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ASSESSING THE PRESENCE / ABSENCE OF ENVIRONMENTAL REPORTING IN THE ANNUAL REPORTS OF SOUTH AFRICAN LISTED COMPANIES

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Submitted 30 October 2014

DECLARATION

I declare that this dissertation is my own, unaided work. It is being submitted for the Degree of Masters of Science at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at any other University.

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(Signature of candidate)

_____day of _____20_____in_____

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ACKNOWLEDGEMENTS

With thanks to the staff of the Animal, Plants and Environmental Sciences School of the University of the Witwatersrand, in particular my supervisor, Dr Ute Schwaibold, Prof Barend Erasmus, Prof Ed Witkowski and Prof Mary Scholes, for their patience and advice. A very special thank you to my wife, Sarah, for her unwavering support and understanding.

ABSTRACT

The reporting of non-financial data has steadily increased over the past three decades and there is evidence that including social and environmental indicators in the annual report is correlated with improved environmental performance of listed companies. The annual reports of a selection of 82 JSE-listed companies, including the full JSE Top 40, were analysed for mentions of the natural environment for the reporting periods of 2010 and 2012. The introduction of the King III principles by the JSE occurred between these two periods, providing an opportunity to assess the impacts that this move had on annual reporting. Attention waspaid to mentions in the leadership reviews by the Chairmen and the CEOs, presence of empirical environmental data, environmental KPIs and the manner in which these data were presented and discussed in the report. In addition, a survey asking qualitative details of company reporting policywas conducted among the staff members responsible for environmental reporting of these companies. The standard and sophistication of environmental reporting varied widely across the sample, with Top 40 companies generally reporting better than non-Top 40 companies. Primary industries were more likely to provide empirical data than service industries and only agricultural industries appeared concerned with the manner in which changes in the natural environment could affect their business. There remains a wide variation in the type and detail of environmental reporting across the sample with very little evidence that the data, as reported, play a meaningful role in the decisions of either management or investors.

CHAPTER 1: INTRODUCTION

In a capitalist, free-market system, a balance needs to be struck between allowing businesses to function in an atmosphere free enough to adapt to and best exploit the world around them, while simultaneously not doing damage to the society and environment within which they exist (World Commission on Environment, 1987). This damage can take the form of damage to other businesses through unfair or anti-competitive business practices, striving for short term profits at the expense of the long term health of society or the environment, or activities that may lead to harm to employees, communities or the ecosystem in which the business operates (Zadek, 2006). As capitalism has become more entrenched in the global economy, so communities have begun to realise that allowing companies unfettered access to resources can lead to the over-exploitation of those resources and damage to the environment in the form of pollution (Hardin, 1968).

The competitive nature of free market capitalism means that companies cannot be expected to completely self-regulate the manner in which they use a resource, especially if the cost of the impacts of that exploitation is not borne by the company itself. This has led first to certain resources becoming protected once it was realised that exploitation was reaching dangerously unsustainable levels (Rudel *et al*., 2011). Good examples of such resource protection can be found in the curbing of whaling at the beginning of the 20th century and the formation of a number of national parks around the same period.Over time, governments began to enact laws designed to moderate the behaviour of companies so as to mitigate the impact that these businesses had on the environment and communities that surround them (Lazarus, 2004). Towards the latter part of the twentieth century, it became clear that even with environmental legislation capitalism is an inherently exploitative practice and a change of culture, from unfettered resource use to a more balanced approach with expectations of long term sustainability was required (Daly, 1996). This found its best expression in the so-called Brundtland Report, in which sustainable development was first clearly defined (World Commission on Environment, 1987).

The need for economies to be sustainable, and to an extent, restrained in their resource use, has provided a conundrum for lawmakers and governments around the world. While all businesses adhere to the same broad economic principles, environmental impacts are far more nuanced and activity-specific. So, while the greatest abuses of the environment can be legislated against, the need to create a culture of more sustainable activity within an economy does not lend itself well to legislation (Daly, 1996). As a result, we have seen businesses themselves begin to respond through internal programs and policies that seek to moderate the way in which the organisation concerned interacts with the world at large (Lazarus, 2004).

A central tenetof this increased focus on sustainability is transparency and the need for companies to communicate with their stakeholders and the public at large. This has coincided with demand from broader societies as both investors (IFC, 2010) and consumers (Gerzema & Lebar, 2008) demand ever increasing levels of transparency regarding businesses' interactions with the

environment. If, in a competitive capitalist environment, companies cannot be expected to self-regulate, and if laws and law-enforcement are not sufficient to properly manage a company's relationship with the environment, then it falls to broader society, to shareholders and the general public, to act as a restraining force on rampant capitalism. The mechanism through which this is achieved is reporting that goes beyond the simple financial position of the company and extends to the organisation's social and environmental footprint, resulting in the rise of non-financial reporting in many markets (Herzig & Schaltegger, 2004).

1.1 The evolution of sustainability reporting

There has been a consistent increase in the inclusion of sustainability reporting[1] in the annual reports of multinational companies the world over (ACCA, 2004; KPMG, 2008).This latest period is simply the most recent stage in a process that started in the 1970s, with the occasional inclusion of social reports alongside traditional, annual financial reports (Fifka, 2012). What followed was a gradual trend through the 1980s away from purely social reporting to the reporting of empirical environmental data like waste management and resource use before this evolved through the 1990s into the more comprehensive reporting that we see today (Hahn & Kuhnen, 2013). The rise of holistic reporting (or at least the ideal thereof) is closely linked to multi-national efforts to standardise reporting styles, perhaps best typified by the adoption of the Global Reporting Initiative as the *de facto* global reporting standard. Despite this trend towards standardisation, a wide variation in the quality and style of reporting is still identified, from country to country and, within nations, between sectors of the economy. (KPMG, 2011).

Not all of this need for information is driven by the public's desire to moderate capitalist behaviour. In the same way that a company may pose a threat to the natural environment, the societal opposition to that environmental damage may in turn threaten the company's future through possible legal action or increased costs following the loss of previously un-accounted natural resources (Kubiszewski & Molnar, 2012). Unreported or unacknowledged environmental risk poses a threatto corporate business and investors alike (Turton, 2010). Against this background, the International Finance Corporation (IFC) recognises that adherence to sustainability reporting protocols as outlined by the Global Reporting Initiative (GRI) not only protects investors from potential environmental risk exposure but also makes for more robust and resilient projects and companies (IFC, 2010).

A study that analysed non-financial reporting in Fortune Global 250 companies between 1998 and 2001 showed an increase in sustainability reporting, with 37% of these multinationals reporting in 1998, rising to 50% by the end of that period (Kolk, 2003). This trend was further

[1] For the purposes of this report, the phrases "sustainability reporting" and "non-financial report" are considered to be interchangeable, referring to reporting on environmental and social aspects of a company's practice, while "environmental reporting" refers specifically to reporting on a company's relationship with the natural environment.

amplified in the subsequent study by Kolk (2010) which updated the research to 2010. Kolk (2010) identified that, even within the overall trend of increased sustainability reporting, change was inconsistently spread through these multi-nationals. Kolk (2010) identified five distinct groups of reporters, namelyconsistent reporters, late adopters, laggards, inconsistent reporters, and consistent non-reporters.

The overall increase in sustainability reporting worldwide may hide significant variation in the type and quality of reporting between sectors and economies, despite the relative uniformity of culture that one might expect from the globe's very largest companies. There are clear sectoral influences, with traditionally heavier, more polluting industries more likely to report but with reporting from the financial and commercial sectors also increasing (Kolk, 2003). As a result, the gap in the prevalence of non-financial reporting between historically reporting and non-reporting sectors is closing over time (Kolk, 2010).

National effects may also influence sustainability reporting. A directly observable influence was found from the publication of a range of reporting guidelines by the Japanese government during the early 1990s which resulted in an increase in reporting by Japanese companies. Similar effects have been seen as governments in Europe began to encourage reporting in the early part of the new millennium (UNEP, 2006). An additional influence on the likelihood of reporting identified in the Kolk (2010) study was the so-called "small-country effect" (Katzenstein, 1985), whereby multinationals based in smaller countries are subject to greater scrutiny and so adopt higher standards of transparency and responsiveness to domestic concerns. South Africa would fall well into this demographic, with a relatively small bourse dominated by a handful of very large home-grown multi-nationals. In fact, South African companies have reflected this global increase in sustainability reporting. In keeping with the experience of other emerging markets, the adoption of non-financial reporting has been such that rates of reporting among South Africa's top 100 companies listed on the Johannesburg Stock Exchange (JSE) now outstrip international groupings such as the *Fortune* Global 100 (Dawkins & Ngunjiri, 2008).

There is an argument to be made that the very use of the word 'sustainable' in sustainability reporting is in and of itself an exercise in legitimisation (Aras & Crowther, 2009). All definitions of sustainability revolve around the same concept that society should strive to reach a situation where resources are used at a rate below which they can be regenerated (World Commission on Environment, 1987;Hawken, 1993). The ease with which the word is used in corporate reporting may well have the effect of fundamentally misleading not only shareholders and investors but also the company staff themselves into believing their own reporting and ultimately leading to a naïve or short-termist view on the true sustainability (or otherwise) of a company's activities (Aras & Crowther, 2009). This is further emphasised when one considers that the concept of sustainability, particularly in the financial sense, has been conflated with the need for a company to grow in perpetuity (Davidson, 2011). This strikes at the very heart of the assumptions inherent in sustainability reporting. The thinking behind triple bottom line reporting

aspires to a company that can experience unlimited growth while simultaneously decreasing consumption of limited natural resources, all while avoiding any compromise in its social responsibilities. It is a cognitive dissonance that is not unique to the world of sustainability reporting but rather pervades the capitalist model (Aras & Crowther, 2009).

1.2 Standardisation of reporting

With the rise of sustainability reporting comes a desire to standardise the practice in order to bring it up to the standard of comparability that is evident in financial reporting. The need for central governments to levy tax on businesses led to financial controls that could be standardised across all the businesses in an economy. While these were originally a method of financial record keeping in order tocalculate tax, they have evolved into a standardised measurement tool. Global accounting principles are so uniform that it is possible to easily compare two businesses of greatly different size, activity or geographic location with relative ease (Robson, 1992).

Early attempts at quantifying and managing sustainability reporting led to the widespread use of 'triple bottom line' reporting (Elkington, 1997), a catchall phrase to describe corporate reporting which covers the social and environmental aspects of a business in addition to the financial aspects. This has since been enhanced by more management-useful concepts such as the five capitals, ascribing sustainable financial management principles to the management of other capital types: human, social, and natural and manufactured (Forum for the Future, 2009).

Various structures have been put in place to attempt some level of standardisation in the world of non-financial reporting, from the global level, such as the Global Reporting Initiative (GRI), through the regional level, such as the European Union's Eco-management and Audit Scheme (EMAS) and the national level, typified by national guidelines adopted independently by a number of different countries. The current sustainability landscape in South Africa is complex, with systems like the GRI given over to reporting and transparency (Global Reporting Initiative, 2002), King III focusing on governance (Institute of Directors (South Africa), 2009)and external, impact-focused assessment as outlined by the South African government (Republic of South Africa, 1998), although this last is seldom used directly for sustainability reporting *per se.*

With standardisation, inevitably comes a move away from voluntary reporting to an external pressure on companies to share information in a transparent, timely and meaningful manner (Adams, 2004). There is some evidence to suggest that this external pressure on companies to report may well lead to a slackening in levels or quality of reporting should societal pressure on companies to communicate sustainability information weaken in the coming years. This has been seen historically in the rise and subsequent fall of social reporting in the late 1970s and early 1980s in the United States (Dierkes & Antal, 1986). It has been argued that the trend to include non-financial information in the annual report at the expense of a stand-alone environmental or social report may actually weaken reporting of these issues (Owen *et al*., 2000).

However, the more recent rise of the GRI and the adoption of its principles into the listing requirements of many stock exchanges is probably enough pressure to force companies to continue reporting for the foreseeable future.

1.3 Rationale behind reporting

This pressure to report can often lead to 'legitimisation', where firms which have their legitimacy threatened through adverse media reporting may make self-serving, selective or not readily verifiable disclosures to back up claims of environmental sustainability not necessarily borne out by reality (Adams, 2004). Despite this, it has also been shown that countries with mandatory corporate sustainability reporting reap substantial benefits in corporate behaviour, including improved corporate governance, more ethical practices, decreases in bribery and corruption and an increase in managerial credibility (Ioannou & Serafeim, 2011).

When assessing the role of the annual sustainability report, much seems to depend on the rationale behind reporting that exists within a specific company. While enforced reporting may result in legitimisation or shallow reporting, empirical analysis has shown that firms that make voluntary disclosures, particularly if those disclosures take the form of verifiable data, have better environmental records than those that donot (Clarkson*et al.*, 2007). That said, sustainability reporting still suffers from its voluntary, guideline nature (certainly as compared to the very strict legal codes of conduct that govern financial reporting), with not only the quality of the reporting itself varying widely from company to company, but substantial variation in the methodology employed in data collection,and the quality of the data themselves, not only from company to company, but also from report to report within the same organisation (Wilson, 2013).

There are a number of further criticisms of sustainability reporting as it is currently practiced. Unlike financial results, social and environmental reporting are often interpretive or qualitative. In their analysis of the Australian oil and gas sector, Dong & Burritt (2010) used a classification instrument to analyse the general social and environmental issues disclosed in the annual reports according to categorical theme, type of evidence (monetary, non-monetary, declarative), type of news (positive, negative, neutral) and volume (number of sentences). When analysed in this way, companies' non-financials were found to be declarative, impervious to fact-checking within the reportsthemselves and generally stressed the positive (Hackston & Milne, 1996; Dong & Burrit, 2010).

Inherent to triple bottom line reporting is compartmentalisation, with reporting tending to adhere to the categories of financial, social and environmental sustainability, while seldom recognising the interrelationships between these categories. It has been recommended that the standard guidelines most often adopted be amended to stress the interrelationship between these different aspects of sustainability, even to the point of including interrelated impacts as a fourth reporting category(Lozano & Huisingh, 2011). This has to an extent been addressed by the rise of

integrated reporting. Following on from the separate environmental and social reports that first started appearing in the 1970s and '80s, has been the trend towards integrated reporting, whereby both financial and other relevant company information are included in one single annual report (Eccles & Krzus, 2010).This process is being driven internationally by the International Integrated Reporting Council (IIRC) which is promoting the adoption of integrated reporting by many multinationals (IIRC, 2011). This has included the official adoption of integrated reporting by the JSE as a listing requirement (or the requirement that an explanation is provided in the absence of such reporting) for all annual reports published after March 2010 (JSE, 2014). In addition to this, the GRI guidelines for the manner in which non-financial aspects are reported are becoming the standard for South African companies (SAICA, 2012).

Another criticism cuts to the very heart of why reporting is practiced in the first place. Despite environmental performance ostensibly being its *raison de'etre*, sustainability reporting often does little to enhance the understanding or management of a company's environmental impact (Veleva & Ellenbecker, 2000). Related to that is the issue of comparability. Sustainability reports and the frameworks upon which they are based often lack standardisation and so it is very difficult to make comparisons, either with the past or with other companies and with independent norms and standards(Veleva *et al*, 2001).

Despite all the work done nationally and internationally, a holistic, multi-industry framework continues to elude sustainability professionals. Even the notion that a standardised format is necessary may be flawed. Unlike financial reporting which is able to address fundamental, universal and largely timeless principles of profit and loss, assets and liabilities, environmental and social reporting needto be adaptable to the changing environment in which companies operate (Sridhar & Jones, 2012). Reporting should be geared towards enhancing the understanding of the actual workings of a company with information that is relevant, comparable and which enhances the ability of management to act, while simultaneously providing stakeholders with a clear understanding of the impacts that companies have and the pressures to which they are exposed. This may be an impossible dream but the rise of a number of sustainability tools that seem closely linked to (at least internal) sustainability reporting may offer a path to real and useful reporting (Baumgartner & Winter, 2013).

1.4 Assessing the quality of reporting

1.4.1 Using indicators in environmental reporting

Faced with the complexity and wide variation in economic activity within a market, researchers have a problem in properly assessing the quality of environmental reports that a company publishes. In response to this, the Lowell Centre for Sustainable Production (LCSP) developed the indicator hierarchy, partially in response to a concern that sustainability reports published by companies were only 'green-wash' intended to improve a company's public image (Velev*aet al.*,

2003). This hierarchy is not a definitive framework but it is a useful tool for quickly assessing the complexity and usefulness of information used in sustainability reporting. The hierarchy has five levels for categorising existing indicators relative to the basic principles of sustainability, namely basic compliance, efficiency, facility effects, supply chain and product lifecycle and sustainable production (Veleva *et al.*, 2001). Central to the philosophy of the use of this hierarchy is the recognition that, by ranking indicators, it is possible to create a snapshot of a company's world view and the evolution of that consciousness with progressively more sophisticated reporting.

It has been shown that companies and communities often measure environmental performance using distinctly different criteria, based on (in the companies' cases) what they can control and, in the case of communities, the degree to which they are affected, not just by one company, but by their entire environment (Fehsenfeld, 1997). By analysing the types of information provided in a report against the Lowell Centre Hierarchy, it is possible for the researcher to at least develop a sense of the level of environmental disclosure taking place, without becoming focussed on the particulars of the information itself.

In order for an assessment of a group of companies' environmental impacts and attitudes to be undertaken, indicators need to be selected against which they can be judged. These are typically numerical measures that provide insight into the physical, social or economic performance of the organisation. Indicators should be chosen in such a manner as to improve understanding or awareness of an issue, inform decision making related to that issue and provide for tracking of the status of the activity being measured over time(Veleva *et al.*, 2001).

Environmental Sustainability Indicators (ESI's) tend to favour the analysis of single sector industries as they address the environmental concerns unique to a specific activity. As a result, the ESIs described in the literature tend to be for single sectors such as construction (Fernández-Sánchez & Rodríguez-López, 2010), technology development (Dewulf & Van Langenhove, 2005), pharmaceuticals (Veleva *et al.*, 2003), mining (Azapagic, 2004) or civil services such as water (Lundin & Morrison, 2002).

1.4.2 Standardising and comparing environmental reports

There are two fundamental ways of looking at the usefulness of reporting. The first is to assess whether the method of reporting makes it possible to compare companies to each other. The second is to assess whether the manner of reporting is done in such a way as to provide management with useful data on which to base their decisions (Veleva *et al.*, 2001). Financial reporting has developed very well in this regard, with all companies ascribing to the same methods and protocols, regardless of size, sector or market. With that, the method of financial reporting is scalable and comparable and provides management and investors alike with relatively clear and unambiguous data. Financial reporting benefits from the fact that all companies, regardless of scale or industry, are governed by the same basic accounting and financial principles. The same is broadly true of the social issues facing a company. As a result, financial and (to a marginally

lesser extent) social reporting enjoys good conformity across companies (ACCA, 2004).

Environmental reporting is a lot more complex in that the types of impacts are heavily sector and size dependent. Frameworks have been proposed that bring together a wide range of initiatives (Labuschagne, Brent, & van Erck, 2005) which often result in complex and unwieldy matrices. Even the ways in whichfirms interact with the concept of sustainability are undergoing a radical shift. Until fairly recently, Corporate Social Responsibility spend (or Corporate Social *Investment* (CSI); Fig, 2005) was indistinguishable from a company's environmental and social responsibilities. CSI does play a role in overall business sustainability (Global Reporting Initiative, 2002) but it will always be secondary to that organisation's inherent sustainability (Fenwick, 1993).

As a result of the variety in the likelihood or opportunity for direct environmental impact from company to company, there is as yet no standard methodology for assessing environmental impact or, inversely, the environmental risk that each organisation assumes (Labuschagne, Brent, & van Erck, 2005). Every attempt to standardise this approach seems destined to become bogged down in the minutiae of sector specific issues. In combatting this, market leaders in the field of reporting, such as Woolworths Holdings Ltd and the Nedbank Group, combine in-house scoring and initiatives with the format of the GRI (Woolworths Holdings Ltd, 2009; Nedbank Group, 2009). This is adequate for in-house, temporal comparisons but fails to progress the cause of comparison across companies, markets or sectors.

The JSE's Socially Responsible Investment Index (SRI) provides a very broad method of differentiating industries based on their sustainability practices. Companies are assessed depending on their sector (which is assessed as low, medium or high impact) and are judged against a set of indicators and metrics (JSE, 2011). Perhaps more importantly, the JSE SRI does not, in fact, assess companies based on actual environmental performance. Rather, requirements for admission to the SRI are centred on a series of policies, reporting and management structures that have to be in place (JSE, 2011). The theory is that the presence of such structures should in turn ensure good environmental behaviour. There is some evidence for this when corporate transparency is combined with strong shareholder activism, as is the case in the United States (Monks, Miller , & Cook, 2005) where SRI investment makes up a little over 10% of total investing (Forum for Responsible and Sustainable Investment, 2012). However, in response to the JSE's release of their 2010 SRI index (JSE, 2010), a number of SRI listed companies were found to have been investigated or prosecuted for contravention of environmental laws, in apparent direct contradiction to the sustainability claims inherent in an SRI listing (Centre for Environmental Rights, 2010).

The rise of the King reports on governance (Institute of Directors South Africa, 2009) have propelled South Africa to a top ranking for corporate governance and reporting standards according to *The Global Competitiveness Survey, 2010-2011*(World Economic Forum, 2010). This is not however reflected in the standard of environmental reporting in the country with South Africa ranking low in both process maturity and quality of communication in a global survey of corporate

responsibility reporting (KPMG, 2011). South Africa lags behind many first world markets in terms of the accessibility and comparability of environmental reporting information. When compared to foreign analyses, it is clear that South Africa lies where the United Kingdom was as far back as the mid-1990s (Gray, Kouhy, & Lavers, 1995). The companies listed on the JSE are also beset by the problems described by these researchers, specifically "problems with defining and identifying CSR, a lack of easily accessible data, difficulties of data capture, the need for longitudinal studies, the difficulties of inter-temporal and inter-country comparison, differences in research approach and the difficulties in identifying – and seeking to reconcile – these differences in method."(Gray, Kouhy, & Lavers, 1995, p. 78). Some South African companies are moving towards more quantitative and systematic styles of reporting but the vast majority of listed companies still describe their sustainability activities in an aspirational and anecdotal manner, with an emphasis on the positive (Sonnenberg & Hamann, 2011). This is not an issue unique to South Africa. A recent Australian study successfully analysed the environmental reporting of the oil and gas sector on that country's stock exchange using a quantitative method, finding that reporting on environmental and social issues are overwhelmingly positive and declarative (>80% of all disclosures) (Dong & Burritt, 2010).

1.5 Analysing and understanding sustainability reporting in South Africa

An analysis of the nature or quality of environmental reporting in a market cannot be limited to a simple survey of adoption or otherwise of global standards, but needs to delve into the actual information reported, as well as surmise some of the attitudes that prevail in an organisation behind the carefully constructed façade of the report. Hahn & Kühnen (2013) summarise the process flow of sustainability information from a starting point of non-financial information gathering (including triple-bottom line analysis and corporate social responsibility), internal performance measurement and finally external information disclosure in the form of either an integrated report incorporating the three sustainability dimensions of finance, society and the environment, a specialised sustainability report (usually including two or more sustainability dimensions such as social and environment) or an isolated environmental or social report.

The trend in South Africa is towards the production of integrated reports for all listed companies and so it is specifically on the integrated annual report that this research focuses. Integrated reporting is not mandatory for JSE listed companies but is requested to comply with the principles of King III on an "apply or explain" basis (JSE, 2013).This semi-voluntary aspect makes the South African situation ideal for study as the support and knowledge infrastructure for appropriate disclosure is present, without a regulatory regime artificially distorting the nature of that disclosure.

The 'apply or explain' requirement for integrated reporting in the top 400 companies on the JSE was implemented in February of 2010 (Integrated Reporting Committee, 2010). Thus an

analysis of reports pre-and post this announcement is a useful indicator of the role of quasi-mandatory integrated reporting on the quality of environmental reporting within annual and integrated reports.

In building a matrix with which to assess the standard of environmental reporting in annual reports in South Africa, the following aspects are included, based on previously published methodologies (Hackston & Mile, 1996; Veleva *et al*., 2001; Global Reporting Intiative, 2002; Dong & Burritt, 2010):

- an assessment of the simple presence or absence of any environmental information or statements in different levels of the report, including the leadership reports, the main body of the report and whether or not the presence of an additional sustainability report is indicated for the year;
- whether that environmental reporting extends to a qualitative discussion on the company's interaction with the environment and includes goal-setting, qualitative self-assessment and the recognition (or explicit dismissal) of potential environmental risk, including economic risk (Dong & Burritt, 2010);
- whether these statements include quantitative data and environmentally-based key performance indicators (KPIs) that adhere to any of the Lowell Centre Hierarchy levels (Veleva*et al.*, 2001). Included in this analysis is whether the company appeared to be interacting with their KPIs. Were KPIs tracked over time, were reasons for changes in the KPI numbers explained, and, on a most basic note, was the quantitative data expressed in a tabular or similar format as is anticipated from other types of reported data such as financial information?

1.6 Research Questions

The following research questions were considered in this study:

- To what degree is the natural environmental addressed in the annual reports of listed companies and how has this changed for JSE listed companies between 2010 and 2012?
- Is the mention of the natural environment done in such a way as to provide useful or usable information to either staff or stakeholders of the companies concerned and how has this changed for JSE listed companies between 2010 and 2012?
- Does the mention of the natural environment in various aspects of the reports influence the degree to which the environment is addressed in other parts?
- Does the manner in which the environment is reported in the annual reports of South African companies result in a meaningful exchange of information regarding these companies' interaction with the natural environment?

1.7 Aim and Objectives

The aim of the project was to assess the level of consideration given to the natural environment in various aspects of 82 JSE-listed companies' annual reports taken from the 2010 and 2012 reporting periods, a period that straddles the introduction of integrated reporting as a JSE listing requirement.

The objectives of this research were:

- to determine the degree to which the relationship between companies and the natural environment is reported on in the annual reports of JSE listed companies in 2010 and 2012;
- to investigate the degree to which the natural environment is meaningfully addressed in various aspects of the annual reports of JSE-listed companies for the years 2010 and 2012;
- to investigate what changes have occurred in environmental reporting of JSE listed companies between 2010 and 2012;
- to assess whether environmental reporting is fulfilling the role for which it is intended, namely to provide transparency to stakeholders and to inform investors as to the environmental impacts and concerns related to the companies in question;
- to investigate whether environmental reporting as it is presented in the annual reports of listed companies represents a meaningful analysis of those companies' relationship with the natural environment;
- to assess the level of detailed environmental information provided in these annual reports;
- to identify possible patterns in environmental reporting between different sectors and between different reporting periods.

CHAPTER 2: METHODOLOGY

To assess the level of consideration that the environment received in the annual reports, the following steps were followed:

1. Identification of participating companies;
2. Collection of annual reports for financial years 2010 and 2012 for these companies;
3. The drawing up of a presence / absence matrix of various aspects of environmental content in annual reports;
4. Analysis of these reports using that matrix;
5. Collation and analysis of results;
6. Circulation of questionnaire to participating companies;
7. Analysis of questionnaire results.

2.1 Identification of participating companies and collection of annual reports

Initial analysis of the reports for 2010 indicated that restricting the study to the Top 40 companies by market capitalisation listed on the JSE (as at March 2010) provided a representative sample of companies with both the resources and the infrastructure to carry out a comprehensive environmental program. In addition to these 40, a further 42 listed companies were selected and analysed, for a total of 82 companies (see Appendix 1). The additional 42 were chosen to represent sectors which exposed companies to specific, easily identifiable environmental risks or potential for direct environmental damage. Generally, this includedcompanies whose main income was derived from primary activities, for example forestry, agriculture and mining. The decision as to which additional companies to include, was made based primarily on ease of access to, and availability of their annual reports. In the event of a company delisting between the first and second analysis period, those data were abandoned. All companies were listed on the JSE and submitted a comprehensive annual report for the year ending March 2010 and again for the year ending March 2012.

Analysis was limited to data that were publically reported during the 2010 and 2012 financial periods and included in the public annual report.The 2010 analysis was conducted on hardcopy reports provided by the companies to the JSE. The 2012 analysis used the annual reports as downloaded in their entirety from each company's website. There is no difference in the content between the hardcopy and digital versions of each annual report.

2.2 Drawing up of presence/absence matrix and annual report analysis

An initial analysis of South African companies suggested that even the fairly rudimentary analysis as conducted by Dong & Burritt (2010) would prove too in-depth for the majority of JSE listed companies where any mention of the environment at all was noteworthy. It was originally proposed that reports be analysed according to the principles as laid out by the GRI (Global Reporting Initiative, 2002). However, preliminary analysis of a subset of the reports from 2010 revealed that the vast majority of companies had not reported at a level anywhere near that which the GRI requires, thus making GRI-based analysis largely meaningless. Beyond the sophisticated analysis conducted on GRI compliant companies, there appears to be very little recent work done on basic, high level analysis of companies' environmental reporting that can include the reporting (or lack thereof) of the least compliant companies. For this reason, a matrix wasdeveloped combining a simplified version of the classification methodology described by Hackston and Milne (1996), and a presence/absence analysis of basic reporting facets (see Appendix 2). These included content analysis to codify the reporting on the natural environmental, through the use of a presence / absence checklist (Weber, 1988). The matrix was further influenced by the Lowell Centre Hierarchy, in that the presence / absence questions informed different levels of environmental interaction, from the most basic compliance, to more sophisticated analysis (Veleva *et al.*, 2001).

The matrix was used to record basic presence or absence of the natural environment in the reports as well as some analysis that would indicate a more sophisticated or comprehensive approach to environmental reporting. Presence was defined as any mention of the company's interaction with the natural environment. This analysis was conducted purely on the presence of environmental reporting within the annual report. Environmental or sustainability reports that were compiled and presented separately from the main annual report were not analysed, although their presence was noted.

No analysis on the quality, detail or veracity of the environmental information that was reported was undertaken (although quality and detail are inferred from an analysis of the presence of such features as quantitative environmental data and the presence of environmentally related goal setting). A mention of the natural environment and the company's interaction with it was sufficient to register as a presence in the report.

For each report, presence or absence of the following aspects of environmental reporting was noted:

Table 1.Assessment matrix for the evaluation of environmental reporting in the annual reports of JSE-listed companies.

Basic environmental information	
Natural environment mentioned in main annual report?	This section serves as an initial filter of the reports, determining the number which included reporting on the natural environment in any form at all(Hackston & Milne, 1996).
Natural environment mentioned in Chairman's review?	
Natural environment mentioned in CEOs review?	
Indication of separate environmental report?	
Indicators of some environmental analysis or discussion	
Qualitative environmental discussion?	Once presence of environmental reporting was established, an assessment was carried out to determine whether there were any discussions of the company's relationship to the natural environment as well as some indication of plans associated with environmental behaviour. Companies that recognised some exposure to environmental risk were also indicative of a company that anticipates an ongoing relationship with the natural environment in the future (Veleva *et al*., 2001).
Environmental plans outlined for new year?	
Qualitative environmental goals set?	
Recognition of environmental risk? Price increase risk? Investment risk? Climate change risk?	
Indicators of environment-related monitoring and quantitative analysis	
Quantitative environmental data?	The presence of quantitative environmental data is a clear indicator of some level of environmental monitoring taking place within the company and therefore is a good criterion against which to judge the degree to which a company engages with the natural environment. If that company then goes on to measure its progress related to this data, through the reporting of KPIs and the clear tabulation of the monitoring results, this indicates an engagement with the data (Veleva*et al*., 2001).
Environmental KPIs?	
KPIs reported for > 1 year?	
Explanation for changes in KPIs?	
Tabular presentation of environmental data?	

The percentages of companies that reported on the environment in the various parts of the annual report were calculated. Companies were further assessed according to broad sectors (agricultural, commercial, financial, industrial and mining), presence/absence of Top 40 membership. Further analysis included looking for correlations between certain aspects in environmental reports. For example, analysis was conducted to determine whether the presence or absence of a mention of the environment in theleadership reports (CEO or chairman's review) influenced the inclusion of the environment elsewhere in the report. To this end, mentions of the environment in the leadership reviews were compared to the presence or absence of environmental discussion, planning, record keeping and presentation of data through the rest of the report. This analysis was run separately for the 2010 reports and the 2012 reports. The results were then compared between the two periods. Potential areas of correlation between sectors were determined through a principal components analysis.

2.3 Questionnaires

A short, high-level questionnaire was compiled in accordance with the University's code of ethics (University of the Witwatersrand, 2011), approved by the University Human (non-medical) Ethics Committee (ethics clearance number H110823), and sent to the executive tasked with environmental issues in each listed company. The purpose of the questionnaire was to gain some insight into the processes behind environmental reporting in the selected companies. The questions were formulated in order to attempt to extend the matrix used in the report analysis to include qualitative assessments of the processes behind report compilation in the companies studied. The person actually tasked with the completion of the questionnaire was at the discretion of the company. Use was made of an online survey tool, the website www.freeonlinesurveys.com.

The questionnaire was circulated once, in July of 2011, and questions were designed according to established principles (see Jack & Clarke, 1998; Marshall, 2005). The questionnaire was designed to have a mix of open-ended and multiple choice questions, providing a mix of quantitative and qualitative responses. Intervieweeswere identified based on personal communication with each individual company whereby the most senior person responsible for environmental reporting was requested to complete the survey, but thereafter anonymity within the sample of 82 companies was assured. Non-responders could therefore not be readily identified and the entire cohort was encouraged to answer the questionnaire on three occasions.

The questionnaire addressed the following (full text available in Appendix3):

- the drivers of environmental behaviour in the company;
- the degree to which the companies' environmental impact features in executive decision making;
- the qualitative and quantitative indicators which executives look to in assessing company environmental performance;

- internal environmental reporting;
- a checklist of common indicators:
  - presence / absence of:
    - carbon / water foot-printing;
    - environmental risk assessment;
    - internal recycling / energy efficiency campaigns;
    - use of environmental status in marketing;
    - tracking of environmental indicators;
    - product lifespan environmental assessment.

2.4 Statistical analysis

Using Statistica©, an analysis of variance (ANOVA) was performed on the arcsine-transformed data using a general linear model (GLM) for multiple dependent variables. The GLM was performed on all the results against the following independent variables:

- Sector
- Presence in the Top 40
- Year
- Activity (Primary, secondary or tertiary)

A Fishers Exact post hoc test was then performed to ascertain significant relationships between all variables. The significance level was set for $p<0.05$.

A principal component analysis was conducted to determine the variables that most influenced the structure of the environmental reporting within the annual reports. The variables were manually filtered to remove questions that obviously represented a cascade from one to the other (for example, the presence of KPIs is necessarily related to whether KPIs are reported for more than one year).

The following variables were selected for analysis:

- Environment in Chairman's review;
- Environmental in CEOs review;
- Environment in main annual report;
- Indication of separate environmental report;
- Qualitative environmental discussion;
- Environmental plans outlined for the new year;
- Qualitative environmental goals set;
- Price increase risk;
- Investment risk;

- Climate change risk;
- Quantitative environmental data;
- Environmental KPIs;
- Tabular presentation of environmental data.

CHAPTER 3: RESULTS

3.1 Reports analysis

The principal components analysis resulted in distinct clusters of correlation (Figure 1). The inclusion of qualitative data unsurprisingly was associated with the presence of environmental KPIs and the representation of environmental data in a table, but more importantly, the presence of qualitative environmental data were not a strong predictor of any other aspect of reporting. It certainly does not appear to have a bearing on the presence of environmental goal setting or analysis in the report.

The presence of explicit qualitative goal setting was associated with the recognition of environmental risk, specifically risks associated with broader investment issues (reputational, legal and demand related risks) and risks of price increases (usually associated with concerns around environmentally related variability in raw material supply or quality). Perceived risk associated with climate change was weakly correlated with other types of risk.

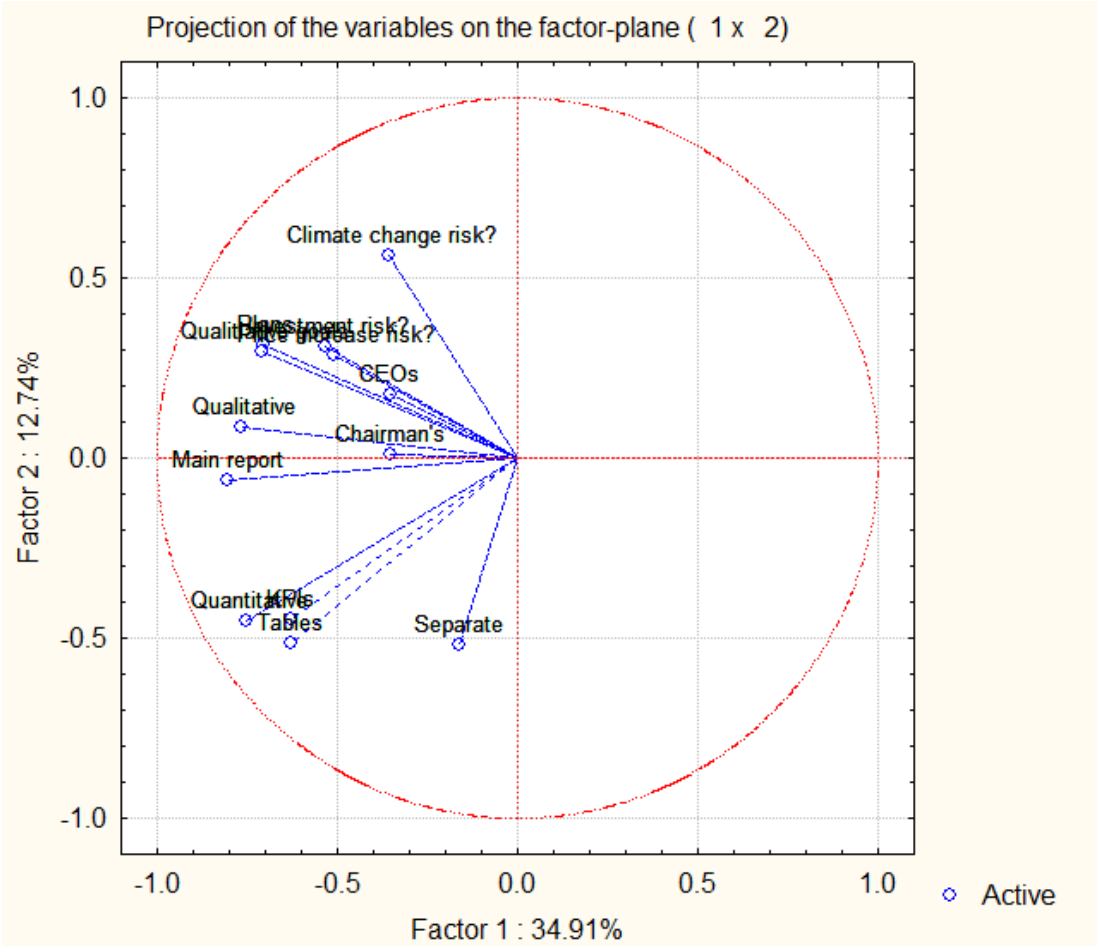

Figure 1: Projection of selected variables associated with environmental reporting in annual reports on a factor plane (Factor 1 x factor 2)

3.1.1 Year on year changes

Some changes were observed in environmental reporting between 2010 and 2012 (F_{162}=3.162; p<0.001). Overall, approximately two thirds of companies surveyed (n=82) referenced environmental issues or behaviour in the main annual report, slightly up from 2010 to 2012 with the change in year making some difference in the way that environmental issues were reported .There was, however, a significant increase in companies indicating that environmental issues were publically reported separately, increasing from 16% in 2010 to over 50% in 2012. Of the companies surveyed, less than half mentioned the environment in the leadership reviews (either the Chairman's or CEO's review) for the periods studied (Figure 2), and there was no significant difference in mentions of the environment in leadership reviews between 2010 and 2012.

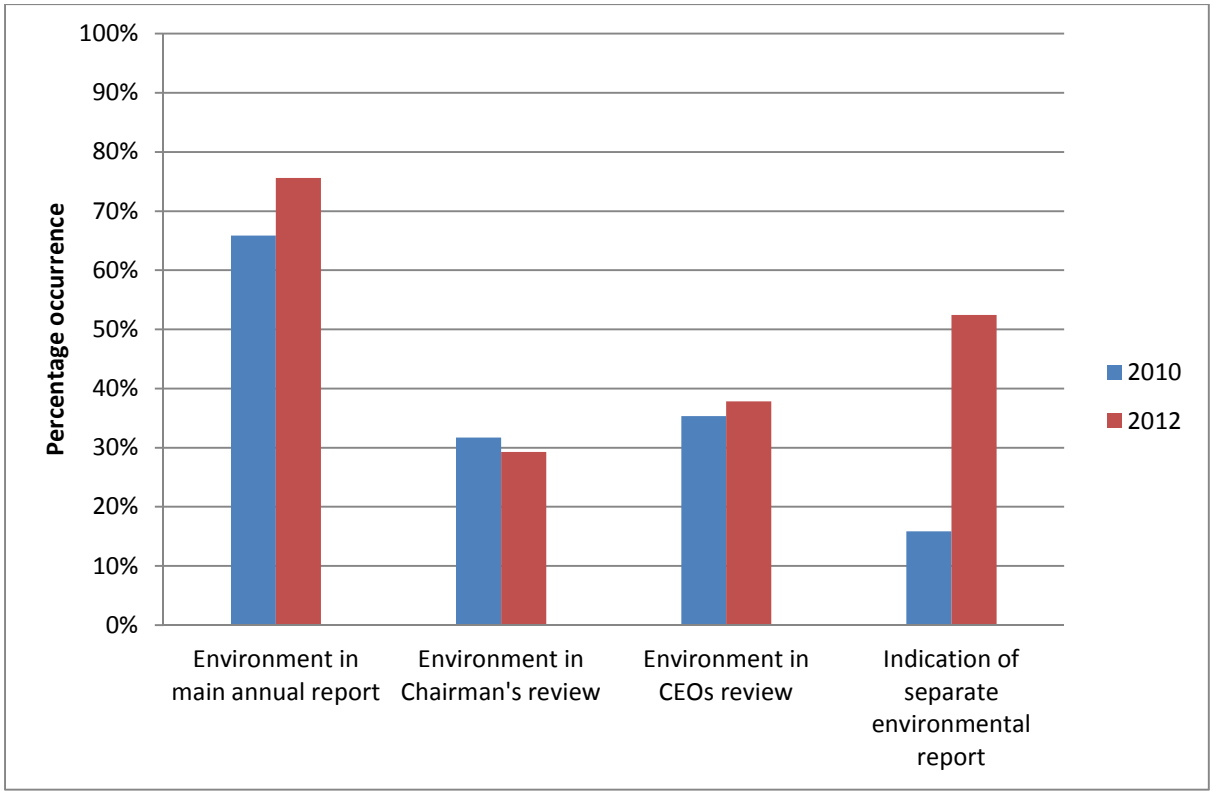

Figure 2. Companies' broad reporting of environmental issues in the annual report (% answered "Yes")

The sophistication and nature of the environmental reporting varied substantially in 2010 with 38% of companies reporting quantifiable environmental data and 24% presenting those data in a tabular format, as would be expected of data from the financial or social parts of the report (Figure 3). These figures improved in 2012 with quantitative data included in 51% of the reports and 38% of reports including these data in tabular format.

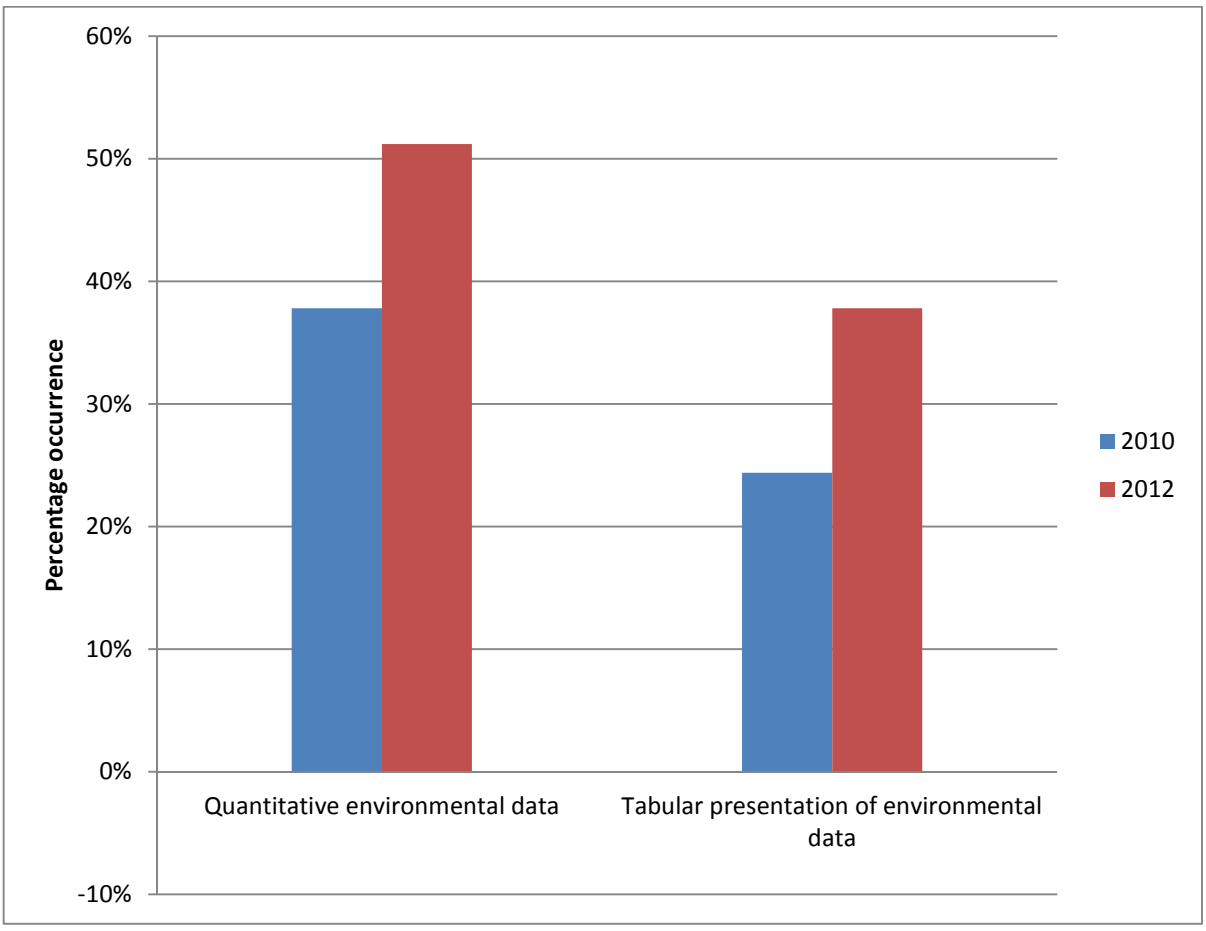

Figure 3. Quantitative reporting of environmental issues in the annual report (% answered "Yes")

Environmental risk was perceived in different ways by different companies, with some seeing environmental issues representing a risk in terms of increased prices of resources ('Price increase risk'), some as an 'Investment risk' while others specifically mentioned climate change as a risk ('Climate change risk'). Overall, 37% of companies in 2010 and 34% in 2012 recognised risk related to environmental issues (Figure 4). Climate change risk in particular was only reported to be a perceived risk by agricultural, timber and tobacco companies or companies that are exposed to those sectors (e.g. Woolworths through supply chain management of fresh produce and Sanlam through their insurance of the agricultural sector).

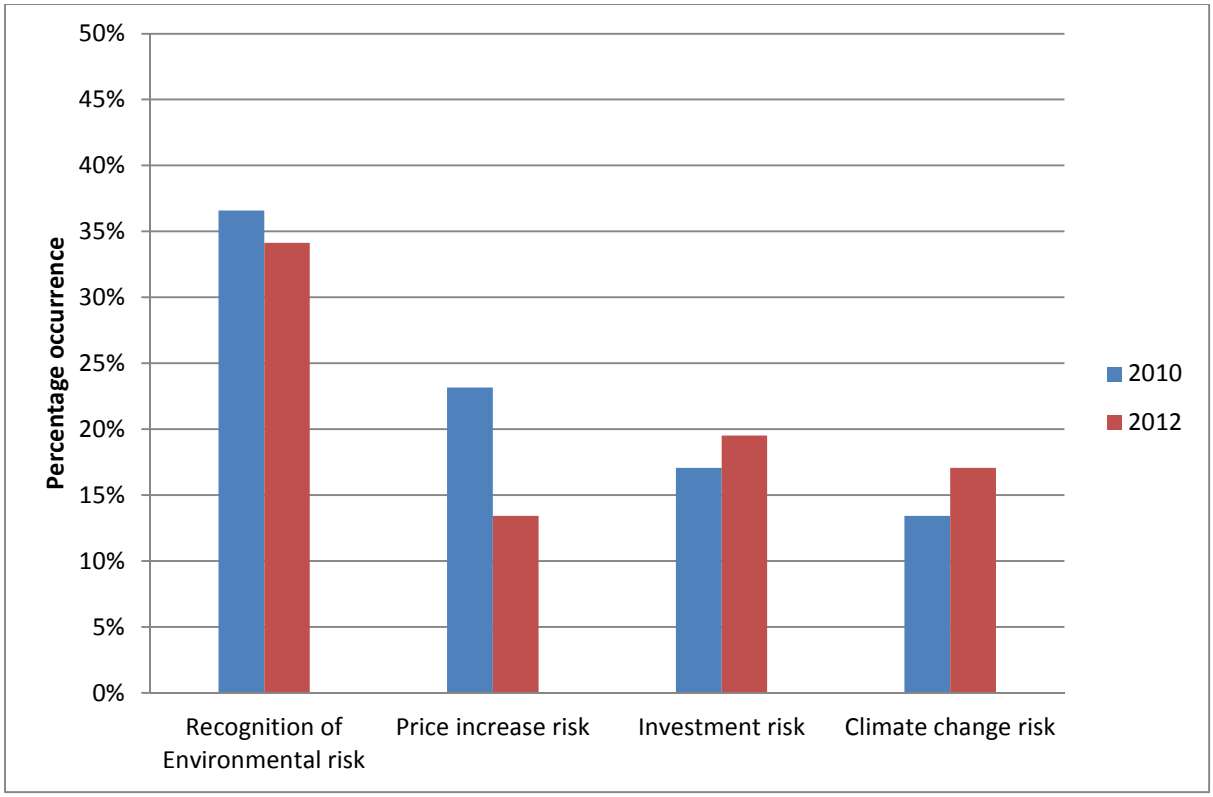

Figure 4.Recognition of environmentally related risk in annual reports(% answered “Yes”)

3.1.2 Reporting of quantitative data

Sixty two percent of companies did not include any quantitative environmental data at all in 2010, a situation that improved to just over 50% in 2012 (Figure 3).

Of the companies that did include quantitative environmental data, the subsequent reporting of those data was reasonably comprehensive (F_{162}=21.043; p<0.001). Sixty four percent included environmental criteria in their Key Performance Indicators (KPIs) and 67% tabulated environmental data in a manner comparable to the manner in which financial data were reported (Figure 5). Correspondingly, the presence of environmental KPIs among companies that did not include quantitative data was very low (p<0.001).

The analysis of the 2012 reports saw a decrease in the proportion of more sophisticated data analysis among companies that reported quantitative data, perhaps indicating a number of companies who were reporting quantitative data for the first time as the overall number of reporting companies increased (Figure 6).

3.1.3 Company presence in the Top 40

The presence of a company in the JSE Top 40 did not appear to affect the overall manner of environmental reporting (F_{162}=1.763; p>0.3) although some aspects were affected, in particular, whether or not the environment was included in the report at all (p<0.1) (Figure 7).

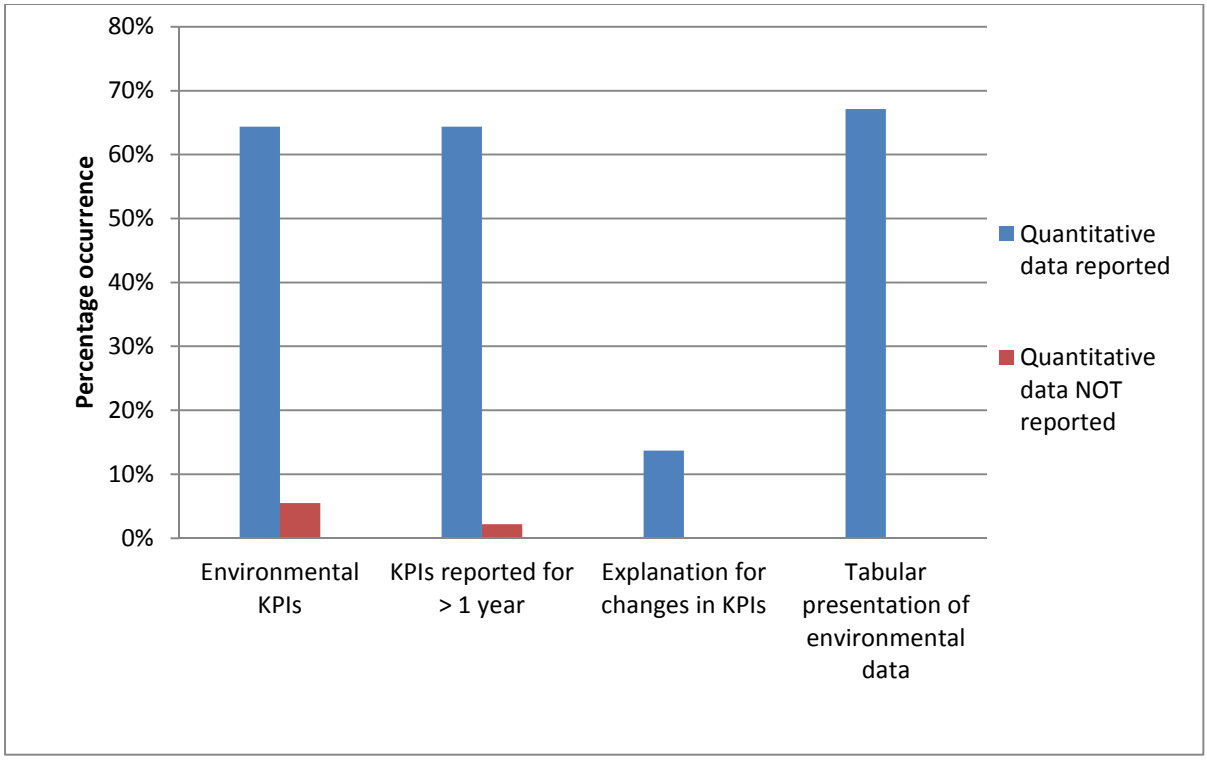

Figure 5.Reporting of quantitative data and subsequent quality of environmental information reported (% answered "Yes")

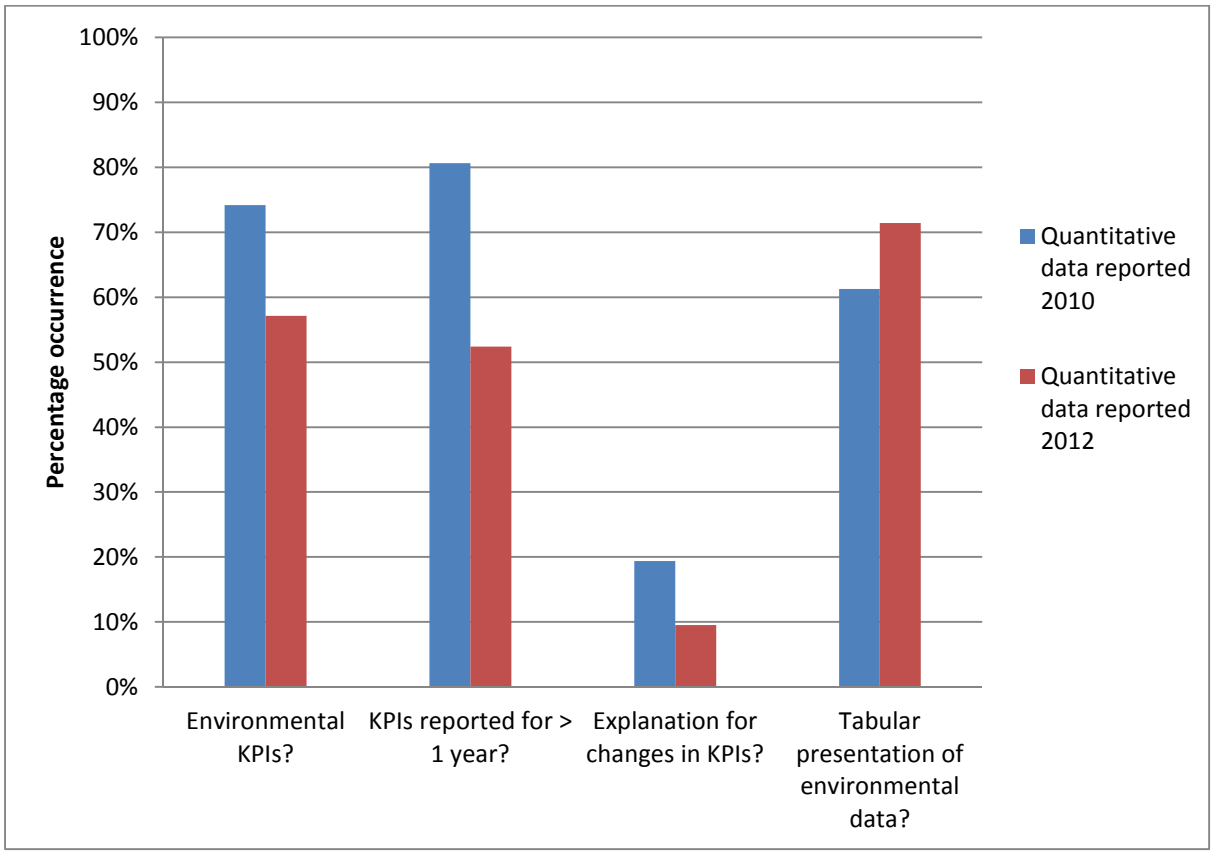

Figure 6. KPI reporting in the annual reports of selected JSE companies who were assessed to have included quantitative data in their reports (% with presence of data)

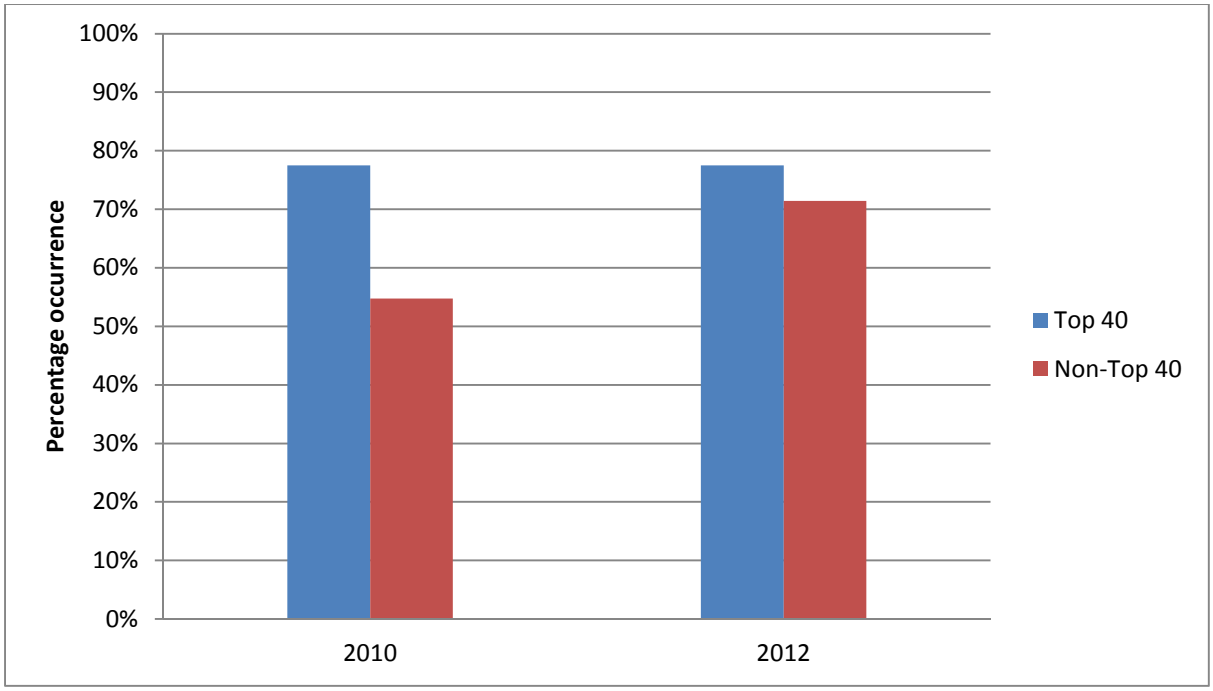

Figure 7.Environmental reporting from Top 40 versus Non-Top 40 companies in their annual report (% with presence of environmental reporting indicated)

Although Figure 7 above indicates no change year on year in the total number of Top 40 companies reporting on the environment, this hides the fact that there was a change in which companies that reported (Table 1).

Table 2. Changes in environmental reporting among selected JSE companies between 2010 and 2012

	No change in reporting	Added environment to annual report	Removed environment from annual report
Top 40 companies	65%	18%	18%
Non-Top 40 companies	60%	29%	12%

A similar pattern is seen with the inclusion of quantitative environmental data and the presentation of those data in tabular form (Table 3 and Table 4).

Table 3. Changes in the inclusion of quantitative data in environmental reporting among selected JSE companies between 2010 and 2012

	No change in reporting	Added quantitative data to annual report	Removed quantitative data from annual report
Top 40 companies	62%	23%	15%
Non-Top 40 companies	67%	26%	7%

Table 4. Changes in the presentation of quantitative data in a tabular format in environmental reporting among selected JSE companies between 2010 and 2012

	No change in reporting	Added tabular presentation of environmental datato annual report	Removed tabular presentation of environmental data from annual report
Top 40 companies	55%	30%	15%
Non-Top 40 companies	69%	21%	10%

In both years, Top 40 companies were also more likely to base their environmental reporting on quantifiable data ($p<0.002$) (Figure 8) and to represent that data in a tabular format ($p<0.002$) than their non-Top-40 counterparts (Figure 9).There were some companies that stopped reporting quantifiable data or presenting that data in a tabular format during the course of the study.

Despite some companies removing environmental data from their reports, on the whole, the quality and depth of reporting improved between the study years. The greatest gains were made in the smaller companies, outside of the Top 40, with the use of quantitative data almost doubling during the study period.

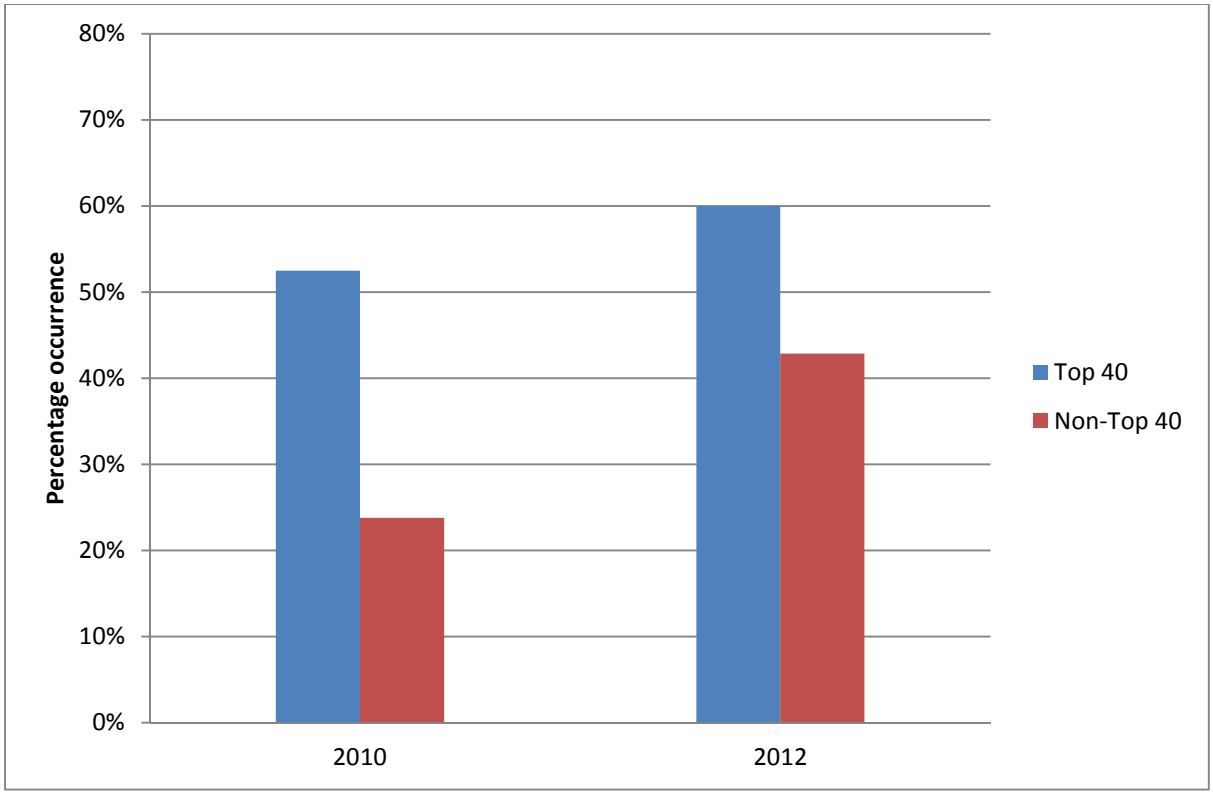

Figure 8. Use of quantitative data in environmental reporting from Top 40 versus Non-Top 40 companies in their annual report (% with presence of quantitative data indicated)

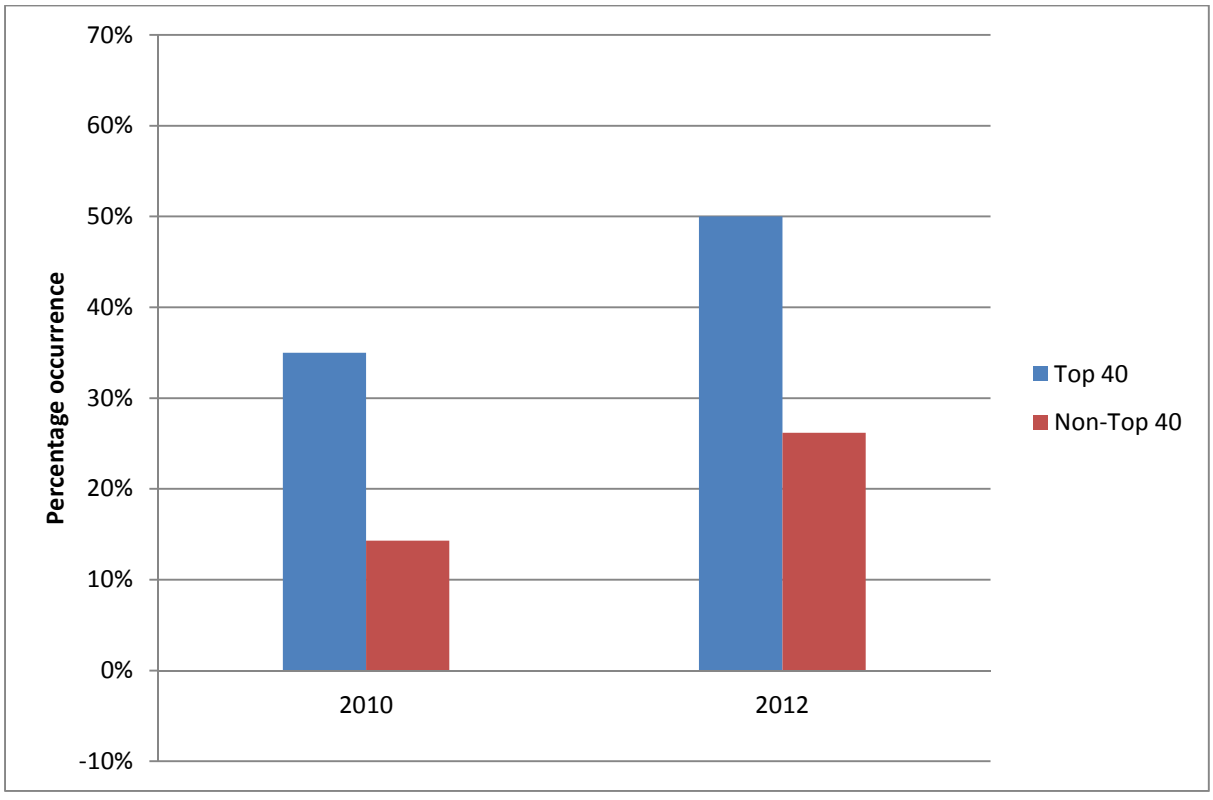

Figure 9.Inclusion of tabulated quantitative data in environmental reporting from Top 40 versus Non-Top 40 companies in their annual report (% with presence of tabulated data indicated)

3.1.4 Sectors

Analysis of the significance of a company's sector as relates to various aspects of environmental reporting by that company indicated that manner of reporting is influenced by business activity (F_{157}=1.2875; p<0.005). However, the pattern is complex with some aspects of reporting closely linked to a single sector (for example, the clear link between agriculture and climate change reporting) while other aspects of reporting remain uninfluenced by sector (for example, assessment of environmental risk). Presence in the financial sector was a good indicator that the environment *would not* be mentioned in the leadership reviews (p<0.02).

When it came to representing environmental data in such a manner as to be useful to management decisions, sector was not a good predictor of the use of quantitative data (p>0.4), but strong improvement in this indicator was experienced across the board between 2010 and 2012 (Figure 10).

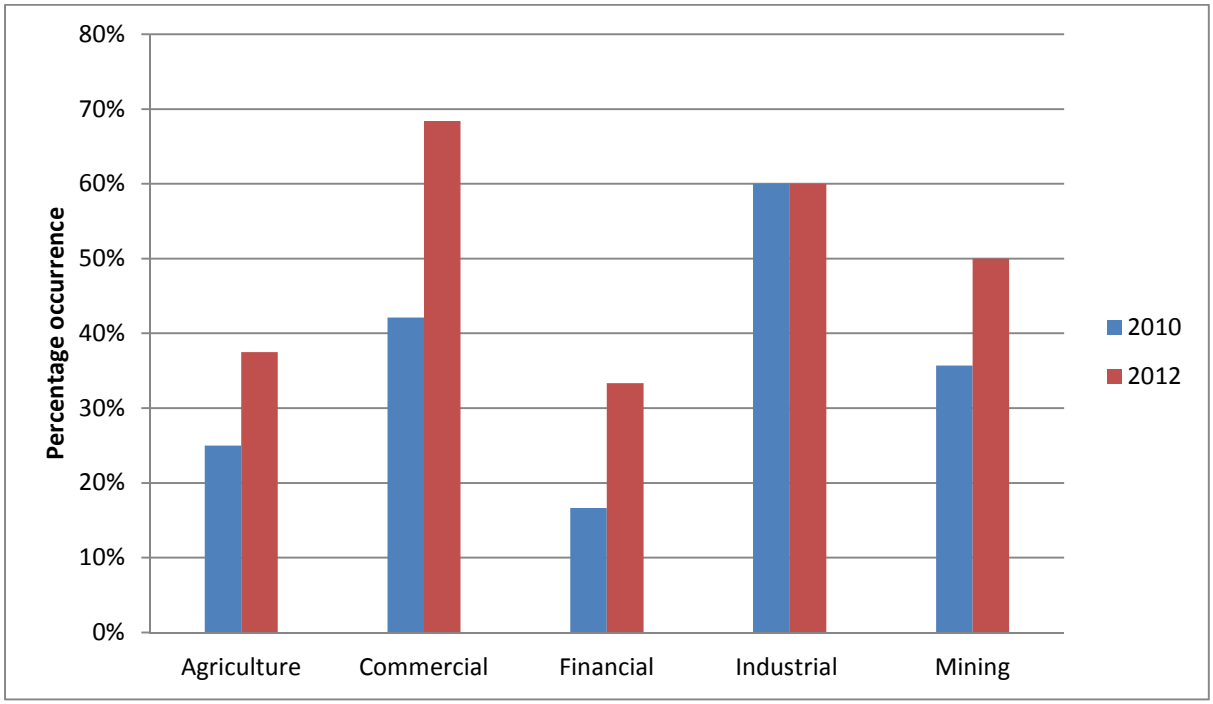

Figure 10. Inclusion of quantitative data in environmental reporting in the annual report of selected JSE listed companies by sector (% with presence of data)

Presence in the industrial sector was linked to the mention of environmental issues in the leadership reports of the companies studied (p<0.05) (Figure 11). Such mentions fell for every sector except commercial and mining between 2010 and 2012.

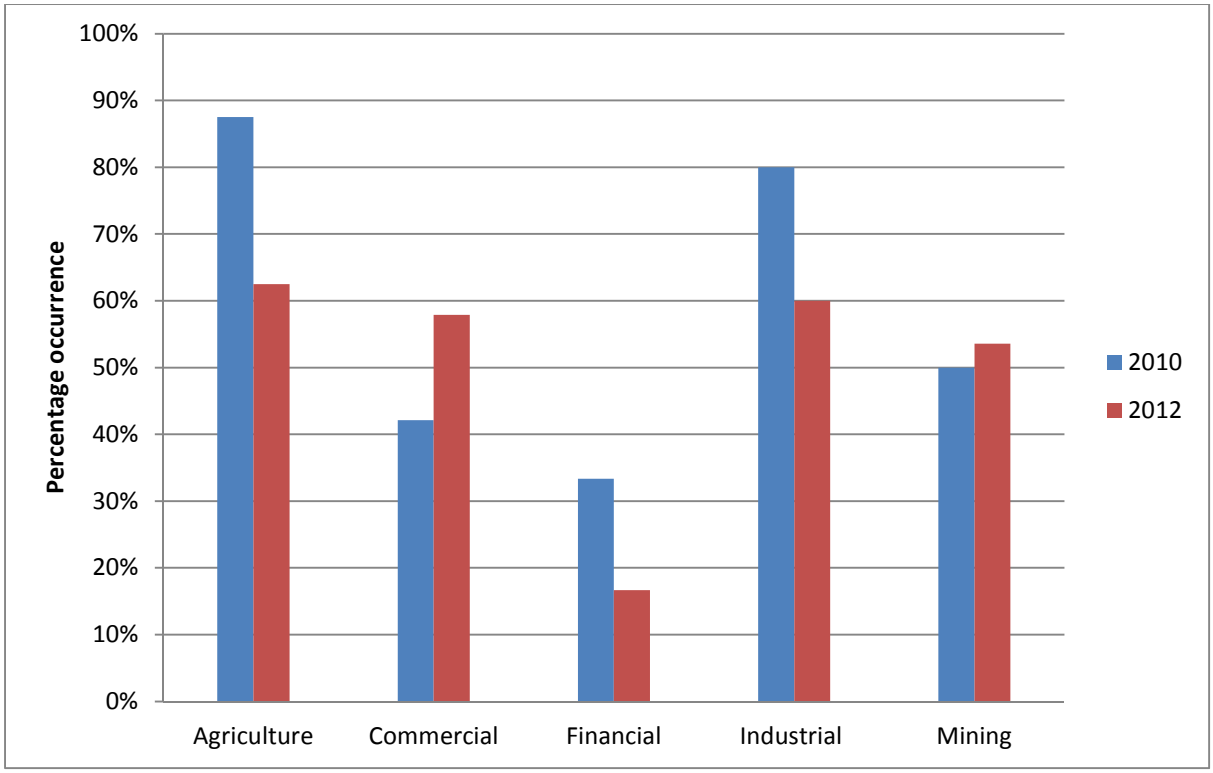

Figure 11. Mention of the natural environment in leadership reviews in the annual reports of selected JSE listed companies against sector (% with mention of the natural environment in CEO's or chairman's review)

The only sector that represented a significant influence on the presence/absence of environmental reporting was the financial sector ($p<0.02$) where 32% of companies surveyed included the environment in their reports in 2010 and 42% in 2012 (Figure 12). All three health companies surveyed included environmental issues in their reports indicating a trend that could be proven with further study. Beyond those two sectors, sector was not a strong predictor of the presence or absence of environmental reporting in the annual reports ($p>0.1$). There did not appear to be a strong trend for changes in inclusion in environmental information in annual reports over time.

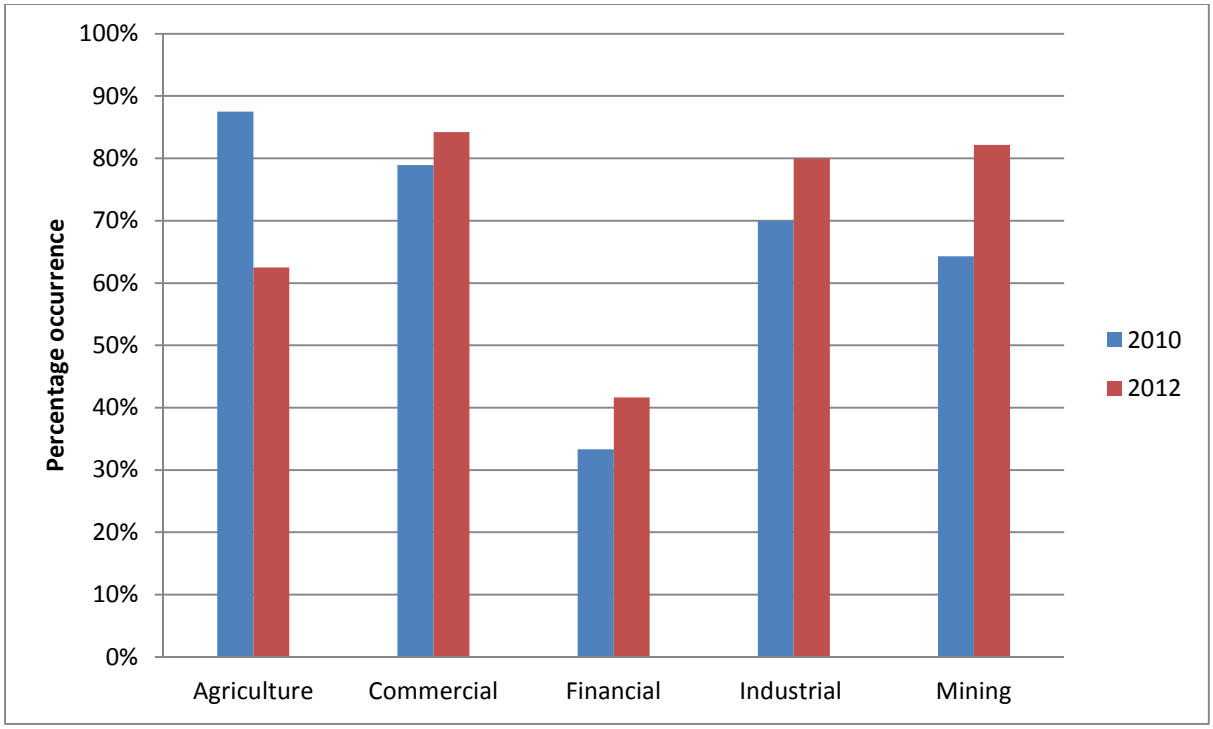

Figure 12. Inclusion of the natural environment in the annual report of selected JSE listed companies by sector (% with presence of data)

Sector was not a good predictor of the perception of environmental risk with the exception of the very strong correlation between presence in the agricultural sector and the perception of climate change risk ($p<0.02$) (Figure 13).

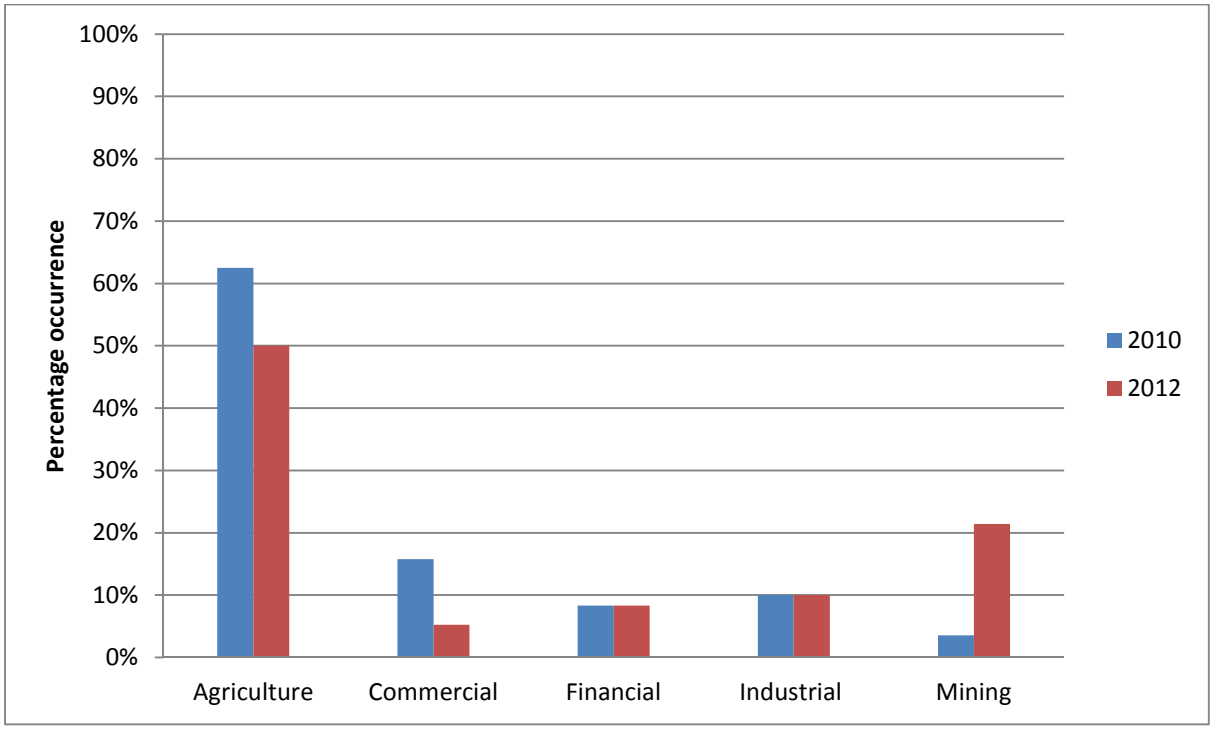

Figure 13. Selected JSE companies that indicate a perception of climate change risk in their annual report by sector (% with presence of risk indicated)

3.1.5 Leadership reporting

The content of the chairman's and CEO's reports individually have little impact on the subsequent level of environmental reporting in the annual report ($p>0.1$), but taken together they can be seen as a predictor of subsequent environmental reporting ($p>0.05$) (Figure 15). To this end, the only factor that the chairman's report is correlated with is the presence or otherwise of environmental issues in the Chief Executive's report ($p<0.01$). However, leadership reporting does lead to increased levels of reporting in management related aspects of the report including qualitative discussions of the natural environment ($p<0.04$), planning ($p<0.02$) and goal setting ($p<0.04$), recognition of environmental risk ($p<0.002$) and the use of quantitative environmental data ($p<0.02$) and subsequent use of environmental KPIs ($p<0.04$) (Fig14).

Sector plays no significant role on the likelihood that the environment would be mentioned in leaders' reviews ($p>0.01$). Similarly, Top 40 companies were as likely as not to mention the environment in their leaders' reviews ($p>0.1$) (Fig 15).

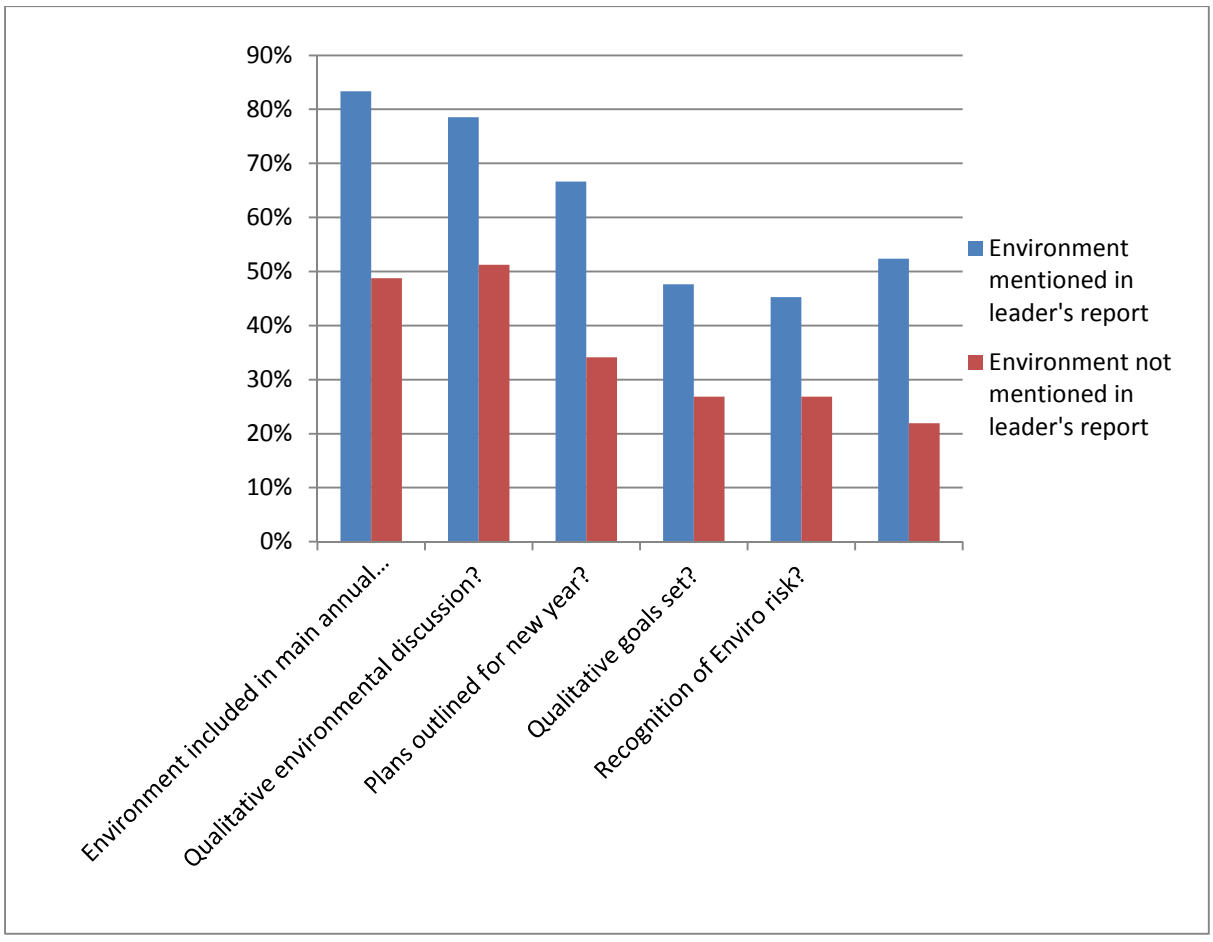

Figure14. Subsequent rates of environmental reporting among companies where the environment was or was notincluded in either the CEO's or chairman's review (% with presence of data)

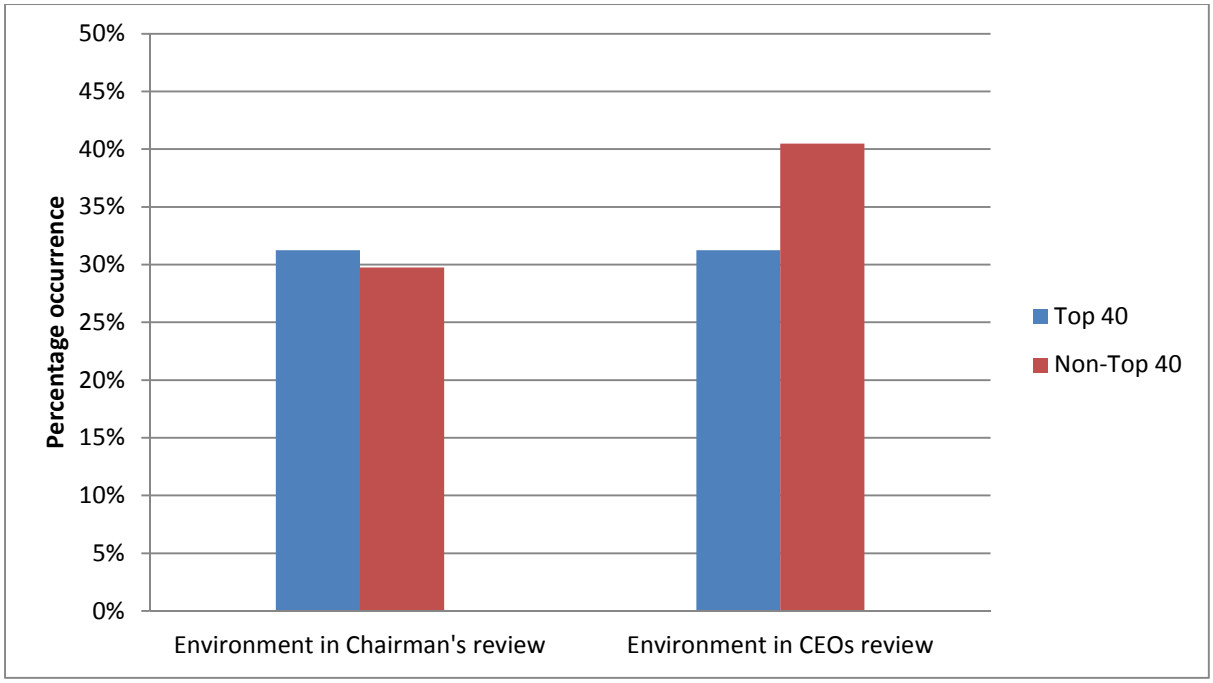

Figure15. Mentions of the environment in leadership reviews for Top 40 and non-Top 40 companies (% with presence of data)

3.2 Key performance indicators

Most companies surveyed provided good, clear KPIs, although many focused exclusively on financial and perhaps social data with no provision for environmental impact (Northam, 2010). Even companies that recognised environmental risk, such as South African Breweries (SAB-Miller 2010) did this in their reports with discussion around the exposure of the company to water risk, but failed to include any environmental data in their KPIs(SAB-Miller, 2010, 2012).

The use of environmental KPIs varied widely, with some companies displaying them alongside of, and in the same format as the financial and social KPIs (Anglogold Ashanti, 2010). In other cases, recognition was made of the environment and KPIs are included, but there was little or no indication of a link between that environmental performance and the future sustainability of the company (see Gold Fields, 2010).

3.3 Survey results

The survey received a response rate of 28.9% (n=24). Of those, just 11 indicated which sector they were reporting for, severely hampering the validity of quantitative results from this section of the research. However, valuable insights were gained from the qualitative questionnaire section.

Environmental reporting is handled very differently from company to company with a wide range of departments and skills responsible for reporting (Figure 16).

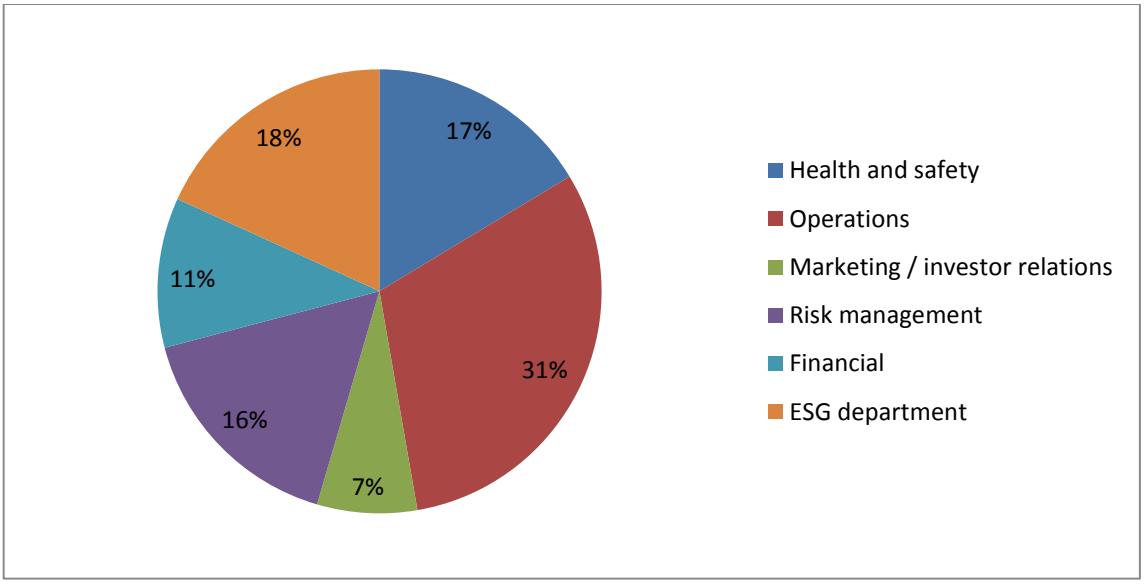

Figure 16. Responsibility for environmental reporting (in number of respondents) in selected JSE listed companies as per survey results

The survey suggested a far more sophisticated and comprehensive relationship with environmental reporting than was indicated in the annual reports. Over half the companies surveyed recognised client or supplier exposure to environmental risk and claimed some level of monitoring of suppliers' environmental performance. 70% claimed that external environmental metrics such as rainfall were monitored (Figure 17).

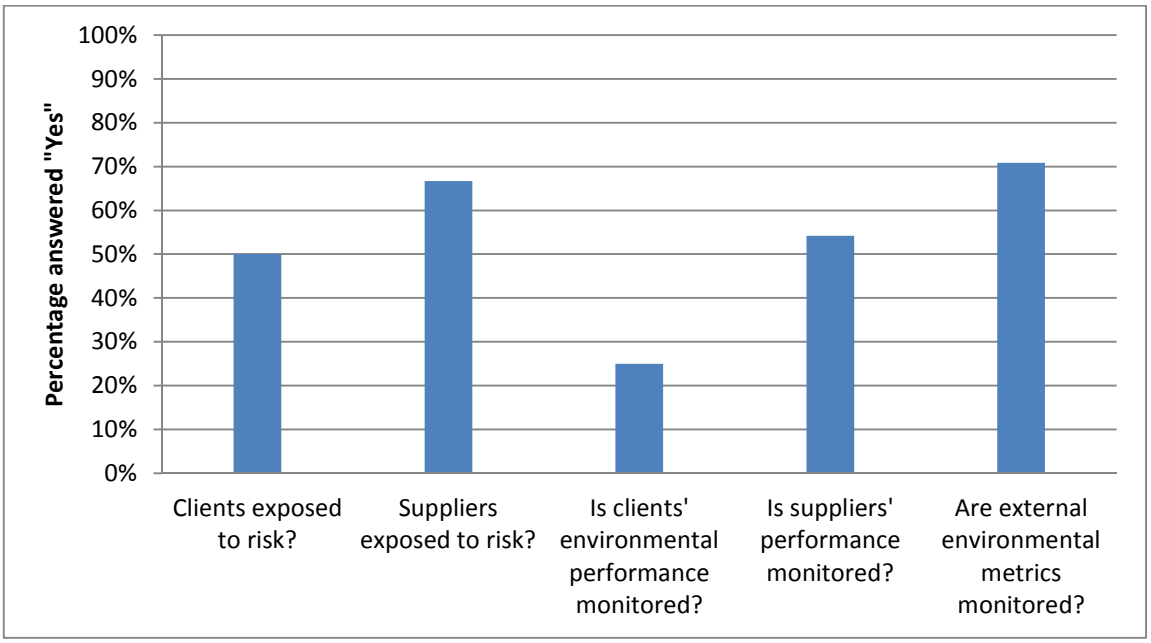

Figure 17. Perceptions and monitoring of external environmental variables in selected JSE listed companies as per survey results

CHAPTER 4: DISCUSSION

When assessing sustainability reports, it is important to differentiate between reporting that is poor and good reporting by a company that either is not exposed to environmental risk or has little impact on the natural environment. An example of this would be the experience of the carbon disclosure project which has seen gradual decreases in transparency among less energy-intensive companies as the burden of detailed reporting remains unmatched by the relevance of it to companies in the service sector (Matisoff, Noonan, & O'Brien, 2012). To this end, some indicators that were assessed such as the use of quantitative data, the presentation of data in a tabular format and the use of environmental KPIs are all a means of assessing the sophistication and detail of a company's thinking around the natural environment. By contrast, content related indicators such as the mention of the natural environment in leadership reports, recognition of environmental risk and environmentally related goal setting are more an indication of the degree to which the company's executive committee feels that the natural environment plays a role in, or is affected by, the activities of the company. These two aspects are not unrelated. A clear finding from this research is that those companies whose executives mention the environment in their leadership reviews saw significantly better reporting on the environment through the rest of the report (see Figure 14).

4.1 Reports analysis: the degree to which the natural environment is included in annual reports

Two countertrends were identified in the assessment of annual reports. First, the degree to which the environment was reported on increased from the first year of assessment (2010) to the second (2012). Inclusion of the environment in the annual report increased marginally from 66% of companies reporting in 2010 to 70% reporting in 2012 but the indication of a separate environmental or sustainability report increased substantially, from just 15% of companies indicating this in 2010 to over half including a separate report in 2012 (see Figure 2). In contrast to the improvement in the degree to which environmental issues were addressed, the apparent importance of the environment to the company executives appears to have diminished. Mentions of the environment in the leadership reviews decreased from 2010 to 2012 (42% of Chairmen's reports mentioned the environment in 2010 while just 28% of them mentioned it in 2012) (see Figure 3).

This rise in separate reporting could be considered a surprise considering that2011 saw the adoption by the JSE of King III principles specifically geared towards the integration of sustainability reports into the main annual report and yet it seems to have had the opposite effect, at least initially. However, integrated reporting strives to provide a platform for a wide range of

information that has a bearing on a company's future prospects being included in a single holistic report (IIRC, 2013). To this end, a rise in separate reporting of sustainability aspects could be a means of addressing detailed sustainability issues at a level of detail that would be impractical in an integrated report. A recent study of ten JSE-listed companies found a significant increase in the social, environmental and ethical information reported in annual reports following the introduction of King III (Solomon & Maroun, 2012). Thisapparent influence of King III on the quality of reporting was replicatedin this analysis withamarked increase in the reporting of quantitative environmental data (38% in 2010; 50% in 2012) and the increased presentation of those data in tabular format (22% in 2010; 38% in 2012) (see Figure 3). This improved reporting did not lead to a significant change in the perception of risk that environmental issues posed with little change in the companies' reported risk profiles across the two years (see Figure 3). It is not possible to say whether the inclusion of quantitative data in the annual report is an indication of a better basis for environmental risk assessment without knowing the basis on which risks are assessed in each individual company.The decrease in perceived price increase risk between 2010 and 2012 probably reflects a combination of easing of fears of electricity shortages that were very prevalent in the 2010 reports and the global economic slowdown which served to stabilise rapidly increasing resource prices through this period.

4.2 Factors affecting environmental reporting

4.2.1 Reporting of quantitative data

The increased level of quantitative reporting (Figure 5) was not matched by an overall increase in the sophistication with which data were reported. When the subset of companies that included quantitative data was assessed, a decrease in the use of environmental KPI's from 2010 to 2012 was found, albeit within a larger subset than was present in 2010 (see Figure 6). This is likely an indication that the 2012 reports still represent a work in progress for the majority of companies. The setting and use of key performance indicators are management tools against which executives can be held accountable so when a new method of reporting is initiated (as has been the case between the 2010 and 2012 reporting periods), it is likely that management teams wish to monitor the data for a few years before committing to public KPIs (Hřebíček *et al*., 2011). This would go some way to explaining the decrease in overall KPI use in 2012.

4.2.2 Company presence in Top 40

Although quantitative environmental data reporting did increase during the period of study it still remains the exception rather than the rule (two thirds of companies did not include any quantitative environmental data at all in 2010, a situation that improved to just over 50% in 2012 (Figure 5)). These low levels may be indicative of the cost and administrative burden of maintaining the

databases necessary to make quantitative reporting worthwhile (Prado-Lorenzo *et al*., 2009). As a result, quantitative reporting is more prevalent in Top 40 companies (Figure 8).

The trend towards more comprehensive reporting is by no means uniform. Although the overall number of companies reporting environmental issues rose between 2010 and 2012, 12 companies that had reported on the environment in 2010 did not do so in 2012 (Table 3). Similarly, nine companies that had included quantitative data in 2010 no longer did so in 2012 which led to a corresponding change in the companies representing data in a tabular format (Tables 4 and 5). This indicates that changes in the type and degree of reporting are not a simple process of improvement over time. Rather, the nature of the information reported can change substantially from year to year.

One area where gains did appear to be substantial was in the case of companies outside of the Top 40, with the use of quantitative data doubling during the period of the study. Part of this increase is the low base from which it was achieved. Only 24% of non-Top 40 companies reported quantitative data in 2010 (Figure 8) and just 14% represented those data in tabular form (Figure 9). This points to the influence of initiatives like King III to influence change in organisations that may not have the organisational infrastructure of a large Top 40 company (Dierkes & Antal, 1986). Top 40 companies will typically have the organisational infrastructure and expertise to report to a high level, should they so desire (Prado-Lorenzo *et al*., 2009). This may explain why the introduction of King III made little or no difference to the number of Top 40 companies that reported on the environment between 2010 and 2012. For some of the smaller companies though, a program like King III provides a framework against which reporting can now be undertaken, thus resulting in the increase in overall reporting seen in non-Top 40 companies.

4.2.3 Leadership reporting

The content of the chairman's report had little impact on the subsequent level of environmental reporting in the report. This may be a function of the oversight role that a chairman has, divorced as he typically is from the day to day running of the company. However, it also speaks to a low perception of the broader, strategic risks that environmental degradation isperceived to represent to South African companies.

Public reporting provides a window into the issues that a company considers as important, or possibly more accurately, the issues that the company realises it needs to be seen to be considering as important (Cormier & Magnan, 2003). For example, almost every company surveyed mentioned the tough external economic environment that preceded the 2010 reporting period (precipitated by the banking crisis of North America and Europe in 2008) (Sanlam, 2010). Similarly, in the mining sector, the issue of safety of workers, which has become a hot topic in labour negotiations in recent years, was mentioned in every single mining company's leadership report. It is a clear indication of the safety-first message that mining company leadership must be seen to present to the world.

In contrast, fewer than half of the Chairmen's reports and just 39% of CEOs' reports mentioned the natural environment in 2010 and these figures dropped significantly for the 2012reporting period (Figure 2). It is unsurprising therefore that very few companies mentioned the external natural environment as having a material effect on the business' performance or its future prospects. It is clearly neither a significantly perceived risk, nor a reputational risk to most companies not to be seen to be overly concerned by or for the environment. Exceptions to this came from two very different quarters, namely the sectors of mining and agriculture. Agricultural companies (including tobacco producers) recognised climate change as a potential risk to the stability and supply of their product (AFGRI Limited, 2010, 2012;Dunhill, 2010, 2012), although this sector too saw a decrease in perceived climate change risk over the research period.

For a more immediate sense of companies being at the whim of uncontrollable external environmental forces, some mining companies placed the blame for lower than expected coal production on the high summer rainfall of the preceding 2009 season (Anglo American, 2010; Sentula Mining, 2010). This mirrors the energy crisis of the preceding year when Eskom also blamed high rainfall as contributing to the inability of the utility to match demand for power through the first quarter of the 2008 calendar year (Zhou & Couto, 2012). Despite this, theyfailed to identify expected increases in extreme wet weather events as a business risk for future seasons (Sentula Mining, 2012). Against this is the recognition of other companies' activities as representing a significant environmental risk, specifically in the case of AFGRI, an agricultural company, expressing concern at the impact that mining activity has on their operations (Afgri, 2012).

It is also clear that companies can become more sensitised to the role of the environment in their operations and that this can then be reflected in their reporting style. Coal of Africa Limited made almost no mention of the environment in their 2010 report. In the Chairman's report of that year, the only mention of the environment was in reference to lobbyists' opposition to the development of the Vele coal mine on environmental grounds (Coal of Africa Limited, 2010). The subsequent negative publicity and financial and reputational harm that was occasioned for the company by that project appears to have made an impact with the environment playing a significant role in the 2012 report (Coal of Africa Limited, 2012).

There is a clear influence of the broader market on the content and focus of Chairmen's and CEO's reviews. In South Africa, extensive focus has been brought to bear on the issue of deaths of workers in mining accidents by organised labour. As a result, every mining company's Chairman's report specifically mentions this issue and stresses the seriousness with which the company regards these deaths, regardless of the actual safety record achieved in the previous year. This is further evidence that the contents of these reports can be an indicator of the issues that the company focuses on (or is forced to appear focused on by public opinion)(Cormier & Magnan, 2003).

Another example of the report as public relations arises from the case of the tobacco companies where very little is made of the health implications of the use of the product and there

is almost a sense that environmental issues are focused on as a smoke screen behind which the companies primary activities can hide. All of the tobacco companies surveyed showed reasonably sophisticated reporting and expressed concerns around external environmental risks such as those posed by climate change (Dunhill, 2010, 2012).

4.3 Key performance indicators

Qualitative data are only useful insofar as they act as an aid to the management of the variable in question. For many companies, the quantification of data is initiated and driven by requirements for carbon auditing. This is a widely accepted and publicised first step in environmental auditing and has the added benefit of being relatively easy to calculate, especially retrospectively. As a result, for some reports, the only KPIs reported relate to carbon emissions rather than a manageable internal variable (Prado-Lorenzo *et al*., 2009; Netcare, 2010).

This report does not link environmental reporting to actual environmental performance. While it does seem that companies that are proud of their environmental track record may be better or more vocal at reporting that record, there were companies that appeared to be involved in a wide range of initiatives without providing detailed or qualitative reporting for the company as a whole (Wilderness Holding Limited, 2010; Telkom, 2010).

4.3.1 Survey results

The survey attempted to address some of the differences between internal and external (public) reporting as typified by the annual reports analysed elsewhere in this study. It would be reasonable to expect that internal reporting would be more honest and less prone to concerns of public image than external reporting. Unfortunately, by its very nature, internal reporting is *ad hoc* and often proprietary, making a comparable study of these mechanisms almost impossible.

4.4 Reporting as an indicator of business tools

There is a sense from this study that environmental reporting in South Africa in 2010 isvery much in its infancy with a marginally better picture presented in 2012. Many companies make no mention of the environment at all, some have very good reporting mechanisms (Nedbank, 2009) but do not include those reports in the main Annual Report (Nedbank, 2010) while others are aware of the importance but freely admit to not yet being at the stage where reporting has been achieved (HCI, 2010). Still others appear to have incorporated the environment into their everyday business decisions and report environmental data in as transparent a way as would be expected from financial data(Capital Shopping Centres, 2010). Inexplicably, after having had one of the most comprehensive annual reports in 2010, Capital Shopping Centres' 2012 report made almost no

mention of the environment at all (Capital Shopping Centres, 2012). It would seem improbable that this is an indicator of an abandonment of all environmental record keeping by this company but clearly indicates a change in attitude as far as public reporting is concerned.

A good indicator of the use of environmental data and reporting as a business tool is the detailed attention paid to the issue in the Chairman's report, backed up with meaningful qualitative data, reporting variables such as carbon emissions against business variables to ensure a manageable ratio(Standard Bank, 2010). Standard Bank maintained this level of reporting into 2012 and was one of the few non-agricultural companies to recognise climate change risk in the Chairman's report (Standard Bank, 2012).

4.4.1 Reporting environmental performance and risks

There are two broad ways in which a company's relationship to the environment is defined. Most companies see this as a one way relationship: the company affects the environment and its responsibility is to minimise that risk wherever possible, or face sanction. It is this type of relationship that typifies the first four levels of Lowell's Hierarchy of reporting (Veleva *et al.*, 2003). The other, more sophisticated perspective is the recognition that, in addition to the threat that a company poses to the environment, changes in that environment may pose a threat to the business. In the companies surveyed, this final, fifth level of Lowell's Hierarchy was most often apparent in companies that were already exposed to environmental variability, regardless of environmental change. Prime amongst this group were the agricultural companies. This is unsurprising as, being primary producers, environmental variability such as variation in seasonal rainfall has in the past sent price signals through the market and so has a material impact (Wheeler & von Braun, 2013). To take this established trend and apply it to the newer concerns around climate change does not take a particularly sophisticated environmental outlook to achieve.

Significantly, there were no examples of a company attempting to assess quantitative environmental performance against broader changes in environmental conditions.Most of the more comprehensive reporting focused on the environment as a recipient of influence, rather than an instigator. There is often tension between companies and civil society and between sectors of the economy regarding land use and environmental degradation (Clarkson *et al*., 2007). Companies reasonably see their role as driving the nation's economy, providing the economic force with which to tackle broader problems. In some cases, recognition was made of the environmental degradation wrought by farming as an activity, with a specific comparison to those impacts as a result of coal mining (AFGRI Limited, 2010).

A strong indicator of healthy environmental activity within a company would be the willingness to set and publicise clear, qualitative goals, as published in the annual report (Anglo American, 2010). In some cases, clear and detailed analysis of environmental risks facing the company are listed in the Chairman's report, as with Anglo Platinum when the relationship of the company with Eskom as South Africa's primary energy provider was highlighted (Anglo Platinum,

2010). Concerns around energy (often reflected as environmental price or investment risk) were common throughout the 2010 cohort of reports. With the easing of the power crisis in South Africa, many companies seemed to downgrade this risk in their reports, leading to a finding of decreased perceived environmental risk in the survey (see Figure 4). This is a good example of the natural environment receiving less space in the annual report, not because of poor reporting but a change in the realities of the situation in which the company finds itself. That said, a crucial difference between the state of financial reporting and environmental reporting is that all financial data are reported regardless of materiality (Robson, 1992). Environmental issues tend to only be included when either significant or as part of a need to be seen to be doing the right thing (Cormier & Magnan, 2003). This is well highlighted by the different approaches by two members of the finance sector, Standard Bank and Rand Merchant Bank. As discussed earlier in this section, Standard Bank report to a high level, are comprehensive in their use of quantitative environmental data and appreciate environmental risk in terms of climate change and investment risk (Standard Bank, 2010, 2012). Rand Merchant Bank, on the other hand are succinct in their views on integrated reporting, stating on the opening page: “RMBH does not believe integrated reporting has a significant influenceon how we run the business” (RMBH, 2012, pg 2).It can be argued that both approaches are equally correct and it will be a challenge for sustainability reporting in the future to find a framework whereby companies like Standard Bank are rewarded and supported for their insight, while simultaneously not foisting an unnecessary burden to report irrelevancies on their competitors(Stubbs, Higgins, & Milne, 2013).

A strong indicator of the perceived importance (or otherwise) of environmental data is the manner in which they are reported. In addition to just including environmental data in the report, the best examples were sure to include tabulated environmental data, reported to a similar format and detail as the financial data that makes up the bulk of the report (Anglo Platinum, 2010) (ACCA, 2004). By far, the majority of companies continue to report the environment in a format that makes analysis across companies or years almost impossible (Fifka, 2012). Others, notably some mining companies, provide detailed quantitative environmental key performance indicators that are listed on the same page and in the same format as the general KPI summary (Anglogold Ashanti, 2010).

In certain instances, specific environmental achievements are mentioned in the CEO’s review, sending a clear signal that at the very least, the company recognises the importance of environmental appearances (Bidvest, 2010). When, in an example like Bidvest’s, those data are represented not only quantitatively, but as a ratio, there is a clear message sent that these issues are being handled, understood and managed by the leadership.

The few international companies that included European standards in their environmental reporting made for interesting reading. In particular, Capital Shopping Centres 2010 report, in which environmental data were reported as ratios against a host of variables (Capital Shopping Centres, 2010). This reinforces environmental data as a manageable part of the business, rather than the blind number reporting that seems to dominate the South African reporting landscape.

A fascinating example of the real world grappling with environmental issues with which business leadership is often faced is provided in the reports of Coal of Africa Limited, discussed earlier in this section. A second company, First Uranium, perhaps at a stage of reporting slightly further down the compliance road than Coal of Africa was at the time, do report losses as a result of environmental issues, but, as with so many South African companies, these losses were expressed simplistically, as having occurred in the short term as a result of non-compliance with environmental laws, rather than a more broader increased economic risk following on from poor sustainability practices (First Uranium, 2010).

There are often cases of issues that may have the environment at their root, but are seen by companies as simple supply and demand issues. An example would be EVRAZ Highveld Steel and Vanadium who recognised their risk of exposure to variations in coal supply (EVRAZ, 2010).

4.4.2 Drivers of environmental reporting

It is interesting to note the very poor correlation between Chairmen's reports and the quality of environmental reporting. Chairmen's reports tend to be more strategic in nature and it is here that one would expect long term concerns to be highlighted. This would appear to indicate that reporting is more focused on the observable and operationally important than on the strategic.

There is little doubt that environmental reporting comes at an additional cost. Financial reporting is strictly enforced by law and is a simple extension of the annual auditing that all companies are required to undergo, regardless of size (Robson, 1992). Environmental reporting, on the other hand, requires skills and personnel that may not exist naturally within many organisations, or may reside with personnel who already have onerous operational responsibilities (Cormier & Magnan, 2003). As a result, size of company is correlated with the quality of environmental reporting, with Top 40 companies reporting better than smaller firms, despite the fact that smaller firms may be far less resilient and more exposed to environmentally related risks (Prado-Lorenzo *et al*., 2009).

This is mitigated when companies have, by their nature, an operational requirement for environmental data. Mines and manufacturing are likely to be required by law to undertake some types of emissions monitoring while agricultural companies have a vested interest in environmental indicators related to the health of their crops. As a result, companies in these sectors are more likely to include quantitative data regardless of size as the inclusion of this data represents a far lower opportunity cost than a similarly sized commercial company.

It is this effect that may explain why quantitative data is negatively correlated with the perceptions of environmental risk. Rather than being an indicator that companies that know about and monitor their impact on the environment are better informed and so less concerned about risk, this is more likely to show that Top 40 companies, dominated as they are by the large financial and commercial concerns, are quite rightly less impacted on by environmental degradation than smaller firms.

While the survey analysis did show that reporting environmental criteria as ratios against other aspects of the business was far more prevalent internally than was represented in the annual report sample, there seems to be a reluctance to take the next step and elevate that reporting to a place alongside other company KPIs.

A lot of the quantitative reporting appears driven by the requirement to provide carbon foot-printing for broader industry reporting. This shows the positive impact that external requirements and pressure can have on the quality of environmental reporting (Dierkes& Antal, 1986), but once again, there is very little evidence of a sophisticated analysis of this data and the incorporation of same into the management of the company.However, the survey showed that footprint reporting was unlikely to correlate across footprint types. If foot-printing is an essential management tool, it makes no sense to undertake the exercise focussing on only one variable (for example carbon or water). But if this requirement is externally forced, then doing the minimum required is a reasonable response (Aras & Crowther, 2009).

Overall there is a sense that reporting among these firms is *ad hoc* and piecemeal, without a unifying standard or a particularly strong management concern for the data. This may be as a result of leadership ignorance of the potential for environmental harm to their operations or it may be as a result of a reasonable and rational risk assessment, showing that the environment is not perceived as a significant threat or opportunity to the companies.

CHAPTER 5: CONCLUSION

The environmental reporting assessed in this study appears to be carried out with little in the way of context or comparison of metrics or attempts to meaningfully engage with a company's impact on the natural environment (and vice versa). While many companies may report on their relationship with the natural environment away from the annual reports assessed, it remains clear that the information included in these reports is sparse and often lacks the structure and applicability of other types of reporting. This is not helped by the bedevilling complexity that faces any researcher attempting to standardise reporting for purposes of comparison across companies or sectors. Even companies that report to a high standard (as compared to the general population of companies) seldom report to anything near the standards required of financial or even social reporting. Environmental reporting is overwhelmingly declarative and, if not completely positive, cast in the light of what positive action is being taken, rather than a fair assessment of the degradation being wrought by a company's activities.

With few exceptions, environmental concerns are more a focus on the perils of failure to comply with environmental legislation than a commitment to diminish environmental impact. Similarly, potential environmental risks are well beyond the horizon that would typically concern an annual report. It is important to note the reality of this. While environmental concerns may be a priority for researchers or activists, most companies are unaffected by environmental degradation in the short- or even medium term. It is unrealistic to expect leaders of such companies to express concerns and data for issues that have little or no bearing on the day to day running of their companies.

Until such time as environmental reporting practitioners can find a method that is comprehensive, universal and cost effective, it is unlikely that public reporting of environmental issues will be seen as anything other than a response to public pressure, rather than a meaningful part of every company's operations.

Further research would be beneficial in achieving this goal, especially in the South African context, where little work has been done on listed company reporting. A more detailed analysis of the manner in which their relationship with the environment is described by South African companies (as done by Dong & Burritt (2010) for Australian mining companies) would go a long way to informing reporting practitioners on the relationship that these companies have with the natural environment.

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APPENDIX 1

A list of all 82 companies analysed

ABSA
AFGRI
African Bank
African Rainbow Minerals
Anglo American
Anglo Platinum
Anglogold Ashanti
Aquarius Platinum
ArcelorMttal
Aspen
Assore
BHP Billiton
Bidvest
British American Tobacco
Buildmax
Capital Shopping Centres
Coal of Africa Limited
Crookes Brothers Limited
Discovery
Distell
DRD Gold Ltd
Dunhill
EVRAZ Highveld Steel and Vanadium
EXXARO
First Rand
First uranium
Gold Fields
Gold One Internatonal Ltd
GrowthPoint
Harmony
Hosken consolidated Investments Limited
Hulamin
Imperial
Implats

Infrasors Holdings Limited
Insimbi
Investec Bank Limited
JSE
Jubilee Platinum
KayDav group
Kumba
Lonmin
Massmart
Miranda Mineral Holdings Limited
Mondi
MTN
Murray & Roberts
Naspers
Nedbank
Netcare
Northam
Old Mutual PLC
Omnia
Optimum Coal
Platmin Limited
PPC
Randgold
Redifine Properties
Reinet Investments
REMGRO
Richemont
RMB
SAB Miller
Sanlam
SAPPI
SASOL
Sentula Mining
Sephaku Holdings Limited
Shoprite
Simmer & Jack Mines
Southern electricity Company Ltd (SELCO)
Standard

Steinoff
Telkom
Tiger Brands
Truworths
Village Main Reef
Vodacom
Wescoal Holdings Limited
Wilderness Holdings Limited
Woolworths
York Timbers

APPENDIX 2

The Presence / absence matrix used for analysis

The following presence / absence matrix was used to assess the 2010 and 2012 reports of 82 companies listed on the JSE, based on the methodology described in Section 2.2[2].

1. Company name
2. Year[3]
3. Sector[4]
4. Activity[5]
5. Top 40?
6. Natural environment mentioned in main annual report?
7. Natural environment mentioned in Chairman's review?
8. Natural environment mentioned in CEOs review?
9. Indication of separate environmental report?
10. Qualitative environmental discussion?
11. Environmental plans outlined for following reporting period?
12. Qualitative environmental goals set?
13. Recognition of environmental risk?
    a. Price increase risk?
    b. Investment risk?
    c. Climate change risk?
14. Quantitative environmental data?
15. Environmental KPIs?
16. KPIs reported for > 1 year?
17. Explanation for changes in KPIs?
18. Tabular presentation of environmental data?

[2] All data was recorded as “Yes / No” unless otherwise indicated).
[3] Financial year (FY) 2010 or 2012
[4] Agriculture, Commercial, Construction, Financial, Health, Industrial or Mining
[5] Primary, Secondary or Tertiary

APPENDIX 3

Questions included in the survey send to all 82 companies analysed

The following questions made up the interview. The goal is to determine the seriousness with which companies report environmental data, from the perspective of the staff responsible for that reporting.

1. I agree to participate in this survey. I understand that I am participating freely and without being forced in any way to do so. I also understand that I can stop this survey at any point should I not want to continue and that this decision will not in any way affect me negatively. I understand that this is a research project whose purpose is not necessarily to benefit me personally. I have received the email address of a person to contact should I need to speak about any issues which may arise in this interview. I understand that my answers will remain confidential. I understand that if at all possible, feedback will be given to me on the results of the completed research.

- Agree
- Disagree

For each of the following, please indicate whether the information referred to is:

- Publically reported in the annual report?
- Publically reported through another outlet?
- Internally reported and monitored?
- Monitored by management but not reported?
- Reported as a ratio against area of operations?
- Reported as a ratio against turnover (or any other earning related indicator)?
- Reported as a ratio against employee numbers?
- Reported as a ratio against kilometres travelled?
- Reported as a ratio against employee hours?
- Not monitored at all?

2. In your company, is the rand amount and / or frequency of fines paid for environmental indiscretions...
3. In your company, is the frequency of official censure from environmental authorities...
4. In your company, is the total amount of energy used...

5. In your company, is the total amount of renewable energy used...
6. In your company, is the total amount of fuel consumed...
7. In your company, is the total amount of fuel consumed...
8. In your company, are the emissions to air...
9. In your company, are the emissions to water...
10. In your company, are other resources consumed ...
11. In your company, is the carbon footprint of the head office ...
12. In your company, is the carbon footprint of the total operation ...
13. In your company, is the water footprint of the head office ...
14. In your company, is the water footprint of the total operation ...
15. In your company, is the total area of biologically diverse land conserved ...
16. In your company, is the efficacy of internal recycling or efficiency policies...
17. In your company, is the efficacy of external (i.e. customer / supplier focused) recycling or efficiency policies...
18. In your company, is the total land footprint of operations...
19. In your company, is the total land rehabilitated...
20. Which departments report environmental data to senior management?

- Health and safety
- Operations
- Marketing
- Risk management
- Financial
- Other (Please Specify):

21. How often are environmental issues minuted at executive level?

- Every meeting
- At most meetings
- Less than four times a year
- Less than once a year
- Never

22. Do you consider your business to be exposed to direct environmental risk? If so, which?

23. Do you consider your clients to be exposed to direct environmental risk? If so, which risks?

24. Do you consider your suppliers to be exposed to direct environmental risk? If so, which risks?

25. Is your clients' environmental performance considered or monitored by you?

26. Is your suppliers' environmental performance considered or monitored by you?

27. Are specific external environmental indicators or metrics considered or monitored by your business?