the integrated report

	2011		2012		2013	
Internal Management	Mines	Food Producers and Retailers	Mines	Food Producers and Retailers	Mines	Food Producers and Retailers
Biodiversity Action plans	7	3	4	4	5	5
Biodiversity Officer	0	0	0	0	0	0

Figure 4.6.1: Total Internal management disclosures per the Integrated Report.

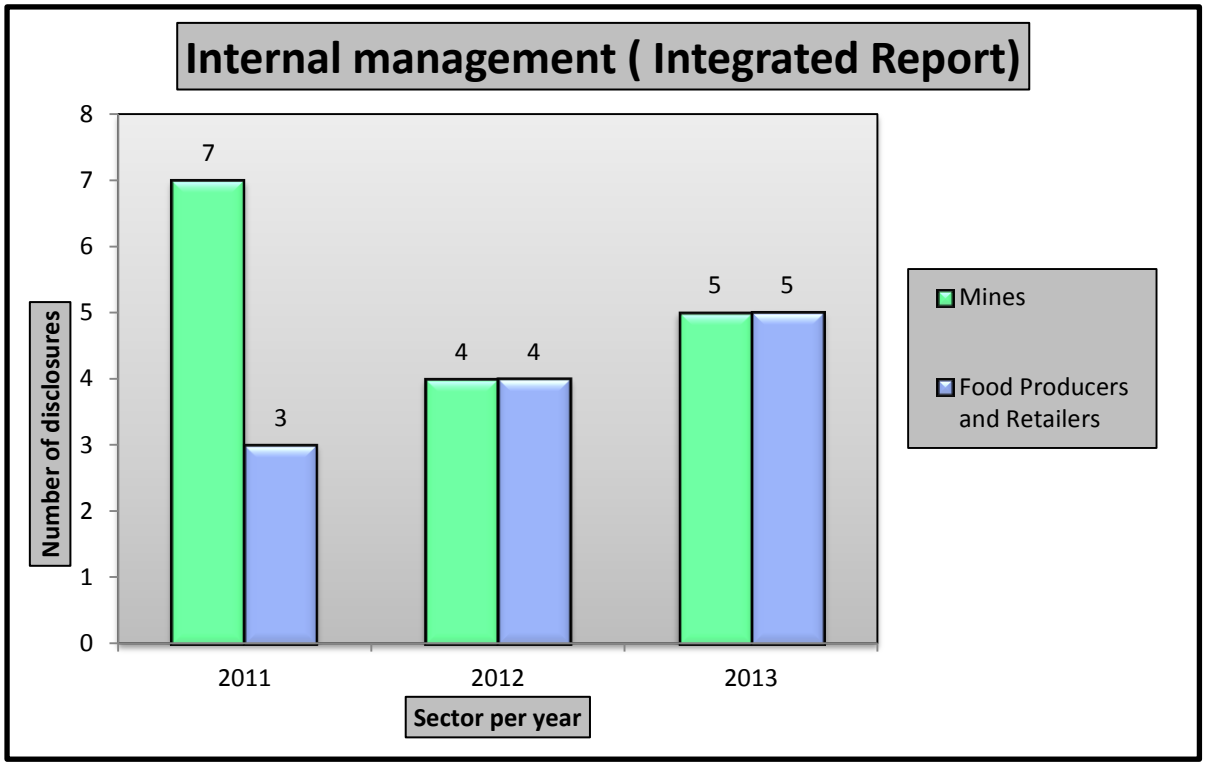


Figure 4.6.1 shows that some companies disclose their internal management structures or plans. Beside in 2011, no differences can be seen in the number of disclosures being recorded in each sector, over the three-year period. Disclosures in the mining sector have decreased by 29% and disclosures in the food sector have increased by 67%. In addition, in Table 4.6.1, it can be seen that all the disclosures from internal management relate to biodiversity action plans and none of the sampled companies has a designated biodiversity officer or anything similar.

Table 4.6.2: Internal management disclosures per the sustainability report

Internal Management	2011		2012		2013	
	Mines	Food Producers and Retailers	Mines	Food Producers and Retailers	Mines	Food Producers and Retailers
Biodiversity Action plans	5	1	7	1	8	2
Biodiversity Officer	1	0	0	0	0	0

Figure 4.6.2: Total Internal Management disclosures per the Sustainability Report

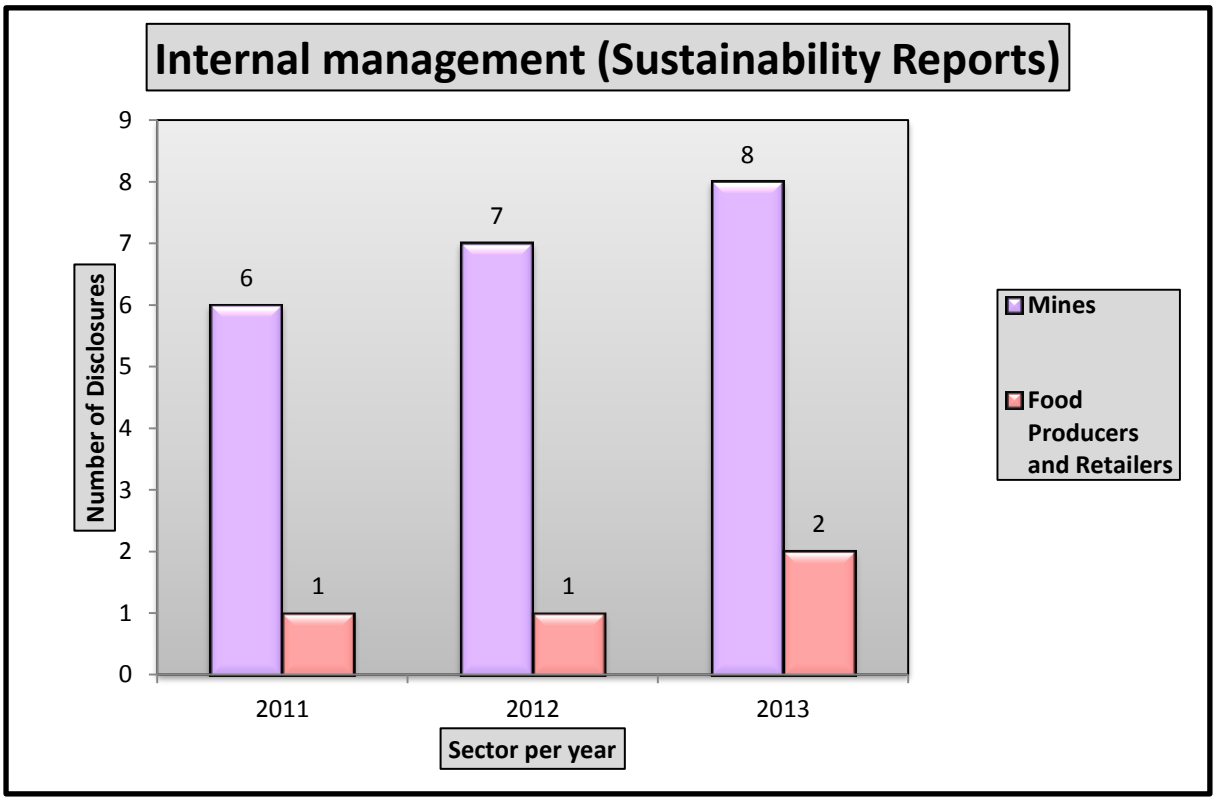


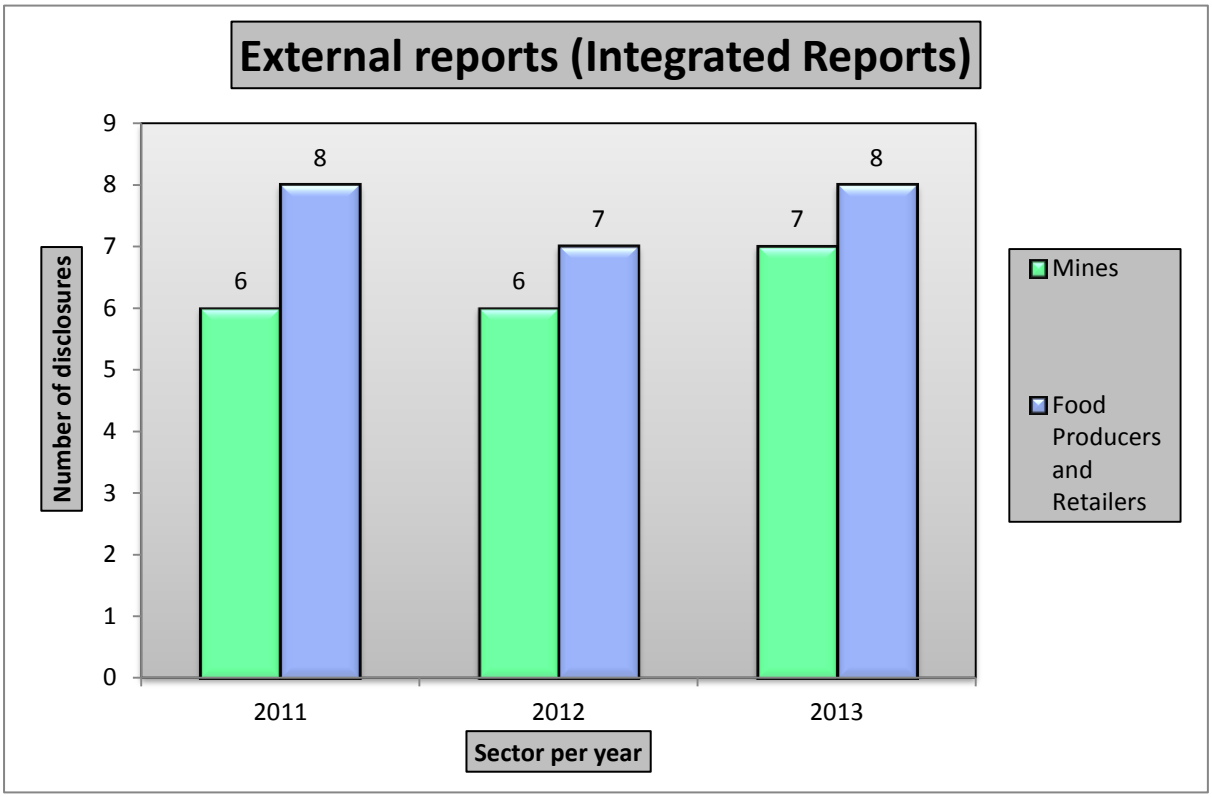
Figure 4.6.2 presents an increasing trend in disclosures relating to internal management, with disclosures in the mining and food sectors increasing by 33% and 100% respectively over the three-year period. Table 4.6.2 illustrates that disclosure for internal management is largely concentrated with disclosures relating to biodiversity action plans which is consistent with the results per the integrated reports.

4.7. External report disclosures

This category relates to disclosures that are guided by frameworks such as the GRI (Grabsch et al., 2012; van Liempd & Busch, 2013).

Table 4.7.1: External report disclosures per the integrated report						
	2011		2012		2013	
External Report	Mines	Food Producers and Retailers	Mines	Food Producers and Retailers	Mines	Food Producers and Retailers
GRI and other frameworks	6	8	6	7	7	8

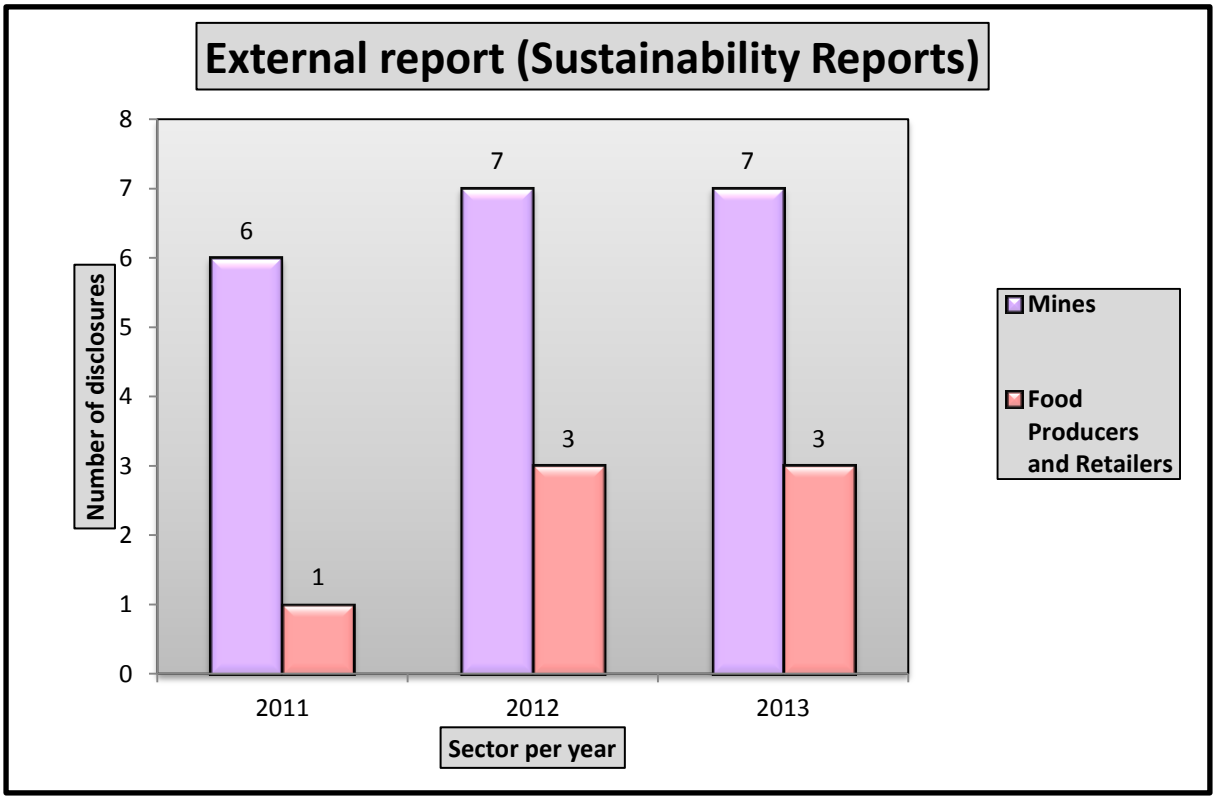
Figure 4.7.1: Total external reports disclosures per the integrated report.



It can be seen that 60%-80% of companies across both sectors prepare disclosures with reference to external frameworks, the most popular being the GRI framework. Interestingly, both sectors experienced a decrease in such disclosures in 2012 but these increased again in 2013. Overall, the disclosures in the mining sector increased by 17% over the three-year period, with a 0% change in the food sectors over the same period.

Table 4.7.2: External report disclosures per the Sustainability report						
	2011		2012		2013	
External Report	Mines	Food Producers and Retailers	Mines	Food Producers and Retailers	Mines	Food Producers and Retailers
GRI and other frameworks	6	1	7	3	7	3

Figure 4.7.2: Total external reports disclosures per the Sustainability report.



From Figure 4.7.2., it is evident that there is an increasing trend in disclosures regarding the use of external reporting frameworks. Disclosure in the mining sector has increased by 17% over the three-year period corresponding to the increase of 17% per the integrated reports. The disclosures by the food sector have increased by 200% over the 3-year period.

4.8. Total biodiversity disclosures

This section illustrates the total biodiversity disclosures included in the integrated reports, as well as the total biodiversity disclosures per sector.

Figure 4.8.1: Total biodiversity related disclosures per the integrated report.

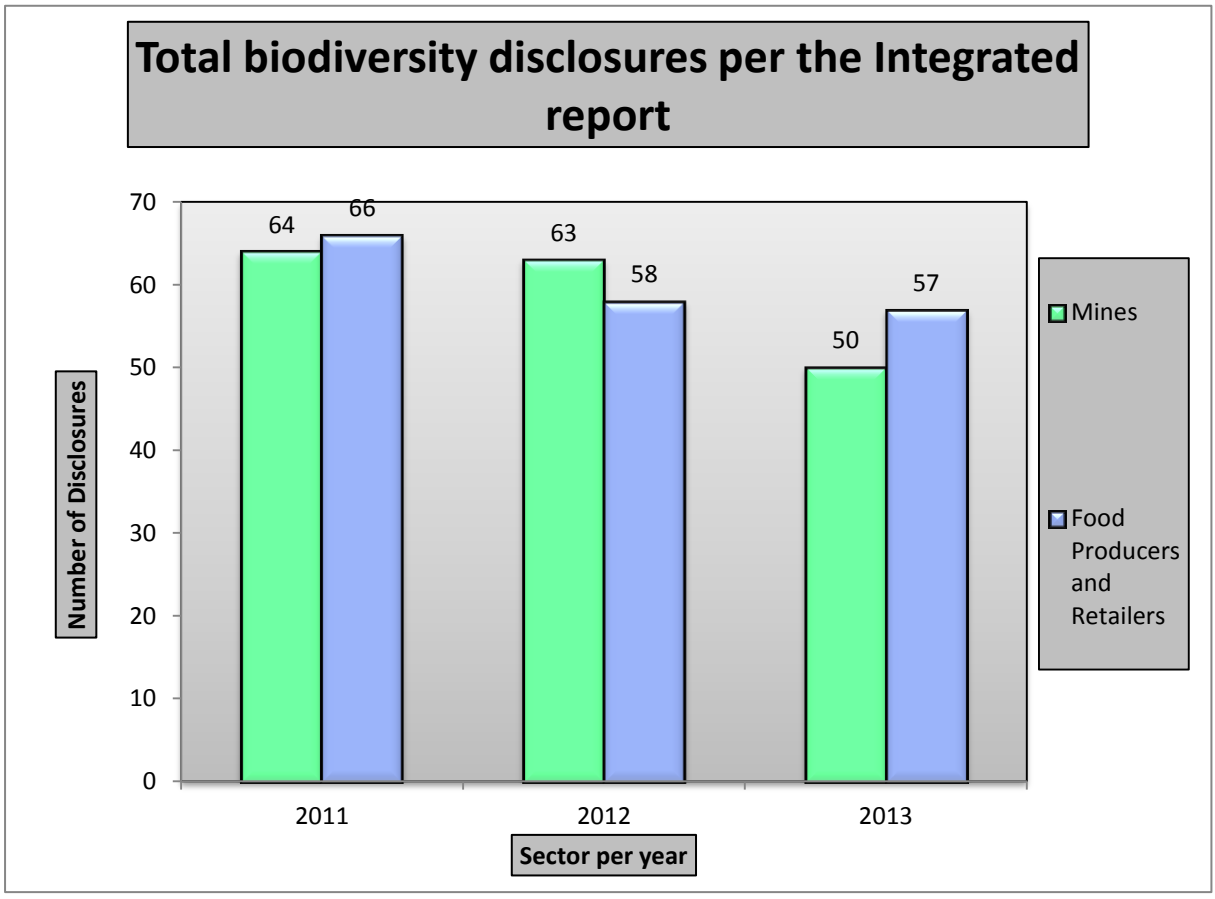


Figure 4.8.1 illustrates that, overall, the extent of biodiversity disclosures has decreased over the three-year period, with disclosures in the mining sector and food sectors decreasing by 22% and 14% respectively. What is also noticeable is that the food sectors appear to be disclosing more biodiversity related information in the integrated reports than is the mining sector. Overall, the sustainability reports (Figure 4.7.2) present a slightly different perspective.

Figure 4.8.2: Total biodiversity related disclosures per the Sustainability report.

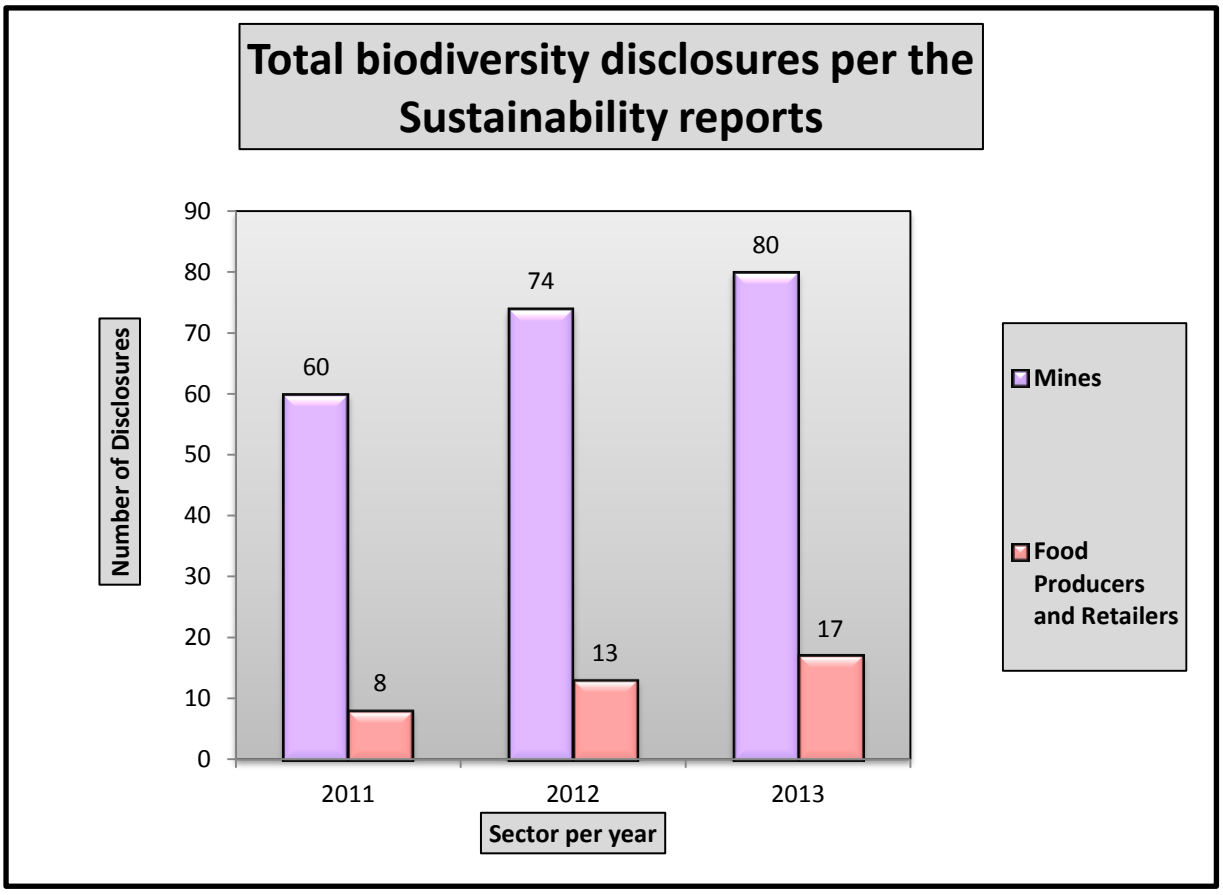
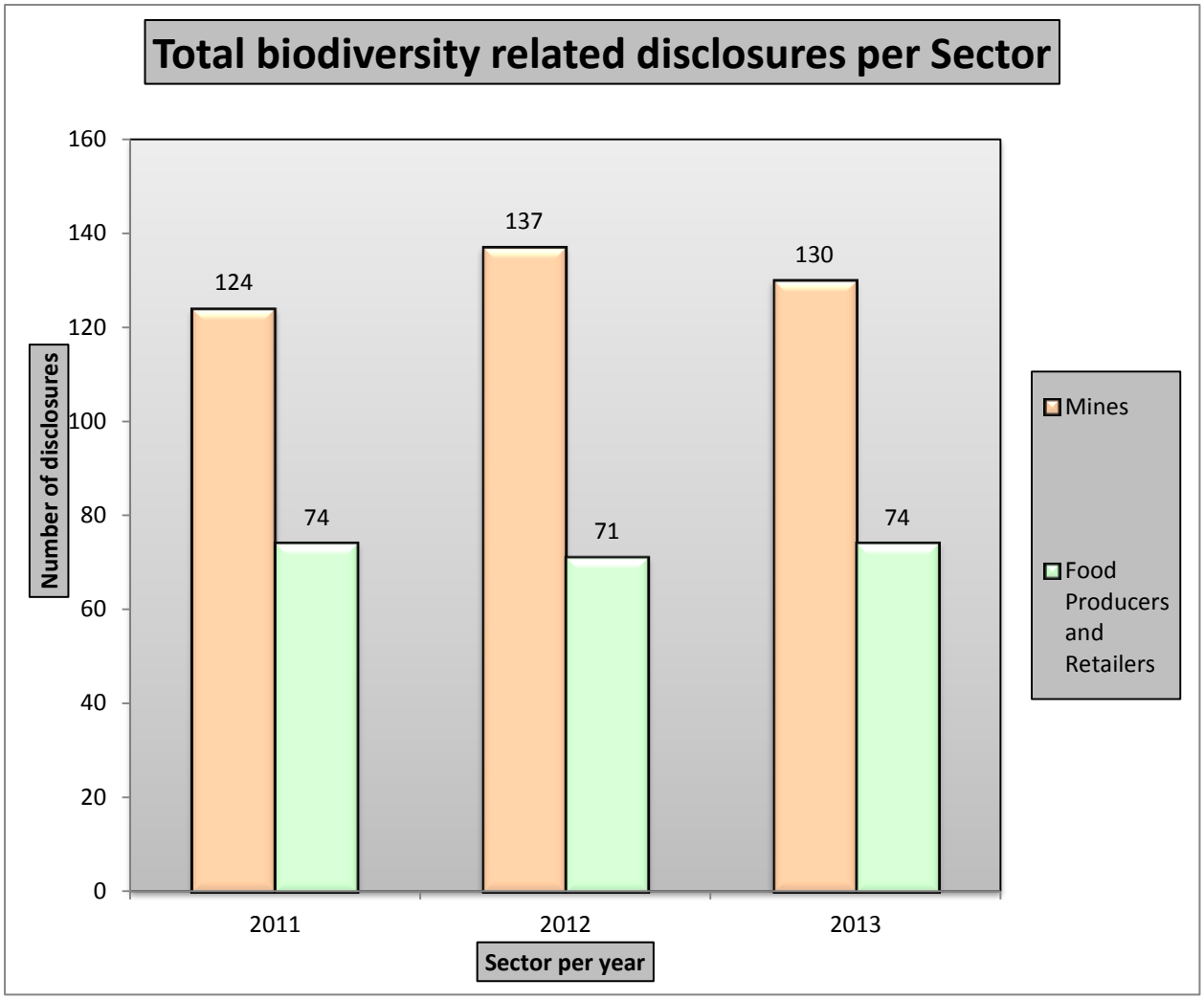


Figure 4.8.2 illustrates that the extent of biodiversity disclosures in the sustainability report has increased over the three-year period. Disclosures in the mining sector have increased by 33% and 113% in the food sectors over the three-year period. These are contrasting results to the decreasing trend noticed in the integrated report. The researcher also considered the sum of all disclosures dealing with biodiversity found in both the sustainability and integrated reports. Results are presented in Figure 4.8.3.

Figure 4.8.3: Total biodiversity related disclosures per sector.



The mining sector appears to disclose more biodiversity-related information than the food sectors. The total biodiversity disclosures have increased by 5% for the mining sector over the three-year period. The food sectors had a 0% change over the three-year period.

Figure 4.8.4: A pie chart depicting the split of the total biodiversity disclosures in the mining sector between the integrated reports and the sustainability reports.

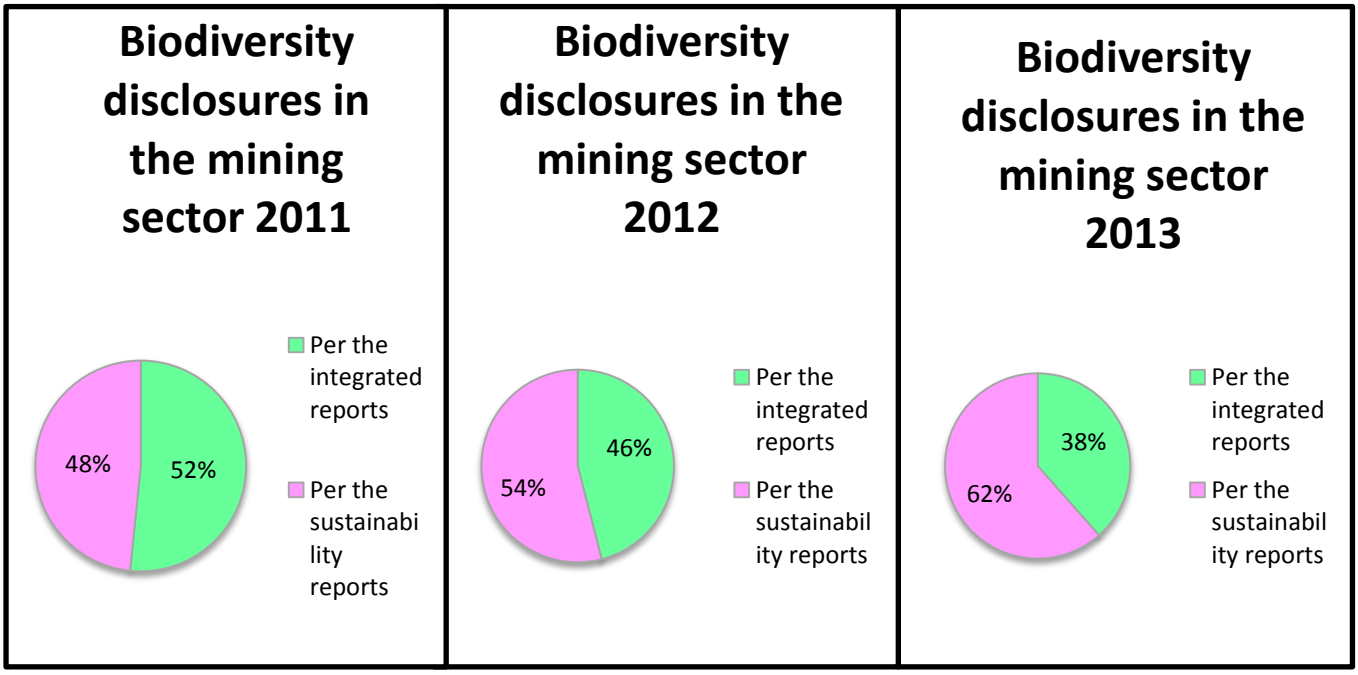
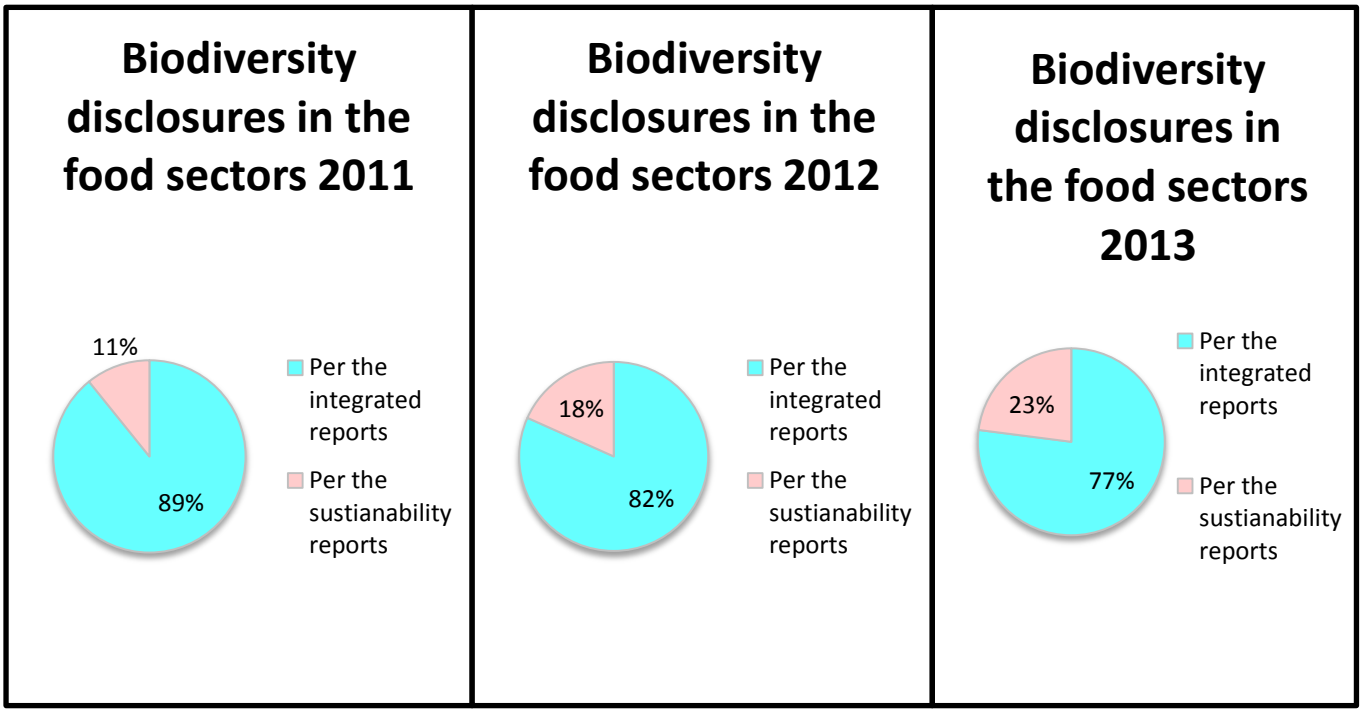


Figure 4.8.4 illustrates that the sustainability reports contain the majority of the biodiversity disclosures over the three-years in the mining sector. Figure 4.8.4 further indicates that there is a clear movement of biodiversity disclosures from the integrated reports to the sustainability reports. In 2011, the majority of the biodiversity disclosures were contained within the integrated repot, yet 2 years later, majority of the biodiversity disclosures were contained in the sustainability reports. This is supported by the decreasing trend noticed in the integrated reports (Table 4.8.1) and the increasing trend evident in the sustainability report (Table 4.8.2). The same analysis is carried out for the food producers included in the study.

Figure 4.8.5: A pie chart depicting the split of the total biodiversity disclosures in the food sectors between the integrated reports and the sustainability reports



As seen in the mining sector (Figure 4.8.4), biodiversity disclosures are gradually increasing in the sustainability reports of the food sector. Despite the increase in the biodiversity disclosures in the sustainability reports, Figure 4.8.5 illustrates that the majority of the biodiversity disclosures are contained in the integrated report, different from what was noticed in the mining sector. During data collection (as described in Section 3.4) it was, however, noticed that companies in the food sectors seldom produce a sustainability report, which would explain the concentration of biodiversity disclosures in the food sectors (Table.3.3)

5. Discussion

In this section, the findings of this study will be analysed in a number of different ways to provide information on the overall level of biodiversity disclosures per industry, the disclosures present in different reports, as well as detail of biodiversity reporting within the chosen sectors. Section 5.1 examines the total level of biodiversity disclosures, providing a closer look into the overall extent and nature of such disclosures. Section 5.2 investigates biodiversity disclosures, analysing trends per disclosure category in order to gain a deeper

understandings of the type and motivations relating to biodiversity disclosures that are present. Lastly, Section 5.3 examines how integrated biodiversity-related disclosures are in the integrated report and sustainability reports, further identifying key trends in biodiversity reporting.

5.1 Total level of biodiversity disclosures

The average number of disclosures per the integrated reports approximates 6 ,for both industries (per Table 5.1.1), which illustrates that companies are, on average, disclosing approximately only 33% of the 18 reporting categories formulated by Grabsch et al. (2012). In the sustainability reports, we notice that the average disclosures in the mining sector is 7.13, which is higher than the average number of disclosures in the integrated report: this correlates with the findings that disclosures are increasing in the sustainability reports per Figure 4.8.2. The food sectors' average number of disclosures has decreased significantly in the sustainability reports, which is supported by Figure 4.8.1 and Figure 4.8.2. It should be noted ,though, that the average in the sustainability reports for the food sectors is affected by the fact that only a total of 2-3 sustainability reports per year were available across the sampled companies in the sector (refer to Table 3.3).

Table 5.1.1: The average number of biodiversity disclosures per company per year.

Description	Mining Sector	Food Sectors
Average number of disclosures in the integrated report per company per year	5.9	6.03
Average number of disclosures in the sustainability report per company per year	7.13	1.27
Average number of disclosures in the per company per year	13.03	7.03

All the sampled companies in the mining and food sectors have disclosed information regarding the environment, as well as their policies and performance in the area but these disclosures tend to focus on environmental issues such as energy and water consumption, waste management and, to some extent, information regarding their carbon dioxide emissions. These disclosure trends are consistent with the findings by van Liempd and

Busch (2013) in their analysis of the largest Danish companies. In addition, all the sampled companies across both the mining and food sectors had some biodiversity-related disclosures in both the integrated and sustainability reports (if available). This is in line with expectations as it is considered likely that the mining and food sectors would present biodiversity related disclosures, seeing that these sectors are classified as red sector zones in the report issued by the F&C Asset Management (2004). This is further supported by Grabsch et al. (2012), where the mining and food sectors were amongst the sectors that had the highest biodiversity disclosures recorded.

Total biodiversity disclosures in the mining industry have increased over the period under review, as seen in Figure 4.8.3. The food sector remained constant over the three-year period but it has increased from 2012 to 2013. It should be noted that the increase in biodiversity disclosures is occurring at a slow rate, and even with the increase in disclosures year-on-year, the overall level of biodiversity disclosures is still low, as was found by van Liempd and Busch (2013) albeit in a different jurisdiction. It was interesting to note that even though total biodiversity disclosures have increased (Figure 4.8.3); the biodiversity disclosures in the integrating reports have decreased over the three-year period (Figure 4.8.1). This result is somewhat peculiar as studies performed by Carels et al. (2013) and Solomon and Maroun (2012) indicate that there is a general increase in the level of environmental disclosures in the integrated reports. In other words, the statistics in Figure 4.8.1 suggest that, although companies are dealing with general environmental issues, there is a limited understanding of the importance of or accountability for biodiversity-specific issues.

It should be noted that biodiversity disclosures in the sustainability reports have increased in both industries over the period under review (Figure 4.8.2). This is not necessarily contradicting the view that biodiversity is not accepted as a key issue by the food and mining industries in South Africa. Instead, this finding shows that companies, in both industries are shifting biodiversity disclosures from the integrated report into the sustainability reports (see Figures 4.8.4 and 4.8.4). This is an important finding, as the integrated report is considered to be the primary reporting platform in South Africa (Institute of Directors in Southern Africa, 2013; International Integrated Reporting Committee, 2011; The Institute of Directors in Southern Africa, 2009), yet biodiversity disclosures are limited in the integrated report. The underlying purpose of an integrated report is to integrate key financial and sustainability information in order to promote integrated thinking (SAICA, 2014). As discussed in Section 2.1, there is a growing appreciation of the threat of biodiversity loss for the long-term sustainability of the capital system (Grabsch et al., 2012; Jones & Solomon, 2013). In direct

contrast, the movement of biodiversity disclosures implies that companies do not consider biodiversity a key issue which needs to be communicated emphatically to stakeholders. The downplaying of biodiversity issues in the integrated report also lends weight to the argument that companies tend to avoid dealing with negative issues in their primary reports (Grabsch et al., 2012). At the same time, because there is an expectation that there should be at least some reporting on issues such as loss of species and habitat destruction, these disclosures are still made but are less prominent (refer to table 4.2.1 and Table 4.2.2).In turn, this suggests that biodiversity disclosures are presented just for compliance purposes, as King-III suggests that the separate sustainability reports should be prepared in line with Guideline frameworks such as the GRI (The Institute of Directors in Southern Africa, 2009). This conclusion is supported when considering the nature of the information found in both reports.

A finding across both industries is the repetition and duplication of the disclosures in the integrated and sustainability reports. This is similar to the repetition of information within the integrated report identified by Solomon and Maroun (2012). The average disclosure, in total, appears to be relatively high; however, this is a misleading result considering the duplication and repetition of disclosures between the reports. Overall, biodiversity-related disclosures are very low, considering that these sectors are exposed to high biodiversity risks per the report issued by the F&C Asset Management (2004) and that the sample selected represents the largest companies in their respective sectors. South African companies are among the leaders in integrated reporting, with many listed companies preparing integrated reports from 2010 (Güleş, 2014; SAICA, 2013), yet the biodiversity related disclosures are at shockingly low levels in the integrated reports of South African companies in the mining and food sectors. This is despite the fact that South Africa relies heavily on its rich biodiversity for food production and tourism (Wynberg, 2002). This does not present a good profile of the extent of biodiversity related information being disclosed by companies if the larger companies, which tend to have more developed corporate governance practice (Rimmel & Jonäll, 2013) are failing to disclose such information to their shareholders. To gain a better understanding of the extent to which companies were dealing with biodiversity in the integrated and sustainability reports, the researcher considered the disclosures per theme in more detail.

5.2 Biodiversity disclosures per disclosure themes

The following sections discuss key findings per disclosure theme and entail examples of biodiversity related disclosures presented in the integrated and sustainability reports in order to describe the nature of these disclosures.

5.2.1 Scene–setting disclosures

As noted above in Table 4.1.1, none of the companies defines biodiversity or what the term means to the company. In spite of this, the mission statement is the most disclosed category in the integrated report, with 90% and 96% of the companies disclosing a mission statement in the mining sector and food sectors respectively over the three-year period (Table 4.1.1). This is not specific to South Africa as a similar result is recorded in Denmark, the United Kingdom and Germany (Grabsch et al., 2012; van Liempd & Busch, 2013).

Per the analysis of the sustainability reports, a definition for biodiversity was recorded in one of the mining companies as:

> *Biodiversity – the variety of plant and animal life on earth - provides us with a range of vital benefits, collectively known as ecosystem services* (Company 3, 2011).

This is the only definition found in the reports: it defines 'biodiversity' in a scientific way but does not define what the term involves for the company. If companies do not define biodiversity, or more importantly, the meaning it carries for the business, it could point to a lack of sincerity or understanding by corporations with respect to the current threat which faces biodiversity globally. This indicates that companies are taking an anthropocentric stance and dismissing the importance of the intrinsic values of biodiversity (as discussed in Section 2.1). The lack of detailed biodiversity definitions and mission statements is indicative of companies' attempts to acknowledge the importance of biodiversity without committing to implement detailed BAP's or initiatives.

The mission statements also appear to be prominent in the sustainability reports; yet, it is not the most disclosed category as with the integrated report. On an overall level, 95% and 62.5% of the sustainability reports from the mining and food sectors included a mission statement (Section 4.1). Despite the high number of companies providing a mission statement, what is common across both reports and both industries is that the mission statements appear to be vague and generic, for example:

> *We seek to deliver lasting benefits to the environment and communities by improving natural resources management and enhancing biodiversity* (Company 2 integrated report, 2012) and,

> *We are committed to protecting our environment and conserving natural resources and will continue to roll-out green innovations throughout our operations […]* (Company 16 integrated report, 2012).

Furthermore, these mission statements are usually stated without a formal action plan or strategy and more often than not, these mission statements are usually vague and are rarely stated as part of the missions and visions outlined in the strategy sections of the integrated reports, consistent with the finding by van Liempd and Busch (2013). As an exception, the most explicit mission statement was found in a mining company's sustainability report stating:

> *We believe conservation is becoming increasingly important, given the enormous value of biodiversity and tourism to the South African economy. Accordingly, we intend to be a mining company that leads by example in protecting, enhancing and conserving the country's biodiversity and demonstrating that mining activities can co-exist with world-class biodiversity conservation initiatives. That way, we ensure the right of future generations to a healthy, complete and rich environment. Various conservation measures are being implemented that underscore [Company 7's] commitment to entrench through the sustainable co-existence of our mining operations and the country's natural resources for future generations* (Company 7 integrated report, 2012).

This mission statement and vision was complemented with a detailed strategy and action plan implemented in order to achieve their desired goals in relation to biodiversity. It is of concern that such disclosures are the exception. The lack of a clearly defined understanding of 'biodiversity', which contextualises the relevance of biodiversity for the respective organisations' long-term prospects can be seen as a key weakness in biodiversity reporting in South Africa (van Liempd & Busch, 2013)..

In this context, companies need to identify their reasons for protecting biodiversity and create a mission/vision in relation to biodiversity (van Liempd & Busch, 2013). One of the reasons for this weakness was identified by Rimmel and Jonäll (2013): that biodiversity disclosures pose a new challenge to companies and, as a result, there is considerable uncertainty about what needs to be disclosed. This is consistent with the findings of Solomon and Maroun (2012) who point out that the recent release of discussion papers on integrated reporting, coupled with the absence of clear reporting guidelines, means that companies are often uncertain about what to include in their integrated reports. In this context, a

comparison of the nature of the scene–setting disclosures between the sectors indicates that the scene-setting disclosures in the mining sector appear to be more evolved and detailed (Section 4.1). This could be explained by the greater number of guidelines and information regarding the mining sector and biodiversity than the food sectors and biodiversity in South Africa, reducing the amount of uncertainty in the mining sectors (refer to section 2.2.1 and 2.2.2). A more critical interpretation is that the absence of context-specific disclosure is part of an established practice of de-emphasising negative environmental indicators and avoiding providing stakeholders with definitive metrics which could be used to hold these companies accountable (van Liempd & Busch, 2013). Irrespective of one's view, the conclusion is that companies need to identify their reasons for protecting biodiversity and state clearly their mission/vision in relation to biodiversity (van Liempd & Busch, 2013).

5.2.2 Specie–related disclosures

Disclosures dealing with site-specific information or a particular species were the most common in the integrated and sustainability reports (Section 4.2). This is the same across both industries. Species–related information accounts for 8% of the total biodiversity disclosures per the integrated reports and 21% per the sustainability reports in the mining sector (Table 4.2.1 and Table 4.2.2). As discussed in Section 4.1, biodiversity disclosures are becoming more prominent in the sustainability reports. Species-related information accounts for 10% of the total biodiversity disclosures per the integrated reports and 11% per the sustainability reports in the food sectors.

Overall, per Table 4.2.1, the food sectors appear to disclose more information regarding specific species than the mining sector in the integrated report. This observation would appear to be reasonable as the food sectors are expected to be more reliant on the interactions and existence of specific species, as explained by Company 19:

> The *biological sustainability of marine resources and assured access to them, particularly in South Africa, is of cardinal importance to [Company 19]* (Company 19 integrated report, 2011).

This is further supported by Pagiola et al. (1998) and Riffel et al. (2010),who suggests that food producers are dependent on the interactions between various species and ecosystems.

South African companies in the mining and food sectors have, in general, been specific in the disclosures that have been made in this disclosure category, often including details such as the name of the species, the location of such species, the impact on these species as

well as mitigation measures that have been put in place. This is a distinct difference in the findings of this study and the study performed by van Liempd and Busch (2013), where it was found that majority of the specie–related disclosure in Danish companies were considered to be vague and general, without much detail provided.

Company 12 (a food sector company), in their 2011 integrated report, disclosed that a *botanical survey was conducted by an external party,* in order to determine the potential impacts of an expansion of their operations. The survey identified that *21% of the site was identified as having critically endangered Swartland Granite enosterveld* and that this specific species was listed on the National list of threatened ecosystems. The existence of this bird species in this area was considered to be a threat to the species and these species were collected and re-introduced into a suitable receptor site to ensure the survival of this species. This type of disclosure was often found when companies were discussing expansion plans but rarely featured in reviews of existing sites and operations.

What was also noticeable was a sense of concern for endangered species by the companies, with many such companies relocating endangered species to more favourable areas. This can be seen in Company 12's disclosure above, with some companies, such as Company 20 (in the food sector) withdrawing their expansion plans *in light of the forest's biodiversity value and is attempting to […] lease the Magombera Forest land for conservation management* (Company 20 integrated report, 2011). Similarly, Company 1, which is a part of the mining sector, stated that the company will not proceed with any sort of activities where *the direct impacts would result in extinction of species listed by the IUCN as being threatened with extinction* (Company 1 sustainability report, 2011). These types of disclosures are often disclosed as part of case studies that are included in the report.

On one hand, these disclosures suggest a genuine commitment by some of the mining companies and food producers to engage with the risks which their operations pose to specific species. The disclosures are, however, fairly isolated and there was little evidence of an integrated approach to managing the risk of extinction (see Section 5.3). For example, none of the companies under review cross-referenced its case studies on managing habitat loss to the key risk sections of the integrated reports or with specific financial measures. As discussed in Section 5.2.1, there was frequently no clearly defined policy for managing biodiversity loss, repetition of the same examples and most of the information was excluded from the main operational review sections of the reports (refer to Atkins & Maroun, 2014; Solomon & Maroun, 2012).This goes hand-in-hand with little evidence of strategic stakeholder engagement to support biodiversity management.

5.2.3 Social engagement disclosures

Social engagement disclosures account for 7% and 23% of the total disclosures per the integrated reports in the mining and food sectors respectively (Table 4.3.1). A similar result is evident in the sustainability reports where 12% and 24% of the total disclosures in the mining and food sectors, respectively, related to social engagement disclosures (Table 4.3.2). This, read in conjunction with the information presented in Figure 4.3.1, illustrates that the food sectors disclose more information in this category. Figure 4.3.1 illustrates a decreasing trend in the social engagement disclosures in the integrated report in the mining sector.

Closer analysis revealed that the most popular disclosure item in this category relates to the partnership which the respective companies have with various organisations (Table 4.3.1 and Table 4.3.2). The nature of partnership disclosures varies from very brief and generic to more detailed discussions. Consider, for example, the following comment from one of the food producers:

> *In a positive step towards ensuring the future of our marine resources and ecosystems, the group continues its relationship the WWF's Southern African Sustainable Seafood Initiative (SASSI)…* (Company 17 Integrated Report, 2011),

The above is evidence of positive examples of partnerships and initiatives supported by companies in order to promote public relations. These disclosures are often biased and focuses on providing public relation information that works in the companies favour (cf van Liempd & Busch, 2013). In addition, disclosures tends to merely list the organisations they are in partnership with or support:

> *[Company 19] supports various voluntary associations such as the National Sea Rescue Institute (NSRI), the Southern African Foundation for the Conservation of Coastal Birds (SANCCOB) and the Wildlife and Environment Society of South Africa.* (Company 19 integrated report, 2011).

The above examples fail to provide any detailed information regarding the partnerships formed or why these partnerships were created. As a result, such disclosures would provide limited functional or operational information. Instead, they may be included in the integrated or sustainability reports for managing public relations (van Liempd & Busch, 2013). Effective disclosures should include enough detail to allow stakeholders to understand why the company has formed these partnerships as illustrated in the sustainability report of Company

2 where the company explains their partnership with the Tasmanian Land Conservancy [10]as follows:

> *As part of the Five Rivers Conservation Project, we are working with the Tasmanian Land Conservancy to conserve approximately 11,000 hectares of land located near Cradle Mountain and Lake St Clair in Tasmania, Australia. The land to be conserved and managed is nationally and internationally significant. It incorporates areas that are covered within the Tasmanian World Heritage Area and contains old-growth rainforest, wild rivers and alpine wetlands; and is habitat for a number of endangered species.* (Company 2 sustainability report, 2013).

Companies have formed partnerships with many types of organisation, the most common of which include Non-Government institutions (NGO's), local authorities, government departments and conservation organisations. In addition, companies in the food sectors have formed alliances with each other, such as the *Responsible Fisheries Alliance (RFA),* in order to promote and facilitate the protection of biodiversity. The RFA was formed by the World Wildlife Fund South Africa (WWF-SA) together with Company 13 and other major South African fishing companies, with the objective of promoting *responsible fishing practices…* (Company 13 integrated report, 2011). This is a positive finding as collaborative initiatives are bound to have more far-reaching effects in the attempt to protect and conserve the country's biodiversity.

Despite the importance of partnerships, interactions with various stakeholders are a vital part of the development of biodiversity disclosures. The purpose of corporate reporting is to provide useful information, and as a result, it is important to consider what biodiversity information is important to stakeholders (Institute of Directors in Southern Africa, 2013; Rimmel & Jonäll, 2013; The Institute of Directors in Southern Africa, 2009). Stakeholder engagements appear to include a large number of educational initiatives involving the communities, as well as the employees of the companies. What is an encouraging finding was the increasing trend noticed that many companies are becoming involved with educational institutions in research initiatives relating to biodiversity.

[10] The Tasmanian Land Conservancy is a non-profit organisation that protects irreplaceable sites, the habitats of endangered species and rare ecosystems by purchasing and managing private land (Tasmanian Land Conservancy, 2015).

> *[Company 7] chair in business and biodiversity leadership (University of Pretoria) — focusing on thought leadership in the interface between the spheres of business and biodiversity. As a group, [Company 7] strives to influence society to make the right decisions by carefully managing the way in which we mine. This programme is an opportunity for the group to be at the forefront of driving something that will not only benefit South Africa, but also the world….Research themes include: Implementation of voluntary ecosystem valuation, Identification and evaluation of current business responses to biodiversity in [Company7] and other industries* (Company 7 integrated report, 2012).

The above disclosure illustrates the type of partnerships being formed with in order to increase the research regarding the interactions between business and biodiversity. What should, however, be noted is that the type of stakeholder engagement disclosure appeared to be motivated (at least to some extent) by the need for impression management (cf Grabsch et al., 2012).

It is expected that companies would disclose awards they have received for their performance across various facets of the organisation, in order to enhance the reputation of the company. Oddly enough, the number of disclosures that relate to awards companies have won with respect to biodiversity are very low, as seen in Table 4.3.1 and 4.3.2. A number of disclosures were, however, found for awards relating to general environmental performance such as the *Ernst & Young's Excellence in Integrated Reporting Awards* and the *Best Sustainability Reporting in the Resources Sector* (Company 8, Integrated Report, 2013) What is of concern is the fact that the level of biodiversity reporting is often limited, yet companies are winning awards for their environmental disclosures. This perhaps indicates that disclosure, to a degree, are compiled using a checklist against applicable criteria. In addition, companies could be disclosing their environmental and reporting awards as a means to legitimise the generic and 'tick the box' type disclosures that are evident for biodiversity reporting. These disclosures could also be used as part of the companies' impression management as they are indirectly communicating to their stakeholders that they are compliant with specific disclosure frameworks (refer to Section 5.2.7). One way of limiting companies' ability to use the reporting of awards as a legitimacy strategy is if institutions that grant these awards start incorporating biodiversity disclosures as part of their assessing criteria, it might incentivise companies to increase their biodiversity disclosures.

5.2.4 Performance evaluation disclosures

Performance evaluation disclosures account for 19% and 4% of the total disclosures in the mining and food sectors. In the sustainability reports, 13% and 3% of total disclosures relate to performance evaluation disclosure in the mining and food sectors respectively (Table 4.4.2). Per the integrated reports, disclosures relating to costs appear to be the most popular disclosure item in this theme.

In the mining sector, the majority of these disclosures refer to land rehabilitation initiatives. Per the Mineral and Petroleum Resources Development Act (Act 28 of 2002), mining companies are required to rehabilitate the environment to its natural state, as far as it is practicably reasonable (Department of Environmental Affairs et al., 2013; Department of Mineral resources: Republic of South Africa, 2002). This could suggest that these disclosures are done only for compliance purposes (Carels et al., 2013), as can be seen in this disclosure extracted from a mining company's integrated report:

> *Each of our business units based in South Africa continues to contribute to a fund to meet the cost of out decommissioning, restoration and environmental rehabilitation liabilities in the country; at year end the value of the fund was $348 million…* (Company 3 integrated report, 2013).

This provides evidence that companies are following compliance based ideology when disclosing biodiversity disclosures. The company has included information on the environmental rehabilitation fund as required by International Financial Reporting Standards (IFRS) and the relevant legislation. There is, however, little in the form of integration. For example, a sensitivity analysis or discussion on how the company plans to rehabilitate damaged ecosystems is seldom provided. Explicit cross-referencing to risk or strategy sections or to relevant stakeholder engagement to conclude on the adequacy of the fund could not be found. This could further point to the lack of commitment companies have for biodiversity, as they are incurring costs to meet their legal obligations.

Beside the vast number of land rehabilitation disclosures, other cost disclosures mentioned are in relation to funding provided to biodiversity related issues but the actual monetary values are rarely disclosed, complementing what was found by Grabsch et al. (2012). Company 7, however, disclosed in their sustainability report that they contributed R15.2 million in 2013 via corporate projects such as the four university hairs which include business and biodiversity research initiatives. This illustrates one of a few disclosures that illustrate the costs of biodiversity initiatives, other than land rehabilitation.

Related to this, disclosures regarding target and target performance are very low and the nature of such disclosures is vague as seen below:

> *Programmes and targets for the continuous improvement of efficient resource use, protection of biodiversity, climate change impact and pollution prevention (by addressing the management of fresh and waste water, waste and air emissions and the rehabilitation of land)* (Company 1 sustainability report, 2011).

In addition, a company's targets, more often than not, relate to land rehabilitation (as seen in the above disclosures). There were some instances of developed targets to finance the conservation and management of high biodiversity areas. Despite the disclosures regarding specific biodiversity issues, however, companies often fail to disclose their performance or progress in meeting their targets, (cf van Liempd & Busch, 2013).

5.2.5 Risk disclosures

This disclosure category is the largest disclosure category in both sets of reports and in sectors, accounting for 31% and 27% of the total disclosures in the mining and food sectors, respectively, per the integrated report and 26% and 21% in the mining and food sectors ,respectively, per the sustainability reports. From Figure 4.5.1 and 4.5.2, it once again appears that disclosures are being shifted from the integrated report into the sustainability reports. Despite this shift in disclosures, the nature of the disclosures has remained unchanged with little or no improvement observed. For example, companies are acknowledging the business risks related to biodiversity but do so in a vague and general manner such as:

> *Risk Issue: Biodiversity management, conserving biodiversity-rich sections, eradicating and controlling alien invasive species.* (Company 7 integrated report, 2011). And

> *The Group recognises that degradation of the environment will undermine its ability to produce resources cost effectively and is therefore paying attention to this issue.* (Company 15 integrated report, 2011), to illustrate just a few of such disclosures.

As per Table 4.5.1 and Table 4.5.2, risk management disclosures are poor. If companies are not able to identify adequately the biodiversity risks that affect their operations, it is then impossible to generate an effective risk management plan. It was identified that companies are also utilising external parties, like NGO's and advisory companies, to aid them in their risk identification procedures, contrary to the spirit of King-III and the IIRC which suggest that the company's officers take responsibility for preparing an integrated report which communicates *their* integrated approach to doing business (International Integrated Reporting Committee, 2011; The Institute of Directors in Southern Africa, 2009)

What is particularly interesting is the fact that many companies do not consider biodiversity as a *focus* risk and often attach a low level of materiality to the issue yet biodiversity is under great threat (as explained in Section 2.2). Environmental incidents, for example, are usually broken up into levels, with level 1 being minimal impact and level 3 being significant. These disclosures are usually for the environment in general, and do not report on the specific effects on biodiversity, besides these exceptions:

> *No endangered species, including those listed on the IUCN Red List, were reported as having been negatively affected. However, a small number of protected Belloto del Norte trees in Chile were destroyed.* (Company 3 sustainability report, 2011) and;
>
> *In 2013, the Group experienced five biodiversity* –related level 3 incidents. One involved 15 wild olive trees being cut down … (Company 3 sustainability report, 2013).

The above disclosures provide effective examples of incident-related disclosures, even though these disclosures could potentially have a negative impact on the reputation of the companies. The problem, however, is that this type of detailed reporting was rare.

5.2.6 Internal management disclosures

Internal management disclosures account for approximately 9% of total disclosures across both sectors and both reports (Tables 4.6.1 and Table 4.6.2). The disclosures in this category relate mainly to biodiversity action plans (BAP) with only one disclosure found relating to biodiversity officers (by Company 3) where a Director of Business and Biodiversity Program of Fauna and Flora International that helps the company with high-level risk assessments.

BAP disclosures, like many other biodiversity-related disclosures, are vague. These disclosures merely mention that BAPs are being implemented. No detail is provided on what the plans actually are and how they are going to be executed. In the study by van Liempd and Busch (2013), no BAPs were disclosed. The following disclosure made by company 9 provides an explanation for the presence of BAPs in South African companies:

> *In response to the requirements of the National Environmental Management Biodiversity Act, sites are required to develop biodiversity action plans to appropriately manage the on-site ecosystems* (Company 9 integrated report, 2011).

The above disclosure suggests that BAP's are recorded for compliance purposes only. Furthermore, it is interesting to note that the more simplistic types of disclosures, such as mission statements and partnerships, tend to be disclosed more frequently than technical issues such as internal management and BAP's (as seen in Section 5.6.2). This suggests that companies are disclosing information which is likely to have a positive impact on a company's reputation and avoiding the difficult points which they are either unable to address or would prefer to de-emphasise. This is a similar to van Liempd and Busch (2013) who found that biodiversity disclosures are used to help maintain good public relations.

In this light, the lack of specific BAP's provides evidence to support the notion that companies are disclosing information which shows their acknowledgement of biodiversity without providing the level of detail which would be necessary to hold them accountable. Companies might also refrain from disclosing such information in order to deflect unwanted attention from stakeholders. Companies are, thus, expected to report on the positive information more easily and frequently than the more detailed sections.

5.2.7 External report disclosures

According to Rimmel and Jonäll (2013), technical protocols and guidance frameworks, such as the GRI, are intended to enhance the reporting of specific areas, such as biodiversity disclosures. As can be seen in Figure 4.7.1 and Figure 4.7.2, there is an increasing number of companies using external frameworks and guidelines in the preparation of their integrated and sustainability reports, the most common being the GRI. Other frameworks include the International Organisation for Standardisation Environmental Management Systems (ISO14001) and guidelines issued by the International Council on Mining and Metals (ICMM).

The majority of the companies make use of an external framework yet, more often than not, biodiversity indicators are not discussed and, if they are dealt with, only the core indicators are mentioned. Company 5 mentioned in its 2011 sustainability report that the information relating to the additional biodiversity indicators *was not available at the time.* Similar to the findings of van Liempd and Busch (2013), other companies considered the biodiversity disclosures to be irrelevant to the organisation.

What was interesting to note was a number of companies have made use of a GRI checklist where disclosures are assessed against this checklist. This indicates that, to some extent, the disclosures are made for compliance purposes (see also Section5.1 and Section 5.2.4.). In addition, assurance over the application of the GRI framework is an increasing trend, as noticed by Rimmel and Jonäll (2013). Assurance over non-financial information could possibly be used for deflecting attention away from the lack of detailed disclosures by creating the impression that the disclosures have been reviewed and approved by a subject expert. Similarly, it would appear that companies are using external frameworks, such as the GRI, as checklists and claiming to be compliant with these codes of best practice to legitimise their disclosures (Rimmel & Jonäll, 2013).

5.3 Integration of disclosures in the Integrated Report and the Sustainability report.

This section presents the results pertaining to the degree of integration of biodiversity disclosures in the integrated and sustainability reports. Table 5.3.1 summarises the changes in disclosure per section of the integrated report.

Table 5.3.1: The cumulative change of disclosures in the integrated report.

SECTIONS OF THE INTEGRATED REPORT	Food sectors (IR)		Mining Sector (IR)	
	CCOT for the sector	**CCOT/N**	**CCOT for the sector**	**CCOT/N**
Summary of Board, members and key officers/committee	0	0	0	0
Chairman's statement and Chief Financial Officer reports	-7	-0.41	-4	-0.24
Consolidated financial statements	0	0	-1	-0.06
Chief Executive Officer's review	0	0	-4	-0.23
Director's report	0	0	0	0
Corporate governance review	0	0	3	0.18
Financial review	0	0	0	0
Introductory group overview	2	0.12	0	0
Operational review	-1	-0.06	2	0.12
Our products/ markets	0	0	0	0
Remuneration/compensation report	0	0	0	0
Strategy statements	-4	-0.24	5	0.29
Strategic risk summary	1	0.06	-5	22
Value added statements	0	0	0	0
Sustainable development and commentary	-6	-0.35	-23	-1.35
Segmental analysis and summarised financial information	0	0	-1	-0.06
External appraisals	0	0	0	0
Total	**-15**	**-0.88**	**-28**	**-1.65**

The cumulative change over time (CCOT) in the integrated report has decreased over the three-year period across both sectors, consistent with results presented in Section 4. On average, biodiversity is in fewer sections, highlighting the decrease in the level of integration.

Disclosures made by the Chairman, Chief Financial Officer, Chief Executive Officer and Directors in their reports are expected to contain issues that are considered fundamental to the long-term performance of an organisation (Solomon & Maroun, 2012; The Institute of Directors in Southern Africa, 2009). From Table 5.3.1, it is clear that disclosures in these major sections have decreased. This provides further evidence of companies de-emphasising negative information but also evidences the fact that companies are trying to avoid accountability for their impact on biodiversity as discussed in Section 5.2.1.

The number of disclosures presented in the consolidated financial statements is almost non-existent. This shows a lack of quantification of biodiversity-related costs (Section 5.2.4). It

links with the point made above, as companies will show restraint to quantify their impacts on biodiversity to avoid unwanted attention. This also reflects a lack of integration of biodiversity disclosures in the reports (refer toSolomon & Maroun, 2012) and shows how, in the absence of a clearly defined standard for reporting costs (such as the guidance provided by IFRS), companies are reluctant to include financial information on biodiversity. As discussed in Section 5.2.1, it may also be the case that the recent introduction of integrated reporting in South Africa has left companies uncertain about what to disclose or unable to collect the relevant data. It must be kept in mind that the companies under review include some of the largest entities on the local stock market. In this context, it may be the case that the cost of biodiversity loss is seen as too remote or immaterial to warrant detailed discussion and quantification.

This view is supported by the fact that biodiversity is not disclosed in detail in the operational reviews. A possible interpretation is that companies, on average, do not consider biodiversity to be an integral part of their operations, despite the reliance of these sectors on the biodiversity of the country (Section 2.2.1 and Section 2.2.2).

Although both sectors do not consider biodiversity to be an integral part of their organisations, it appears that companies, specifically in the mining sector, consider biodiversity as a strategic and risk issue. This can, however, be explained by the vast amount of legislation and public scrutiny present in the mining sector (as explained in Section 2.2.1). The mining sector in South Africa has been exposed to increased public scrutiny due to the increased unrest in the sector and, as a result, companies need to manage their images as well as stakeholder expectations. This implies that companies are not disclosing such information out of genuine concern.

Overall, the level of integration of biodiversity information is low in the integrated report. The largest change is noticed in the sustainable development and commentary section and this section also contains the greatest number of biodiversity disclosures. This would indicate that the information is not being integrated, but rather concentrated in what would have been the ESG sections of the old annual reports. Figure 5.3.1 also shows the decrease in the number of disclosures in the integrated report which have been shifted to the sustainability report, as suggested in Section 5.1 and shown in Figures 4.8.4 and 4.8.5. This will now be further investigated by examining the CCOT in the sustainability reports (Table 5.3.2).

Table 5.3.2: The cumulative change of disclosures in the sustainability report.

SECTIONS OF THE SUSTAINABILITY REPORT	Food sectors (SR)		Mining Sector (SR)	
	CCOT per sector	**CCOT/N**	**CCOT per sector**	**CCOT/N**
About the report/ company and Approach to sustainability	1	0.08	3	0.25
Approach to sustainability	0	0	-3	-0.25
Chairman's statement	0	0	1	0.08
Chief Executive Officer's review	0	0	2	0.17
Compliance/ External appraisals	0	0	4	0.33
Corporate governance and management/ Stakeholder Engagements	2	0.17	1	0.08
Environmental Sustainability	3	0.25	26	2.17
Human/Social Sustainability	1	0.08	-1	-0.08
Material Issues/ Risk statements / strategy statements	4	0.33	-1	-0.08
Non-Financial Statements	0	0	-6	-0.50
Socio-economic sustainability	0	0	1	0.08
Sustainability Targets and Performance	0	0	10	0.83
Total	**11**	**0.92**	**37**	**3.08**

The CCOT for the 2011-2013 period has increased in the sustainability reports for both sectors. This is consistent with results presented in section 4.1. On average, it can be seen that the level of biodiversity has increased in the sustainability report over the three-year period, reflecting the increase in the level of integration in the sustainability reports.

Furthermore, from Table 5.3.2, it is evident that the bulk of the disclosures appears in the environmental sections of the sustainability reports, evidencing a lack of integration in the sustainability reports. This is as expected as a sustainability report does not necessarily promote or require the integration of information, as expected in the integrated report (Global Reporting Initiative, 2013). In addition, the GRI framework encompasses biodiversity as part of environmental considerations and as a result, the environmental sections of the sustainability reports can be expected to the contain majority of biodiversity-related disclosures (Global Reporting Initiative, 2007). The CCOT for the mines is considerably lower than the CCOT in the food sector. This can be explained by the fact that mines are expected to have been reporting on biodiversity information for a considerable amount of time due to legislation that govern the sector. The food sectors have recorded a significant increase in biodiversity disclosures in the environmental sections of the sustainability reports. This is consistent with the fact that the threat to biodiversity has only been

acknowledged recently by the companies in the sectors and, thus, the awareness of this grave threat has been increasing over the years (Rimmel & Jonäll, 2013)

The sections that contain the lowest number of disclosures relate to the control environment of the organisation and the organisation's ethics. The lack of disclosures in these sections lends weight to the argument that companies do not have strategic direction (see also Section 5.2.6). Limited disclosures are also consistent with poor disclosure of a clear definition of 'biodiversity' and related mission statements (Section 5.2.1). Collectively, the findings in Table 5.3.2 and Section 5.2.6 suggest that companies have not identified the relevance of biodiversity and seen it as an integral part of their business models. Not only does this point to lack of integrated thinking as required by King-III (2009) and the International Integrated Reporting Committee (2011), it implies that much of the disclosure found in the integrated and suitability reports is compliance-driven.

It is also strange to notice that biodiversity information does not relate to social sustainability as biodiversity plays an important role in the existence and progression of the human race (Wynberg, 2002). Again, this suggests that companies are not applying their minds to biodiversity disclosures. There is no appreciation of how biodiversity is integrated with the various parts of the organisation and the impact which it has on stakeholder groups. In turn, this calls into question the sincerity of biodiversity reporting and long-term sustainability of the local mining and food producing industry.

6. Conclusion and recommendations

This chapter summarises the findings (Section 6.1). The contribution to the professional and academic literature is highlighted (Section6.2) and inherent limitations and areas for additional research discussed (Section 6.3).

6.1 Summarising comments

Biodiversity is under great threat, with contributing factors such as global warming and overpopulation affecting the current state of biodiversity. South Africa is no exception, with biodiversity facing multiple threats. This is a serious issue as biodiversity plays an integral part in the economic development of the country. It is, thus, essential for companies to be accountable for their impact on biodiversity, as well as be transparent regarding their impact on biodiversity and how they intend to manage their biodiversity risk (Grabsch et al., 2012). The increasing focus on sustainability reporting serves as a catalyst for biodiversity reporting

as companies cannot claim to be sustainable without acknowledging their impact on biodiversity (Grabsch et al., 2012).

South Africa is considered to be a leader in integrated reporting, as a result of the JSE listing requirements effectively mandating the application of King-III (Güleş, 2014; SAICA, 2014). The transition for South African companies was considered to be easier as South African companies have been preparing sustainability reports for a number of years (Güleş, 2014). This is definitely not the case with respect to biodiversity reporting. Per the analysis, as found in other studies, corporate disclosures on biodiversity in South Africa are usually limited (Rimmel & Jonäll, 2013; van Liempd & Busch, 2013). These disclosures are often vague, suggesting that biodiversity reporting are used as a tool for impression management (Grabsch et al., 2012). These findings were consistent across both the mining and food sectors. Considering the fact that these sectors are considered to face a high amount of biodiversity risk and that the largest companies in these sectors were analysed, it is evident that the current state of biodiversity reporting in the country is very poor. In addition, it would appear that companies often acknowledge the importance of biodiversity but fail to provide disclosures that could, potentially allow companies to be held accountable by stakeholders for their impact on biodiversity.

A key finding of this thesis is the apparent movement of biodiversity disclosures from the integrated report to the sustainability report, suggesting that companies are de-emphasizing the importance of biodiversity and are avoiding negative biodiversity disclosures in their integrated reports, which are considered the primary reporting platform in South Africa. This also supports the notion that biodiversity reporting is merely conducted for compliance purposes. Furthermore, there is considerable repetition of disclosures by companies in both sectors. This tends to defeat the purpose of producing a sustainability report, as no new material information is provided. This supports the findings of a report issued by the Global Reporting Initiative (2013) in which it is suggested that the integrated report has become a mere combination of the annual and sustainability reports. It was also observed that biodiversity-related disclosures are heavily concentrated in the environmental section of the report, illustrating that companies could be disclosing biodiversity disclosures in order to be compliant with the GRI.

Overall, it is clearly apparent that the there is room for considerable improvement in both the quantity and the quality of biodiversity reporting (Grabsch et al., 2012; van Liempd & Busch, 2013).

6.2 Contribution of the thesis

The study aids in raising awareness of corporate biodiversity reporting (Grabsch et al., 2012) and aims to contribute to the development and enhancement of such reporting. This research contributes to the minimal body of research currently present in the field, in the belief that efficient and effective biodiversity reporting can aid in transforming corporate behaviour. This thesis answers the call of Jones and Solomon (2013) for additional descriptive research in the field. The extent of biodiversity disclosures has only been examined in a few countries (See Grabsch et al., 2012; Rimmel & Jonäll, 2013; van Liempd & Busch, 2013). This study marks the first of its kind in South Africa and highlights key weaknesses in biodiversity-related disclosures by large South African companies in the food and mining industries.

6.3 Limitations and areas for future research

This study specifically focused on the mining and food sectors, with the analysis being limited to the integrated and sustainability reports of the top 10 companies in each sector. As a result, the findings of the study cannot be generalizable across all sectors and may depict more extensive disclosures on average. Further research in the field is encouraged, and could possibly investigate biodiversity disclosures in other sectors, as well as in other countries. In addition, future research should try and incorporate additional forms of corporate communications in the analysis, as these might provide a more detail look into biodiversity reporting by corporations as well as highlight how corporations are using biodiversity reporting as a strategy for impression management. This study is further limited to the analysis on the quantity of biodiversity-related disclosures; however the quantity of disclosures does not necessarily indicate the quality of such disclosures. It is often seen that discourses are repetitive across different years and different reports. Future research should, therefore, incorporate the quality of the disclosures that are presented by companies in order to understand the current state of biodiversity reporting.

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8. Appendices

8.1: Theme register

The following Table has been developed using themes (axial codes) employed by Grabsch et al. (2012); van Liempd and Busch (2013). The Table will be used to analyse each select company over the three years under review.

TABLE 1: Axial codes Themes	Code symbol	2011	2012	2013
SCENE-SETTING				
Definition	A			
Mission statement	B			
SPECIES RELATED				
Site-specific	C			
Specific species	D			
Surveys	E			
IUCN Red list	F			
SOCIAL ENGAGEMENTS				
Partnerships	G			
Awards	H			
Stakeholder engagements	I			
PERFORMANCE EVALUATIONS				
Target performance	J			
Costs	K			
RISK				
Risk	L			
Risk management	M			
Incidents	N			
Materiality	O			
INTERNAL MANAGEMENT				
Biodiversity action plans	P			
biodiversity officer	Q			
EXTERNAL REPORTS[11]				
GRI and other frameworks	R			

[11] Grabsch et al. (2012) refers to disclosures regarding environmental liabilities per the Directive of the European Union. This is excluded from the checklist as it is considered irrelevant in the South African context.

8.2 Explanation of themes in the analysis

Adapted from Grabsch et al. (2012); van Liempd and Busch (2013)

TABLE 2: THEMES	EXPLANATIONS
SCENE-SETTING	
Definition	Whether the company defines biodiversity and its components
Mission statement	Reporting of a biodiversity mission statement or general vision with respect to biodiversity
SPECIES RELATED	
Site-specific	Reporting of biodiversity information relating to specific sites that are considered to have national, regional or local biodiversity significance
Specific species	Disclosure relating to the animals and plants that are affected on the company's sites or species that are vulnerable to the company's operations
Surveys	Reporting on biodiversity surveys conducted
IUCN Red list	Mention of the IUCN red list and the possibility of IUCN red list species in occur in operational areas
SOCIAL ENGAGEMENTS	
Partnerships	Organisations with whom the company has partnerships on biodiversity, for example NGO's and government institutions
Awards	Awards gained by the company in relation to biodiversity
Stakeholder engagements	Any form of engagements by the company with stakeholder groups on biodiversity issues, for example, engagement with the local community
PERFORMANCE EVALUATIONS	
Target performance	Reporting on their targets in relation to biodiversity and their performance in achieving the targets
Costs	Reporting on costs relating to biodiversity as a result of rehabilitations, closures or specific initiatives
RISK	
Risk	Reporting and assessment of biodiversity risks
Risk management	Any information relating to systems or processes developed to manage or mitigate biodiversity risks
Incidents	Report on incidents/accidents that have positively or negatively impacted biodiversity
Materiality	Any sort of indication that biodiversity is considered to be a material risk for the company
INTERNAL MANAGEMENT	
Biodiversity action plans (BAP)	Information relating to their BAP: is there an action plan and is it as a result of a legal requirement etc.
Biodiversity officer	Does the company have a specific officer with the responsibility for biodiversity?
EXTERNAL REPORTS	
GRI and other frameworks	Is reference made to the GRI and does the company follow these guidelines?

8.3 Location and the extent of integration in the integrated report

For the purpose of identifying the nature and extent of biodiversity-related disclosures in the integrated reports, the following report sections, as per Solomon and Maroun (2012) Solomon and Maroun (2012) and Carels et al. (2013) are used.

SECTIONS OF THE INTEGRATED REPORT	2011	2012	2013
Summary of board, members and key officers/committee			
Chairman's statement and Chief Financial Officer reports			
Consolidated financial statements			
Chief Executive Officer's review			
Director's report			
Corporate governance review			
Financial review			
Introductory group overview			
Operational review			
Our products/ markets			
Remuneration/compensation report			
Strategy statements			
Strategic risk summary			
Value added statements			
Sustainable development and commentary			
Segmental analysis and summarised financial information			
External appraisals			

8.4 Location and the extent of integration in the sustainability report.

For the purpose of identifying the nature and extent of biodiversity-related disclosures in the sustainability reports, the following report sections are used.

SECTIONS OF THE SUSTAINABILITY REPORT	2011	2012	2013
About the report/ company and Approach to sustainability			
Approach to sustainability			
Chairman's statement			
Chief Executive Officer's review			
Compliance/ External appraisals			
Corporate governance and management/ Stakeholder Engagements			
Environmental Sustainability			
Human/Social Sustainability			
Material Issues/ Risk statements / strategy statements			
Non-Financial Statements			
Socio-economic sustainability			