RHODES UNIVERSITY
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An investigation of the response of entities in the South African JSE ICT sector in 2005 to Environmental Sustainability Reporting

by

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A dissertation submitted in partial fulfilment for the degree of

Masters in Business Administration

Rhodes Investec Business School

November 2006

Abstract

Pressure is on organisations the world over to report to their stakeholders, not only on their economic performance, but also on their environmental and social performance. In South Africa the King II code of corporate governance provides the guidance and impetus for this integrated "triple bottom line" sustainability reporting. The ICT sector in South Africa has been cited as lagging behind other sectors with regards to sustainability reporting, particularly in environmental sustainability reporting. Many ICT organisations would appear to be using their office and service based existence as reasons for having little or no impact on the environment. The study of the impacts of ICT on environmental sustainability in this research suggests that this is not necessarily the case.

An assessment tool based on the internationally recognised Global Reporting Initiative Guidelines was developed in this research to investigate the level of environmental sustainability reporting in the South African ICT sector. The investigation showed the level of environmental sustainability reporting in the sector's 2005 annual reports to be low. To get an indication of the level of reporting in more developed countries, a small sample of international ICT and service organisations was assessed using the tool, which showed significantly higher levels of environmental sustainability reporting. A set of ICT specific environmental sustainability performance indicators are proposed to enhance and encourage more significant levels of environmental sustainability reporting in South Africa.

Executive Summary

Corporate sustainability and sustainable performance is recognised and adopted in a business context to mean the achievement of balanced and integrated economic, social and environmental performance, known as the "triple bottom line". The King II report provides emphasis and direction for "Integrated Sustainability" between organisations and the communities in which they exist. Organisations are encouraged to openly report on their performance on the triple bottom line. Surveys in Integrated Sustainability Reporting in the Information and Communication Technologies (ICT) sector have indicated that South African organisations are particularly poor with regards to their reporting. With the rapid growth of ICT, organisations increasing reliance on ICT, the pervasiveness of ICT, the convergence of ICTs and the integration of the information society with sustainable development, a greater understanding is therefore needed of the impact that ICT has on the environment – both positive and negative. This increased understanding will encourage and allow the ICT sector to improve its positive impact on the environment while reducing its negative impact. Greater understanding will also assist in formulating business sector specific guidelines for environmental sustainability reporting and through this, a greater level of environmental sustainability reporting can be achieved.

The results of the research show that the level of environmental sustainability reporting in the South African ICT sector in 2005 was assessed to be low. Many of the organisations assessed did not report on environmental issues, while others reported that they have no significant impact on the environment. Telecommunication organisations tended to have more significant reports. Those organisations with Environmental Management Systems (EMSs), and those using guidelines (like the Global Reporting Initiative (GRI) or the JSE Social Responsibility Investment (SRI) index) had more significant reports. Most of the environmental reporting in the South African ICT sector focused on waste management and recycling initiatives. Priorities in South Africa focus on the social sphere of sustainable development and on transformation issues. The reports indicate that Black Economic Empowerment (BEE) and Corporate Social Investment (CSI) are key focus areas.

The results of the research show that the level of environmental sustainability reporting in selected large international ICT and service organisations in 2005 was

assessed to be high. The selected international organisations all had significant environmental reports and all provided relevant context to their reports that included their key shortcomings and successes, and their major risks and opportunities related to environmental issues. The reports that were assessed indicated that their reporting is being driven by regional regulations and directives, supply chain pressures and public pressure. All the international reports assessed were "In Accordance" with the GRI guidelines. It is evident that using a set of reporting guidelines or frameworks enhances the quality and significance of the report.

Organisations wishing to report significantly on their environmental performance should use a set of reporting guidelines. The GRI provides a suitable set of internationally accepted guidelines for this purpose. To enhance environmental sustainability reporting in the ICT sector, the GRI guidelines are summarised into a seven (7) step process and a set of ICT sector specific indicators are proposed to be used in the process. The indicators are based on the GRI G3 draft guidelines and include the indicators that are most relevant to the ICT sector based on this research project. In determining the most relevant indicators, the following factors were considered: the various effects of ICT on environmental sustainability, the environmental sustainability reporting trends highlighted by this research and the indicators that the international reports focused on.

Acknowledgements

Thanks to the Lord, through Him all things are possible. I am truly grateful for the opportunity and wisdom provided to complete the course.

My most sincere thanks to my supervisor, Prof. Dave Sewry, for your guidance, dedication and counsel, not only for on the dissertation but throughout the duration of the MBA course. Thank you for the direction and advice, and for your tireless reading of drafts.

Thank you to Dr. Kevin Whittington-Jones for your initial interest and guidance in the dissertation.

Thank you to all my colleagues in the Department of Information Systems for providing such a supportive environment in which to complete the MBA.

To RIBS and the MBA class of 2004, thanks for a wonderful three years of fascinating, often crazy, discussion and engagement. What you taught me about myself is the greatest learning I take from the course.

Finally, my deepest thanks and love to my wife, Shelly, and children, Toni and Cameron, for all you mean to me. Your support and encouragement has enabled me to achieve an important milestone in my life.

Declaration

I certify that this dissertation has not been submitted for a degree in any other university and that it is my original work

Kevin Rafferty

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Chapter 1: Introduction to the Research

This chapter introduces the research problem, including the research area, presents a summary of the results of the research and explains the organisation of the thesis.

1.1 Introduction

One of the key themes articulated in the King II report on corporate governance is the reporting on non-financial aspects of organisational operations. The concept of the triple bottom line is reflected in this theme. The trilogy of financial, social and environmental reporting is acknowledged as a pivotal cornerstone of credible and authoritative corporate annual reports. As more pressure is placed on organisations to provide standardised information on sustainable development performance, appropriate framework conditions for sustainability reporting should be developed and used. The Global Reporting Initiative (GRI) Guidelines provide an appropriate framework for sustainability reporting.

It is reported that the level of sustainability reporting, particularly environmental sustainability, is low in the South African Information and Communication Technologies (ICT[1]) sector with many ICT organisations reporting that their office and service based operations have no impact on the environment. A review of the impact that ICT has on the environment indicates that this is not necessarily the case. This research develops an assessment tool based on the GRI guidelines in order to assess the level of environmental sustainability reporting in the South African ICT sector.

This chapter provides the context of the research to provide a background to the study and is followed by the statement of the research problem. The scope of the research indicates the assumptions and delimitations of the research. This is followed by a brief discussion of the research methodology and a summary of the results of the research. Finally, the organisation of the thesis is detailed.

1.2 Research Context

The notion of corporate sustainability and sustainable performance has recently been recognised and adopted in a business context to mean the achievement of balanced and integrated economic, social and environmental performance, known as the "triple

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[1] ICT in this research is defined as information technology plus telecommunications equipment and telecommunications services. Information technology refers to the combined industries of hardware for office machines, data processing equipment, data communications equipment and of software and services (EITO, 2002).

bottom line" (Cliffe Dekker Attorneys, 2002). The concept of sustainability is derived from the term "Sustainable Development", which became a legally accepted term in international law at the United Nations Conference on Environment and Development (the so-called "Earth Summit") in 1992 (Cliffe Dekker Attorneys, 2002, Bell and Morse, 2003). Sustainable Development is defined by the Brundtland Report (Report of the World Commission on Environment and Development in 1987) as "development that meets the needs of the present without compromising the ability of the future generations to meet their own needs" (Höver, 2005:115). The World Business Council for Sustainable Development (WBCSD) similarly defines Sustainable Development as "forms of progress that meet the needs of the present without compromising the ability of future generations to meet their needs" (WBCSD, 1998:3).

Industry has had to respond to the growing pressure exerted by sustainable development policies and ideologies. The demand for accountability, transparency and improved environmental and social performance has led to the notion of triple bottom line performance. Large organisations are being required to demonstrate their performance against the triple bottom line, through various indicators, like the Global Reporting Initiative (GRI) and the JSE Socially Responsible Investment (SRI) index, and through corporate reporting.

In today's globalised knowledge economy, communication and transparency are essential for organisations. In a South African context, the concept of corporate responsibility has been extended to that of "Integrated Sustainability". The King Report on Corporate Governance for South Africa – 2002, known as "King II", seeks to provide indicative and aspirational guidelines to South African organisations wishing to improve on their disclosure practices and recognise the importance of the relationship between organisations and the communities in which they exist (IoD, 2002). Corporate governance is an attempt to create structured dialogue between organisations and their stakeholders, inclusive of shareholders, in order to pave the way for "…understanding the company's strategic and operational goals…" (Parum, 2005:702) which could include critical success factors for achieving organisational goals (Cadbury, 2000, Parum, 2005).

A special feature of corporate governance in South Africa is its promotion of an inclusive stakeholder approach, where stakeholders include the shareowners,

customers, employees, suppliers, subcontractors and business partners, local communities, non-governmental organisations and other special interest groups whose concerns may be with issues such as market stability, social equality and the environment and also the state (IoD, 2002). Within this approach, the organisation has to be fair, accountable, responsible and transparent towards all stakeholders of the organisation, and that the interests of the shareholders are balanced with the interests of other stakeholders (Rossouw, 2002). The King II Code requires organisations to report, at least annually, on the nature and extent of their "social", "transformation", "ethical", "safety", "health" and "environmental" management policies (IoD, 2002). The reporting requirements of the King II Code provide a greater degree of integration, moving beyond a simple triple bottom line reporting structure.

The significance of sustainable development and in particular corporate sustainability has led to the need for stakeholders to assess commitment to sustainable development. Sustainability reporting has proved a useful tool for driving changes in an organisation's performance and demonstrating business value to its stakeholders (Cottrell and Rankin, 2000). Jørgensen (2001) comments that organisations have traditionally demonstrated their financial responsibility through quarterly and annual reports, relegating societal accountabilities to public relations efforts and marketing brochures. Jørgensen (2001) adds that triple bottom line reporting incorporates social and environmental performance to these accomplishments which marks a major milestone in corporate accountability. As sustainability is reported on, it can be measured and thus managed which Jørgensen (2001) believes will encourage organisations to express information such as ratios and absolute values as well as disclosure of reporting policies.

Sustainability reporting is defined by the Global Reporting Initiative (GRI) as the process of publicly disclosing an organisation's economic, environmental and social performance (GRI, 2002). The 2005 KPMG International Survey of Corporate Responsibility Reporting reveals that the GRI reporting guidelines are well established and further refinement of these guidelines will assist organisations to focus their reporting and improve the possibilities for benchmarking performance (KPMG International, 2005).

Despite the presence of the GRI reporting guidelines, the KPMG 2004 Survey of Integrated Sustainability Reporting in South Africa (KPMG, 2004) reported that the

Information Communication and Technology (ICT) sector was "lagging" in Integrated Sustainability Reporting and that only 44% of ICT organisations were reporting against some suitable criteria. Within this area, a greater understanding needs to be gained of the impact and effect that ICT has on the environment. An understanding of the impacts that ICT has on the environment will enhance integrated sustainability reporting and assist in developing industry sector specific supplements for the GRI reporting guidelines – a "need" identified by the GRI (GRI, 2006a).

To assess the impact of ICT on environmental sustainability, EITO (2002), supported by Kohler and Erdmann (2004) and Casal, Van Wunnik, Sancho, Burgelman and Desruelle (2005), proposed a three order framework:

- First order: The impacts and opportunities by the physical existence of ICT and the processes involved. This includes the design, manufacture, operation and disposal of ICT.
- Second order: The impacts and opportunities by the ongoing use and application of ICT. This includes E-business.
- Third order: The impacts and opportunities by the aggregated effects of large numbers of people using ICT over the medium to long term. This includes the changing nature of relationships between business and markets.

Under First order impacts, the production of ICT, does not place as high a level of demand on natural resources as many other industries. A relatively low level of pollution in the production process is also experienced (EITO, 2002). However, in the operation and disposal of ICT, the environment is negatively impacted, which can be mitigated to an extent (EITO, 2002). Under Second order impacts, the application of ICT has a more ambiguous effect on the environment, in that it may create efficiencies leading to a reduction in the amount of natural resources needed to support human activity – termed dematerialization by EITO (2002). Under Third order impacts, the aggregated effects of widespread use of ICT on the environment are difficult to identify and quantify without considering the effects of ICT on social and economic factors (EITO, 2002). A greater understanding of the role of ICTs in environmental sustainability is required in order to increase the positive impact of ICT on the environment (Casal *et al.*, 2005).

For organisations to demonstrate their commitment to sustainable development and environmental sustainability, it is necessary that they report at least annually on their triple bottom line performance. The publication of integrated annual reports representing economic, social and environmental performance is the first step towards the progressive integration of the three spheres of sustainability.

1.3 Statement of the Problem

An investigation of the response of entities in the South African JSE ICT sector in 2005 to environmental sustainability reporting.

1.4 Statement of the Sub-problems

▪ An investigation of South African corporate governance with respect to sustainable development

▪ An investigation of sustainable development and sustainability reporting in the South African context

▪ An investigation of globally accepted reporting guidelines (GRI) for environmental sustainability reporting

▪ An investigation of the impact that ICT has on environmental sustainability through a literature study

▪ An investigation of the extent of JSE ICT organisations response to environmental sustainability reporting in 2005 through an assessment tool based on the GRI Draft G3 guidelines and the JSE SRI index

▪ An investigation of trends, highlights and lowlights in ICT environmental sustainability reporting

1.5 Scope of the Research

The focus of this research is on the organisational reporting of environmental sustainability. It is concerned with the evidence of environmental sustainability presented in the reports and not what the actual operations are of the relevant organisation. The assessment of reports is confined to the 2005 reports.

The study of the impact of ICT on environmental sustainability is based on a literature study of journal articles and organisational reports on environmental impacts of ICT.

The assessment tool is based on the GRI G3 draft guidelines. The GRI G3 final guidelines were not publicly released at the time when the research was conducted.

1.6 Research Methodology

The research method employed is Evaluation Research with a document analysis of JSE ICT organisations' 2005 annual reports against GRI Environmental Performance Indicators (Babbie and Mouton, 2004). Knowledge-oriented evaluations are used to enhance the relevance and quality of environmental sustainability reporting in the ICT sector in line with the impact of ICT on the environment, in order to reduce uncertainty and enlighten stakeholders (Babbie and Mouton, 2004).

The research is situated within a Post-positivist orientation paradigm (Guba and Lincoln, 1994). It includes critical realism to get as close to reality as possible, but perhaps never quite getting there (Guba and Lincoln, 1994). The research takes an objective stance on the analysis and achieves approximate knowledge through a quantitative and qualitative approach (Guba and Lincoln, 1994).

1.7 Summary of the Results

The overwhelming result of the investigation is that very little is being done by the South African ICT sector with respect to environmental sustainability reporting. The level of environmental sustainability reporting in the South African ICT sector in 2005 was assessed to be low. Many organisations did not report on environmental issues, while others reported that they have no significant impact on the environment. Many organisations would appear to be using their office and service based existence as reasons for having little or no impact on the environment.

Telecommunication organisations tended to have more significant levels of reporting, with their reports indicating a higher emphasis on Environmental Management Systems (EMS) and certifications. They also reported on the influence that the JSE SRI and the Black Economic Empowerment (BEE) charter for ICT are having on their reporting. No awards or compliance issues were noted. This is indicative of the state of regulation on environmental issues in South Africa which tends to focus on the high impact industries at the moment, such as mining (JSE, 2004).

Most of the environmental reporting in the South African ICT sector focused on waste management and recycling initiatives. Outside of waste management and recycling, the South African ICT sector, as a whole, presented little or no reporting on environmental sustainability. Priorities in South Africa focus on the social sphere of sustainable development, like corporate social investment (CSI), ICT education and training, ICT infrastructure development, HIV/AIDS programmes and transformation issues like BEE.

The twenty-one (21) South African ICT 2005 reports that were assessed indicated that they were being driven to report by the King II code of conduct on corporate governance. The reports support economic performance and showed a substantial effort in social performance, but were generally lacking in reporting on environmental performance.

Since limited evidence of environmental reporting was found in the South African ICT sector reports, six (6) reports from international organisations, from the ICT and services sectors, were selected and assessed. All of the six (6) reports are "In Accordance" with the GRI G2 guidelines.

The overall impression created by the international reports is that something is being done to perform in the environmental sphere of sustainable development. The primary focus of the international reports is to manage Greenhouse gas emissions. Evidence exists in the reporting of policies and programmes to reduce energy use and reduce energy sourced from non-renewable energy sources like coal. The focus is on alternative energy sources like solar, hydro and wind. Evidence in the reports indicates that the international organisations are aware of the environmental benefits to be gained from teleconferencing and telework, and the use of public transport systems.

It is evident that using a set of reporting guidelines or frameworks enhances the quality and significance of the report. The international organisations are subject to tight regional and international regulations and directives. This appears to enhance the significance of the reports. It is evident that the reports identify clearly what their impacts on the environment are and it is these areas that are significantly reported on. Both positive and negative impacts are reported on. In some cases, the reports identify areas of economic and social benefits as a result of environmental management.

The reports that were assessed indicated that their reporting is being driven by regional regulations, directives, supply chain pressures and public pressure. Organisations based in the United States of America (USA) are compelled to adhere to environmental regulations by the US Environmental Protection Agency (US EPA). European based organisations are driven by European Union (EU) directives.

To encourage and enhance significant environmental sustainability reporting in the South African ICT sector, a seven (7) step process is summarised from the GRI guidelines and a set of ICT sector specific performance indicators are proposed to be used in the process. The steps include: identifying relevant stakeholders and appointing an executive member to be accountable for the environmental sustainability concerns, identifying and selecting a set of reporting guidelines like the GRI guidelines, determining the report content, establishing the report boundary, ensuring the quality of the reported information, determining standard disclosures in two parts (including performance indicators), and generating the environmental sustainability report.

The proposed ICT environmental performance indicators are based on the GRI G3 draft guidelines and include the indicators that are most relevant to the ICT sector based on this research project. In determining the most relevant indicators the following factors were considered: the First, Second and Third order effects of ICT on environmental sustainability, the environmental sustainability reporting trends highlighted by this research and the indicators that the international reports focused on.

1.8   Thesis Organisation

This thesis is organised into seven (7) chapters.

Chapter 1: Introduction to the Research

The research area and the specific problem under investigation are introduced by providing contextual background information and the rationale for conducting the research. A statement of the research problem and its sub-problems are presented. The scope of the research, the research methodology, a summary of the results of the research and the organisation of the thesis are detailed.

Chapter 2: Sustainability Reporting

This chapter describes corporate governance, sustainable development, sustainability reporting and the Global Reporting Initiative (GRI) framework. Corporate governance is promoting sustainable development whilst sustainability reporting is a mechanism to monitor and measure sustainable development. The GRI framework is a set of globally accepted guidelines that assist organisations to report on their economic, environmental and social performance.

Chapter 3: The Impact of ICT on Environmental Sustainability

This chapter reviews the impacts that ICTs have on environmental sustainability. A greater understanding of the role which ICT plays in environmental sustainability is required in order to increase the positive impact of ICT on the environment and to enhance the significance of environmental sustainability reporting.

Chapter 4: Assessment Tool

This chapter describes the assessment tool to be used to assess the level of environmental sustainability reporting in annual reports. The tool is based on the GRI G3 draft guidelines and the JSE SRI index.

Chapter 5: Research Methodology

This chapter describes the research methodology inclusive of the research approach, sources of data, treatment of the data and presentation of the results.

Chapter 6: Results

This chapter describes the population and sample, and presents the results of the assessment. The assessment the South African ICT sector as a whole indicates little or no significant environmental reporting. The assessment of the selected international reports indicates a far more mature and significant level of reporting.

Chapter 7: Conclusion

This chapter reviews the contribution of the research and identifies areas for future research.

Appendix A

This Appendix contains the GRI reporting principles and associated tests.

Appendix B

This Appendix contains the GRI Economic, Environmental and Social performance indicators.

Appendix C

This Appendix contains an example GRI content index.

Appendix D

This Appendix contains the assessment Tool questionnaire for environmental sustainability reporting and a glossary of terms used in the assessment questionnaire.

Chapter 2: Sustainability Reporting

Chapter One provided a background to the research. This chapter describes corporate governance, sustainable development, sustainability reporting and the Global Reporting Initiative (GRI) framework. Corporate governance is promoting sustainable development whilst sustainability reporting is a mechanism to monitor and measure sustainable development. The GRI framework is a set of globally accepted guidelines that assist organisations to report on their economic, environmental and social performance.

2.1   Introduction

Corporate governance requires greater emphasis on the sustainable or non-financial aspects of an organisation's performance. In South Africa, particular emphasis is being placed on organisations to adopt an inclusive, and not an exclusive, approach to corporate governance. This focus on sustainable development generates a paradox with the conflicting requirement of providing the flows of production and consumption needed to maintain a good quality of life for all mankind - while at the same time sustaining the local and global environment and bio-diversity. The concept of corporate sustainability has led to the need for sustainability reporting which focuses on the triple bottom line. The Global Reporting Initiative (GRI) has a set of sustainability reporting guidelines which serves to provide stakeholders with relevant information about an organisation's economic, environmental and social performance.

This chapter describes corporate governance and its need in business and in organisations, with particular reference to the South African business arena. This is followed by a description of sustainable development and the need for organisations to perform in the economy without undermining social equity and without undue exploitation of the environment. A description of sustainability reporting follows with particular emphasis on the GRI guidelines for sustainable reporting. Finally, the environmental reporting guidelines are highlighted.

2.2   Corporate Governance

According to Cadbury (2000), corporate governance is concerned with holding the balance between economic and social goals and between individual and communal goals. He adds that the aim of corporate governance is to align, as nearly as possible, the interests of organisations and the individuals and society affected by the organisation. Parum (2005) defines corporate governance as set of principles concerning the governing of organisations and how these principles are disclosed or communicated externally. It can be seen from these two definitions that corporate governance is an attempt to create structured dialogue between organisations and their stakeholders, inclusive of shareholders, in order to pave the way for "…understanding the company's strategic and operational goals…" (Parum, 2005:702) which could include critical success factors for achieving organisational goals.

In recent years, a number of high-profile corporate scandals have surfaced (for example, Enron and WorldCom) that have led to 'best-practice' corporate governance guidelines being developed and practised in several countries (Hilb, 2005). This should be taken as a positive step towards promoting the dialogue between organisations and their stakeholders. Hilb (2005), however, contends the following:

- The Anglo-American model of governance is being promoted as the global standard which may not be suitable for emerging economies

- The laying down new soft law does not replace the need for integrity and trust in board relationships and processes

- The best-practice guidelines are typically designed for large, publicly listed firms and are often not suitable for small firms

- Good governance guidelines do not guarantee good governance practice

Hilb (2005) thus believes that in adopting corporate governance guidelines organisations should be aware that a one size fits all corporate governance approach does not exist. This could imply that corporate governance practices adopted in the developed economies might not be suitable to developing economies like South Africa.

Cliffe Dekker Attorneys (2002), Höver (2005) and the Institute of Directors in Southern Africa (IoD, 2002) describe the governance approach adopted by South Africa. South Africa has adopted a corporate governance practice based initially on the 1994 King Report on Corporate Governance[2] (King I), further enhanced by the updated 2002 King Report on Corporate Governance for South Africa, 2002 (King II) (Cliffe Dekker Attorneys, 2002). King I advocated an integrated approach to good governance in the interests of a wide range of stakeholders and was considered groundbreaking at the time. However, due to the ever-changing global economic environment and legislative developments, King II was developed (Cliffe Dekker Attorneys, 2002). King II recognises the need to move away from only profit for shareholders to a triple bottom line approach, which embraces the economic growth,

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[2]The King Committee on Corporate Governance was headed by former High Court judge, Mervyn King S.C.

environmental impact and social involvement of an organisation (Cliffe Dekker Attorneys, 2002, JSE, 2004). The three spheres (economic, environment and society) of the triple bottom line are interconnected where society depends on the economy and the economy depends on the global ecosystem (Höver, 2005). The JSE (2004) Social Responsibility Investment (SRI) index, states further that the principles of fairness, accountability, responsibility and transparency are common to all three spheres of the triple bottom line. These principles are also the fundamental concepts that lie at the root of corporate governance. It can therefore be said that corporate governance is the foundation in which each sphere of the triple bottom line is embedded.

A special feature of corporate governance in South Africa is its promotion of an inclusive stakeholder approach, which includes the shareowners and other stakeholders (IoD, 2002). The inclusive stakeholder approach referred to in the King II report distinguishes the following groups of stakeholders: 1) the shareowners (investors) and 2) all other stakeholders including customers, employees, suppliers, subcontractors and business partners, local communities, non-governmental organisations and other special interest groups whose concerns may be with issues such as market stability, social equality and the environment and also the State (IoD, 2002). The ethical nature of corporate governance is determined by how stakeholders are defined (Rossouw, 2002). In this regard, Rossouw (2002) distinguishes between inclusive and exclusive definitions of stakeholders. He further states that when stakeholders are exclusively defined as shareholders, corporate governance has a very restricted ethical nature, in that the governance of the organisation is directed solely for the benefit of the shareholders, and that the interests of non-shareholding stakeholders can be neglected. Corporate governance gains a distinctively more ethical character when stakeholders are more inclusively defined as all parties who are affected by, or who affect, the organisation (Rossouw, 2002). Within this definition, the organisation has to be fair, accountable, responsible and transparent towards all stakeholders of the organisation, and that the interests of the shareholders are balanced with the interests of other stakeholders (Rossouw, 2002).

The JSE (2004) supports the IoD (2002) by requiring organisations to adopt a more inclusive approach to business, with greater emphasis on the non-financial aspects of performance. To achieve an integrated / inclusive approach, organisations should

display good corporate governance standards in all their activities both in principle and in practice (JSE, 2004). The key challenge is to achieve a balance between performance and compliance while taking account of stakeholder expectations. Proper governance embraces both.

In essence, the literature explored suggests that successful governance in the contemporary world requires organisations to adopt an inclusive and not exclusive approach. Organisations must place greater emphasis on the sustainable or non-financial aspects of its performance. Boards must apply the test of fairness, accountability, responsibility and transparency to all actions as well as being responsive and responsible towards the organisation's identified stakeholders. However, focusing on governance and non-financial aspects, attempting to be fair and transparent, and being accountable and transparent have costs associated with them. It can take an organisation's focus away from its core capabilities and responsibilities - especially in an entrepreneurial market. It is vital therefore to seek the benefits of corporate governance and to find the correct balance between conformance with governance principles and performance, and this balance should be specific to each organisation.

2.3   Sustainable Development

Heemskerk, Pistorio, and Scicluna (2002) state that "Sustainable Development" means different things to different people and different users may have different preferences, interests and views on the importance of various aspects of sustainable development, hence different materiality criteria. Furthermore, the importance of these aspects may differ depending on the geographical and cultural context, and they may change over time. Responding to such needs is further complicated by the great uncertainty related to the impact of many man-made substances on human health and the environment.

Donald Johnston, Secretary-General of the Organisation for Economic Co-operation and Development (OECD) reports that "here seems to be a wide variety of definitions and opinions as to what "sustainable development" really means. One might even be tempted to conclude that sustainable development is in the eye of the beholder!" (Johnston, 2002:1). Very little consensus on a common understanding of sustainable development exists. However, underlying principles have helped spawn sustainable

developments which are encapsulated in the following thoughts by Goodland and Daly (in Bell and Morse, 2003:6):

- Learn how to manage renewable resources for the long term

- Reduce waste and pollution

- Learn how to use energy and materials more efficiently

- Invest in repairing the damage to the earth

2.3.1 Sustainable Development Definitions

The term "Sustainable Development" is defined by the Brundtland Report (Report of the World Commission on Environment and Development in 1987) as "development that meets the needs of the present without compromising the ability of the future generations to meet their own needs" (Höver, 2005:115). The World Business Council for Sustainable Development (WBCSD) similarly defines sustainable development as forms of progress that meet the needs of the present without compromising the ability of future generations to meet their needs (Heemskerk *et al.*, 2002).

The European Information Technology Observatory (EITO) defines sustainable development as a dynamic process which enables all people to realise their potential and improve their quality of life in ways that simultaneously protect and enhance the Earth's life-support systems (EITO, 2002). Implicit in this definition is that economic, social and environmental dimensions are equally vital and inter-connected:

- Economic sustainability means economic growth without making undue demands on social or natural resources

- Environmental sustainability means not only minimising impacts on the environment, but building natural resources and safeguarding them for the future

- Social sustainability means building, and not undermining, social equity

The International Institute of Sustainable Development (IISD) defines sustainable development as the adoption of business strategies and activities that meet the needs of the enterprise and its stakeholders while protecting, sustaining and enhancing the human and natural resources that will be needed in the future (IISD, 1992). The IISD (1992) add that developing an effective management framework for corporate

sustainable development requires that both the decision-making processes and governance issues of an organisation are addressed.

2.3.2 Corporate Sustainable Development

Bell and Morse (2003) believe sustainable development should focus on what is done now to improve the quality of life of people and should not degrade the environment and resources such that future generations are put at a disadvantage - "We should not cheat the future" (Bell and Morse, 2003:3). Improving lives now should not be at the expense of degrading future quality of life, but this does not mean that everything should remain static (Bell and Morse, 2003).

Cliffe Dekker Attorneys (2002) indicate that the concept of sustainability has recently been adopted in a business context to mean the achievement of balanced and integrated economic, social and environmental performance – the triple bottom line. They continue to add that non-financial issues, social and environmental, can no longer be regarded as secondary to more conventional business imperatives. The concept of sustainability is derived from the term "Sustainable Development", which became a legally accepted term in international law at the United Nations Conference on Environment and Development (the so-called "Earth Summit") in 1992 (Cliffe Dekker Attorneys, 2002, and Bell and Morse, 2003).

Heemskerk *et al.* (2002) believe that pursuing a mission of sustainable development can make organisations more competitive, more resilient to shocks, agile in a fast-changing world, more unified in purpose, more likely to attract and hold customers and the best employees, and to be more at ease with regulators, banks, insurers, and financial markets.

Heemskerk *et al.* (2002) state that sustainable development is best achieved through open, competitive, rightly framed international markets that honour legitimate comparative advantages. They indicate that such markets encourage efficiency and innovation, which are both necessities for sustainable human progress. Movement toward corporate concern for the triple bottom line performance requires radical change throughout the corporation (Heemskerk *et al.*, 2002). They imply that sustainable organisations: embrace community and stakeholder success, hold its natural and cultural environments to be as precious as its technology portfolio and its employees' skills, and have concern for stakeholder well-being, reputation

enhancement, and environmental care. They also add that sustainable organisations have broad corporate vision and excel on the traditional return on financial assets and shareholder and customer value creation (Heemskerk *et al.*, 2002).

2.3.3 Sustainable Development Opportunities and Challenges

Elkington (1998) argues that thoughtful business leaders accept that there is risk in not following a triple bottom line approach to business and that it could lead to commercial extinction. He is of the opinion that having sustainable capitalism will be the most complex transition for mankind to make. Some organisations will find this easy and others extremely hard. Successful businesses will be those that focus on business ecosystems of which they are a part and are those that can co-evolve with a much wider array of stakeholders – including environmental organisations (Elkington, 1998).

Hart (1997) sees both an enormous challenge and opportunity to develop a sustainable global economy that the planet is capable of supporting indefinitely. However, he adds that those who think that sustainability is only a matter of pollution control do not fully appreciate the problem. Hart (1997) believes that sustainable development constitutes one of the biggest opportunities in the history of commerce and that there is a real need to understand problems posed by society's current unsustainable patterns of behaviour and develop strategies for providing solutions. Dyllick and Hockerts (2002) claim that sustainable development at a global level is poor and gets increasingly better as you move from national, to local, to organisational level. It is at the corporate level that sustainable development has really been adopted and has become known as corporate sustainability. They indicate that trade-offs are necessary and a balance is needed between long term and short term needs. At the corporate level, three types of capital need to be managed: economic, natural and social. Hart (1997) has a similar view to Dyllick and Hockerts (2002) and is of the opinion that businesses have the resources, technology, global reach and motivation to achieve sustainable development. Perhaps businesses are lacking the motivation to really embrace sustainable development (Hart, 1997). Hart (1997) believes the responsibility for ensuring a sustainable world falls largely on the shoulders of the world's organisations – the economic engines of the future. Clearly, public policy innovations and changes in individual consumption patterns need to move toward sustainability. Organisations can and should lead the way, helping to shape public policy and driving

change in consumers' behaviour. In the final analysis, it makes good business sense to pursue strategies for a sustainable world (Hart, 1997).

Beckett and Jonker (2002) offer reasons as to why organisations may not readily initiate and engage in corporate sustainability activities. These reasons include:

- Corporate sustainability as a concept is unclear

- Corporate sustainability has been traditionally associated with the on-going environmental debate, and has no role in the traditional organisational structure

- The social dimension of corporate sustainability has been undefined, and hence is difficult to categorise and make operational

- Many organisations, particularly in the service sector, view their environmental impact as minimal

Robert Shapiro in Magretta (1997) believes that few people are living in a sustainable way and that the whole system has to change, it is an opportunity for re-invention. Shapiro indicates that the world cannot avoid needing sustainability in the long run, "sustainable development is not a soft issue grounded in emotion or ethics; it involves cold, rational business logic" (Shapiro in Magretta, 1997:81). Technology, specifically ICT, will play a major role in sustainable development by being able to substitute information and services for 'stuff' and products, and using miniaturisation to use less of 'stuff' (Magretta, 1997).

2.3.4 Criticisms of Sustainable Development

Schendler (2002) expresses that sustainable development is not cheap and easy, it is fundamentally difficult and expensive and there is not always a clear return on investment (ROI), with any ROI tending to be in the long run. Schendler (2002) believes that sustainable development will only occur if the mandate comes from the ethical argument not the economic argument.

Castro (2004) takes a critical perspective on sustainable development. He states that although all definitions of sustainable development see it in terms of maintaining conditions for future generations, the mainstream approach primarily sees this in terms of economic conditions, whereas more critical perspectives emphasise ecological conditions directly. Castro is of the opinion that sustainable development "…sounds suspiciously like plain old development" (Castro, 2004:198), and the idea

that economic growth is achieved by free trade, and that economic growth reduces poverty, and that once poverty is reduced environmental degradation will be reduced as well, does not work out in practice. His perspective comes from the view that in the international political economy, "environmentally sound" technology is very expensive, and most countries on the periphery of technological advancement will have to export natural resources, thereby creating more environmental destruction, to be able to buy this technology (Castro, 2004). He goes on to add that in fact communities on the periphery may well have "environmentally sound" technologies that are not compatible with the capital modernisation proposed by development.

Höver (2005) concurs with Castro (2004) and indicates business as usual is not an option. Höver (2005) states that the continuing degradation of the world's natural resources and the impoverishment of large segments of the world's population are placing people's security, and that of future generations, at risk. To be more sustainable, Höver adds, development must improve economic efficiency, protect ecological systems, and enhance the well-being of all people.

Castro (2004) is of the opinion that sustainable development is still a contested concept and that more critical perspectives are needed if any kind of meaningful sustainable development (which has to be about sustaining the environment even more than sustaining economic development) is to be achieved. He proposes environmental Marxism as an essential perspective to true sustainable development.

2.3.5 The Paradox of Sustainable Development

Sustainable development has made the world a place where the individual has a stake in development – not just economists; sustainable development is participatory and should involve people from the very beginning (Bell and Morse, 2003). Bell and Morse (2003) acknowledge that these are good intentions, but questions whether everybody's views can really be considered and states that public participation brings its own problems. Jane Nelson of the Prince of Wales Business Leaders Forum argues that the real issue with sustainable development lies in people themselves and the "core issue is about changing attitudes, values and approach" (Nelson, quoted in Elkington, 1998: 37). There is essentially a paradox in sustainable development – conflicting requirement of providing the flows of production and consumption needed to maintain a good quality of life for all people - in perpetuity, while at the same time

sustaining the local and global environment and bio-diversity. Sustainable development needs to be monitored and measured in some form to assess progress and adherence to the principles of sustainable development, particularly at the corporate level, which can potentially be achieved through sustainability reporting.

2.4   Sustainability Reporting

The significance of sustainable development and in particular corporate sustainability has led to the need for stakeholders to assess commitment to sustainable development. Sustainability reporting has proved a useful tool for driving changes in an organisation's performance and demonstrating business value to its stakeholders (Cottrell and Rankin, 2000). Jørgensen (2001) comments that organisations have traditionally demonstrated their financial responsibility through quarterly and annual reports, relegating societal accountabilities to public relations efforts and marketing brochures. Jørgensen (2001) adds that triple bottom line reporting incorporates social and environmental performance to these accomplishments which marks a major milestone in corporate accountability. As sustainability is reported on, it can be measured and thus managed, which Jørgensen (2001) believes will encourage organisations to express information such as ratios and absolute values as well as disclosure of reporting policies.

Sustainability reporting is defined by the GRI as the process of publicly disclosing an organisation's economic, environmental and social performance (GRI, 2005a), also known as reporting on the triple bottom line (Cliffe Dekker Attorneys, 2002, JSE, 2004, Höver, 2005). According the GRI (2006b) a sustainability report refers to a single, consolidated disclosure that provides a reasonable and balanced presentation of performance over a fixed time period. Stakeholders should be able to directly access all of the report information from a single location, such as a GRI content index (GRI, 2006b).

2.4.1 Corporate Sustainability Reporting

The European Commission (2004) has identified that an increase in corporate sustainability reporting is being experienced, which is linked to the increased demand for greater accountability and transparency of organisations. Key stakeholders not only expect businesses to take account of their social and environmental impact, but also want to be informed on how they are performing in these areas (European

Commission, 2004). Hellriegel, Jackson and Slocum (1999) and Rossouw (2002) define an organisation's key stakeholders as being the owners, investors, employees, customers, suppliers, the local community and society as a whole in which the organisation operates.

Reporting on an organisation's economic, environmental and social performance is a growing concern (Jørgensen, 2001). Investors, government, managers, employees, and society as a whole, demand information about an organisation's non-financial practices before deciding to invest in, buy from, partner with, or work for a particular organisation (Jørgensen, 2001). Through the implementation of a triple bottom line reporting structure, an organisation assists in bringing together stakeholders and value chain participants through a common understanding and assessment of key issues and concerns (Dyllick and Hockerts, 2002).

KPMG International (2005) report, however, that some critics claim corporate sustainability reporting is just a promotional campaign to improve corporate image and public relations, while others believe that the costs of corporate responsibility activities are detrimental to shareholder value. This is supported by the Association of Chartered Certified Accountants UK (ACCA) (2004) and Idowu and Towler (2004) who add that many inconsistencies exist in the quality and scope of reporting, which can be attributed to the large number of standards, codes, guidelines and regulations governing integrated sustainability reporting. Despite this, significant improvements in the quality of sustainability reporting have been reported (Stratos Inc., 2003). Idowu and Towler (2004) maintain that the quality of integrated sustainability reporting will continue to improve globally, but the information disclosed in the reports needs to be standardised. The 2005 KPMG International Survey of Corporate Responsibility Reporting reveals that the GRI reporting guidelines are well established and further refinement of these guidelines will assist organisations to focus on their reporting and improve the possibilities for benchmarking performance (KPMG International, 2005).

2.4.2 Sustainability Reporting in South Africa

The King II Code was released in March 2002 (KPMG, 2003). The purpose of this Code is to promote the highest standards of corporate governance in South Africa (KPMG, 2003). Section 5 of the King II Code recommends that organisations release

annual sustainability reports on social, transformational, ethical, safety, health and environmental policies and practices (IoD, 2002). Whilst compliance with the Code is voluntary, it is a listing requirement on the JSE Securities Exchange (KPMG, 2003). As the GRI process is rooted in inclusiveness, transparency, neutrality, and continual enhancement (GRI, 2002), it supports the King II Code in South Africa.

Wayne Visser, a special advisor to, and former Director of KPMG Sustainability Services indicates that South African organisations have followed the international trend of adopting standards and guidelines as a form of voluntary self-regulation on triple bottom line issues as well as ethical issues (KPMG, 2004). The standards and guidelines which have had the most impact include ISO 14001 for environmental management, the King II Code for corporate governance and the GRI for sustainability reporting, while the influence of other frameworks like those on social accountability (for example, AA 1000, SA 8000) and general corporate citizenship (for example, the Global Compact, the OECD Guidelines for Multinationals) have been more limited (KPMG, 2004). KPMG (2004) reports that in areas of corporate citizenship, such as legislation, corporate governance, stakeholder consultation and social responsibility investment, South Africa shows global leadership, whereas in other aspects, such as levels of sustainability reporting, stakeholder capacity and regulatory enforcement, progress is still required.

2.4.3 Developing Sustainability Reporting

Allen White, Acting Chief Executive of the Global Reporting Initiative believes that tools, for example, the GRI guidelines, are now available to make it possible for a closer alignment between enhanced financial reporting, sustainability reporting and principles of corporate governance (White, 2002). He adds that the GRI 2002 (G2) Sustainable Reporting Guidelines provide a flexible mechanism for such enhanced reporting and offer a detailed methodology for performance disclosure. White (2002) indicates that the GRI guidelines can be seen as complementing other instruments, like the OECD Guidelines on Multinational Enterprises and its principles of corporate governance.

The GRI guidelines have been developed since 1997 in a consultative process involving representatives from the business, accountancy, labour and NGO sectors around the world (White, 2002). The initiative has enjoyed the active support and

engagement of representatives from this consultative group as the guidelines provide a ready-to-use, consistent and comparable framework designed to reinforce traditional financial reporting. Together, these different constituencies have worked to build a consensus, around a set of reporting guidelines, with the aim of achieving worldwide acceptance (GRI, 2002, White, 2002).

2.5 Global Reporting Initiative Sustainability Reporting

The GRI's vision is that reporting on economic, environmental and social performance by all organisations becomes as routine and comparable as financial reporting (GRI, 2006c). GRI seeks to achieve this through its sustainability reporting framework. GRI aim to provide a globally shared and widely understood framework of concepts, consistent language and agreed metrics for communicating sustainability (GRI, 2006b).

Any type of organisation can report against the GRI guidelines, whether they are experienced reporters or still beginners. A GRI sustainability report comprises two main parts. The first part requires defining the report content, setting the report boundary and ensuring the quality of the reported information. The second part requires specifying the base content or standard disclosures that should appear in the report.

2.5.1 Part 1: Report Content, Boundary and Quality

The first step in reporting in Part 1 is to determine the report content. This includes determining what should be covered in the report in order to ensure a balanced and reasonable presentation of the relevant organisation's performance (GRI, 2006b). The following steps are required for determining report content (GRI, 2006b):

- Identify the topics and related environmental aspects that are relevant and might be appropriate to report on

- Consider the relevance of all topics and aspects identified in the GRI guidelines and where applicable, sector supplements (the sector supplements compliment the guidelines with interpretations and guidance on how to apply the guidelines in the context of a given sector)

- Consider other topics, if any, that are relevant to report on

The GRI provides a set of principles and tests that should be used to assist in identifying topics and indicators for inclusion in the content of the report (GRI, 2006b). The principles are:

- Inclusivity Principle – this requires that relevant stakeholders are identified and how they have responded to their issues in their report is explained

- Relevance and Materiality principle – this requires that information in their report that covers issues and indicators that substantially influence the decisions of the stakeholders using the report is included (materiality in this context is "the threshold at which an issue or indicator becomes sufficiently important that it should be reported and is also used to assess the relative priority of issues and indicators" (GRI, 2006b:7))

- Sustainability Context principle – this requires that the organisation's performance in the wider context of sustainability, where such context has significant interpretative value, is presented

- Completeness principle – this requires that the relevant and material issues and indicators are covered (the definition of the boundary report should be sufficient to enable stakeholder to assess the organisation's triple bottom line performance for the reported period)

For each of the principles, a set of tests is provided by the GRI to use in assessing the use of these principles. The tests are intended to serve as tools for self diagnosis, not as specific items to report against, and can serve as references for explaining decisions about the application of the principles (GRI, 2006b). An example of the tests is listed here for the principle of inclusivity, the others are contained in Appendix A - Table A.1-1.

Tests for the Inclusivity Principle (GRI, 2006b):

- The organisation can describe the stakeholders to whom it considers itself to be accountable, and identifies the stakeholders that it expects to use the report

- The report content draws upon the outcomes of stakeholder engagement processes used by the organisation to manage its activities

- The report content draws upon the outcomes of any stakeholder engagement processes undertaken specifically for the report

- The stakeholder engagement processes that inform decisions about the report are consistent with the scope and boundary of the report

The second step in reporting in Part 1 is to establish the report boundary. During the defining of the content of the report, an organisation should determine which of its entities' performance will be represented by the report. Typically this will be the entities which the reporting organisation exercises control over or which it has significant influence over (GRI, 2006b). This report boundary is a dimension of the principle of completeness. It is also closely related to the application of the principles of Inclusivity, Materiality and Sustainability Context (GRI, 2006b).

The third step in reporting in Part 1 is to ensure the quality of the reported information, including its proper presentation (GRI, 2006b). The principles for quality reporting are:

- Balance Principle – this requires that a balanced and reasonable presentation of the reporting organisation's performance is provided

- Comparability Principle – this requires that the information reported should remain consistent and be complied and presented in a manner that enables stakeholders using the report to analyse changes in the organisation's performance over time as well as its performance relative to other organisations

- Accuracy Principle – this requires that the reported information should be accurate and sufficiently detailed for stakeholders using the report to make decisions with a high degree of confidence

- Timeliness Principle – this requires that information is presented in time and on a regular schedule for stakeholders using the report to make informed decisions

- Clarity Principle – this requires that information be made available in a manner that is understandable by, and accessible to, stakeholders using the report

- Assurability Principle – this requires that the information and processes used in the preparation of a report should be recorded, compiled, analysed and disclosed in such a way that it is subject to review and assurance

For each of the principles, a set of tests is provided by the GRI to use in assessing the use of the principles. The tests are intended to serve as tools for self diagnosis, not as specific items to report against, and can serve as references for explaining decisions

about the application of the principles (GRI, 2006b). An example of the tests is listed here for the principle of balance, the others are contained in Appendix A - Table A.2-1.

Tests for the Balance Principle (GRI, 2006b):

- The report discloses both favourable and unfavourable results and issues

- The information in the report is presented in a format that allows users to see positive and negative trends in performance

- The emphasis on different content of the report is proportionate to the relative materiality of the issues or information.

2.5.2 Part 2: Standard Disclosures

This part is divided into two main sections and specifies the base content that should appear in a sustainability report and should be done subject to the content defined in Part 1. The first section comprises of standard disclosure items which include "Strategy and Analysis", "Organisational Profile", "Report Parameters" and "Governance, Commitments and Engagements" (GRI, 2006b). The second section comprises of disclosure on a reporting organisation's management approach and performance indicators.

The first section of Part 2 allows the reporting organisation to specify disclosures that set the overall context for understanding organisational performance such as its strategy, profile, and governance (GRI, 2006b). For the reporting organisation:

- Strategy and Analysis – this section is intended to provide a high-level, strategic view of the organisation's relationship to sustainability in order to provide context for subsequent and more detailed reporting against other sections

- Organisational Profile – this section is intended to provide a description of the nature of the organisation's business environment (including products, services, markets served and operational structure)

- Report Parameters – this section is intended to provide the report scope and profile, an explanation of processes used in the organisation's reporting, the reporting boundary, a GRI Content Index and any independent assurance of the report

- Governance, Commitments and Engagement – this section is intended to provide the organisation's governance structure, its commitments to external initiatives and its stakeholder engagement

The second section of Part 2 allows the reporting organisation to specify disclosures that cover how the organisation addresses a given set of topics in order to provide context for understanding performance in a specific area and provides performance indicators that elicit comparable information on the triple bottom line performance of the organisation (GRI, 2006b).

The section on performance indicators is arranged by economic, environmental, and social (further arranged by Labour, Human Rights, Society, and Product Responsibility) categories. Each of the categories include a disclosure on the organisation's "Management Approach" and a corresponding set of core and additional performance indicators. The core indicators are intended to identify generally applicable indicators and are assumed material for most organisations. The reporting organisation should report on core indicators unless they are considered not material on the basis of the GRI reporting principles. Additional indicators represent emerging practice or address topics that may be material for some organisations, but are not material for others (GRI, 2006b). Performance indicators are accompanied by technical protocols which the reporting organisation should use when reporting on the indicators. The technical protocols give basic guidance on interpreting and compiling reporting information for each indicator.

Economic Performance

The economic performance is concerned with the organisation's impact on the economic conditions of its stakeholders and on economic systems at local, national, and global levels. The economic indicators demonstrate the flow of capital among the various stakeholders and the main economic impacts of the organisation throughout society. This information is usually already reported on in the financial accounts (GRI, 2006b). The disclosure on the "Management Approach" includes the following economic aspects:

- Economic Performance

- Market Presence

- Indirect Economic Impacts

The economic performance indicators are contained in Appendix B - Table B.1-1.

Environmental Performance

The environmental performance is concerned with the organisation's impact on bio-physical natural systems, including ecosystems, land, air and water. Environmental indicators cover performance related to inputs (material, energy, water) and outputs (emissions, effluents, waste). They also cover performance related to biodiversity, environmental compliance and other relevant information such as environmental expenditure and the impacts of products and services (GRI, 2006b). The disclosure on the "Management Approach" includes the following environmental aspects:

- Materials

- Energy

- Water

- Biodiversity

- Emissions, Effluents, and Waste

- Products and Services

- Compliance

- Transport

- Overall

The environmental performance indicators are contained in Appendix B - Table B.2-1 and in Table 2.6-1.

Social performance

The social performance is concerned with the organisation's impact on the social systems within which it operates. The social performance indicators identify key performance aspects surrounding "Labour Practices", "Human Rights", "Society, and Product Responsibility" (GRI, 2006b). The disclosure on the "Management Approach" for "Labour Practices and Decent Work" includes the following aspects:

- Employment

- Labour/Management Relations

- Occupational Health and Safety

- Training and Education

- Diversity and Equal Opportunity

The disclosure on the "Management Approach" for "Human Rights" includes the following aspects:

- Investment and Procurement Practices

- Non-discrimination

- Freedom of Association and Collective Bargaining

- Abolition of Child Labour

- Prevention of Forced and Compulsory Labour

- Complaints and Grievance Practices

- Security Practices

- Indigenous Rights

The disclosure on the "Management Approach" for "Society" includes the following aspects:

- Community

- Corruption

- Public Policy

- Anti-Competitive Behaviour

- Compliance

The disclosure on the "Management Approach" for Product Responsibility includes the following aspects:

- Customer Health and Safety

- Product and Service Labelling

- Marketing Communications

- Customer Privacy

- Compliance

The social performance indicators are contained in Appendix B - Table B.3-1.

The reporting should include a content index. A content index is a table that lists all the standard disclosures and where the responses to the disclosures can be found in the report. The content index provides users with a quick overview of what has been reported and eases report use (GRI, 2006b). An example of a content index from the GRI organisation is contained in Appendix C - Table C.1-1.

2.5.3 In Accordance Reporting

"In Accordance" reports are reports that satisfy In Accordance criteria described by the GRI G2 guidelines (GRI, 2006e). In Accordance reporting is designed for reporters ready for a high level of transparency and who seek to distinguish themselves as leaders in the field (GRI, 2006e). There are five (5) criteria for reporting In Accordance (GRI, 2006e):

1. Report on Part 1 - Report Content, Boundary and Quality (as outlined in section 2.5.1).

2. Include a GRI Content Index.

3. Respond to each core performance indicators by either (a) reporting on the indicator or (b) explaining the reason for the omission of each indicator (as outlines in section 2.5.2).

4. Ensure that the report is consistent with the principles of the Guidelines (as outlines in section 2.5.1)

5. Include the following statement signed by the board or CEO:
   "This report has been prepared in accordance with the 2002 GRI Guidelines. It represents a balanced and reasonable presentation of our organisation's economic, environmental, and social performance."

Reporting on the triple bottom line performance could coincide or be integrated with other organisational reporting, for example, annual financial statements. Coordinated timing reinforces the linkages between financial performance and economic, environmental, and social performance (GRI, 2006b).

2.6   Environmental Sustainability Reporting

The GRI guidelines for sustainability reporting are divided into two parts. Part 1 focuses on the principles and tests. Part 2 provides the context and focus on standard disclosures for each of the three spheres of sustainability, economic, environmental and social. Each sphere consists of two main sections, namely, the Management Approach and the Performance Indicators. This research focuses on the environmental sphere of sustainability reporting.

The GRI (2006b) lists a series of Environmental Performance Indicators (EPI) that have been identified to measure the impact on the environment. There are ten (10) generic indicators: Materials, Energy, Water, Biodiversity, Emissions, Effluents and Waste, Products and Services, Compliance, Transport and Overall. The generic indicators are then divided up into core and additional indicators. The core indicators are considered to be material and should be reported fully on, unless demonstrated otherwise. Materiality is the threshold at which an indicator becomes sufficiently important that it should be reported (GRI, 2006b). Additional indicators provide an opportunity for organisations to report on less material issues and can be used to indicate priority of aspects. The GRI guidelines represent a general set of indicators, which are applicable to organisations in all sectors of commerce, globally. GRI recognises that sector-specific guidance must be developed to supplement the general information elicited in the guidelines. This is essential to enable more robust and useful reporting - and to extend the applicability and uptake of the GRI guidelines across sectors and around the world (GRI, 2002).

The environmental performance indicators are listed in Table 2.6-1. The environmental aspects are listed in the first column. For each aspect, indicators, either core or additional, are described in the third column.

Aspect	Indicator number	Core indicators in Bold face Additional indicators in Normal type face
Materials	**EN 1**	**Weight of materials used**
	EN 2	**Percentage of materials used that are recycled**
Energy	**EN 3**	**Direct energy consumption broken down by primary energy source.**
	EN 4	**Indirect energy consumption broken down by primary source**
	EN 5	**Percentage of total energy consumption met by renewable resources.**
	EN 6	**Total energy saved due to conservation and efficiency improvements**
	EN 7	Initiatives to provide energy-efficient products and services
	EN 8	Initiatives to reduce indirect energy consumption.
Water	**EN 9**	**Total water withdrawal by source.**
	EN 10	**Water sources and related habitats significantly affected by withdrawal of water**
	EN 11	Percentage and total volume of water recycled and reused.
Biodiversity	**EN 12**	**Location and size of land owned, leased, or managed in, or adjacent to, protected areas.**
	EN 13	**Description of significant impacts of activities on protected areas.**
	EN 14	Area of habitats protected or restored.
	EN 15	Programs for managing impacts on biodiversity
	EN 16	Number of IUCN Red List species with habitats in areas affected by operations broken down by level of extinction risk
Emissions, Effluents and Waste	**EN 17**	**Greenhouse gas emissions.**
	EN 18	**Emissions of ozone-depleting substances.**
	EN 19	**NO_x, SO_x, and other significant air emissions by weight**
	EN 20	**Total amount of waste by type and destination**
	EN 21	**Total water discharge and quality**
	EN 22	**Total number and volume of significant spills**
	EN 23	Other relevant indirect greenhouse gas emissions.

	EN 24	Weight of transported, imported, or exported waste deemed hazardous under the terms of the Basel Convention Annex I, II, III and VIII.
	EN 25	Water sources and related habitats significantly affected by discharges of water and runoff.
Products and services	**EN 26**	**Initiatives to manage the environmental impacts of products and services and extent of impact reduction.**
	EN 27	**Percentage of products sold that is reclaimed at the end of the products' useful life by product category**
Compliance	**EN 28**	**Incidents of, and fines or non-monetary sanctions for, non-compliance with applicable environmental regulations**
Transport	EN 29	Significant environmental impacts of transportation used for logistical purposes.
Overall	EN 30	Total environmental protection expenditures by type

Table 2.6-1: Environmental Performance Indicators (GRI, 2006b)

An understanding of the impact of ICT on the environment and on sustainable development will assist in developing sector specific guidelines for the ICT sector. This should encourage organisations to report more completely on the environmental performance indicators that affect their industry.

2.7   Conclusion

Corporate governance is concerned with holding the balance between economic and social goals and between individual and communal goals. A special feature of corporate governance in South Africa is its promotion of an inclusive stakeholder approach, which includes the shareowners and other stakeholders. Sustainable development means different things to different people and different users may have different preferences, interests and views on the importance of various aspects of sustainable development, hence different materiality criteria. Sustainable development is generally defined as development that meets the needs of the present without compromising the ability of the future generations to meet their own needs. The concept of sustainability has recently been adopted in a business context to mean the achievement of balanced and integrated economic, social and environmental performance – the triple bottom line.

Enormous challenges and opportunities exist to develop a sustainable global economy that the planet is capable of supporting indefinitely. Sustainable development is not

cheap and easy, it is fundamentally difficult and expensive and a clear return on investment is not always evident, with any return on investment tending to be in the long run. A paradox in sustainable development exists between the conflicting requirement of providing the flows of production and consumption needed to maintain a good quality of life for all people - in perpetuity, and in sustaining the local and global environment and bio-diversity. Sustainability reporting has proved a useful tool for driving changes in an organisation's performance and in demonstrating business value to its stakeholders. Key stakeholders not only expect businesses to take account of their social and environmental impact, but also want to be informed of how they are performing in these areas. The GRI guidelines make it possible for a closer alignment between enhanced financial reporting, sustainability reporting and principles of corporate governance. The GRI's vision is that reporting on economic, environmental and social performance by all organisations becomes as routine and comparable as financial reporting. The GRI has a series of Environmental Performance Indicators (EPI) that have been identified to measure the impact that an organisation has on the environment.

Sustainable development is concerned with achieving a balance between economic, environmental and social dimension of organisational activity. This call for social progress recognises the needs of everyone, effective protection of the environment, prudent use of natural resources and maintenance of high and stable levels of economic growth and employment. Organisational development in this area should be reflected in their sustainability reporting, informing all stakeholders of the progress being made by the organisation in sustainable development. Information and communication technologies can be used to enhance sustainability, and sustainability reporting should be used to manage and measure progress in this regard.

Chapter 3: The Impact of ICT on Environmental Sustainability

Chapter Two described corporate governance, sustainable development, sustainability reporting and the GRI reporting guidelines. This chapter reviews the impacts that ICTs have on environmental sustainability. A greater understanding of the role which ICT plays in environmental sustainability is required in order to increase the positive impact of ICT on the environment and to enhance the significance of environmental sustainability reporting.

3.1   Introduction

With the rapid growth of ICT, organisations' increasing reliance on ICT, the pervasiveness of ICT, the convergence of ICTs and the integration of the information society with sustainable development, a greater understanding is needed of the impact, both positive and negative, that ICT has on the environment and environmental sustainability. This increased understanding will encourage and allow the ICT sector to improve its positive impact on the environment while reducing its negative impact. Greater understanding will also assist in formulating sector specific guidelines for environmental sustainability reporting.

This chapter describes the challenges in assessing environmental sustainability for ICTs. This is followed by an overview of a sustainability analysis framework for ICT. The environmental sphere of the framework is described and finally, the effects of ICT on the environment are examined.

3.2   Information Society and Sustainability

Surprisingly few attempts have been made to assess whether the growing acceptance of the sustainable development agenda and the growth of ICT will complement or conflict with one another in the light of the convergence between the two policy agendas for sustainable development and the "Information Society" (EITO, 2002). With the information society and sustainable development both being policy priorities, integration between the two policy agendas should be inevitable (EITO, 2002). Shapiro in Magretta (1997) supports the EITO (2002) view that ICT presents opportunities to resolve traditional trade-offs between economic growth, the environment and social cohesion. This is further enhanced by the opportunity to integrate sustainability criteria into the information society at an early stage of its development, thereby maximising the social and environmental opportunities of ICT and mitigating its adverse impacts (EITO, 2002).

Several challenges need to be considered in assessing environmental sustainability (EITO, 2002):

- The development and application of ICT through the economy and society is still relatively new considering other technologies

- ICT is becoming pervasive and enabling, and is advancing rapidly

- ICT is constantly giving rise to new social phenomena like the development of online communities

- New regulations and legislation are coming into force in response to the development of ICT

3.3 Sustainability Analysis Framework

To assess the impact of ICT on environmental sustainability, EITO (2002) propose a framework as laid out in Table 3.3-1. The framework shows a summary of the opportunities and impacts created by ICT for the three spheres of sustainability. The three spheres of sustainability that have been used are Environmental, Social and Economic, allowing for linkages across the triple bottom line. The effects of ICT have also been separated according to the different stages in their development and deployment. Effects are divided into First, Second and Third orders. Within each cell of the framework, key areas have been selected that demonstrates the extent of existing understanding while positive effects are listed along with negative effects.

		Impacts/opportunities sphere		
		First order *The impacts and opportunities by the physical existence of ICT and the processes involved.* *This includes the design manufacture, operation and disposal of ICT.*	**Second order** *The impacts and opportunities by the ongoing use and application of ICT.* *This includes E-business.*	**Third order** *The impacts and opportunities by the aggregated effects of large numbers of people using ICT over the medium to long term.* *This includes the changing nature of relationships between business and markets.*
Sustainability spheres	**Environmental**	**Design and manufacture of ICT equipment** **Operation of ICT equipment** **Disposal of ICT equipment**	**Increase and decrease in the use of transport** **ICT in business systems** **Virtualisation of material products** **Effects on product lifetimes** **Distribution and manipulation of environmental information**	**De-coupling economic growth and energy consumption** **De-coupling economic growth and carbon emissions** **Changing settlement patterns**
	Social	Job creation Digital Divide	Access to information Security challenges Access to better service New communities online Popular protest online	Cultural homogeneity or cultural diversity Building local communities Building civic culture
	Economic	Growth of ICT market Ongoing investment in ICT and in ICT research and development New types of organisations Boom and bust	Application of ICT within businesses New opportunities for SMEs Financial markets The relationship between business and the market	ICT and the "new economy": a new paradigm of growth Exclusion or inclusion?

Table 3.3-1: EITO framework for Analysis - EITO (2002:253,263,272)

3.3.1 Environmental Sustainability Analysis

Kohler and Erdmann (2004) and Casal *et al.* (2005) support the EITO (2002) conceptual framework that distinguishes between three levels of environmental impact of ICT. Kohler and Erdmann (2004) enhance the framework by classifying the First, Second and Third order effects as follows:

- First-order effects: Includes all environmental impacts resulting from ICT hardware during the product lifecycle, covering production, use, and disposal.

- Second-order effects: The use of ICT causes effects to other processes such as traffic or industrial production and influences their environmental impacts indirectly.

- Third-order effects: Owing to the assumed widespread use of ICT in daily life, economic structures and lifestyles can change, indirectly affecting the expression of first- and second-order effects.

The environmental effects and opportunities created by ICT under the First, Second and Third order impacts are listed below:

3.3.1.1 First Order Impacts

Under First order impacts, ICT production is a relatively lightweight industry which does not place as high a level of demand on natural resources as many other industries. Despite the use of toxic components, (for example, batteries in mobile telephones contain toxic metals such as lithium or cadmium, cathode ray tubes (CRT) in monitors contain large amounts of lead and high levels of toxicity, and many devices are coated with flame retardants that contain toxic compounds) a relatively low level of pollution in the production process exists (EITO, 2002). The manufacture of ICT equipment is resource intensive though, (for example, the production of the average computer chip requires 45.46 litres of water, used primarily for washing, with one chip plant in the USA being cited as using between 4.5 and 13.5 million litres of water a day (Pulver, 2001 in EITO, 2002), and a European Union (EU) study in 1998 proposed that the production of a personal computer, including materials, manufacture and distribution, would lead to the release of 0.19 tonnes of Greenhouse gases, 36 kg of overall waste and would require 3.6 Giga Joules (GJ) of energy (EITO, 2002)).

The new waves of technology are more energy efficient providing opportunity for organisations to reduce their energy use. However, in the operation and disposal of ICT, the environment is negatively impacted (for example, in 2000 the European Commission estimated that the EU produces six million tonnes of Waste Electrical and Electronic Equipment (WEEE) a year (EITO, 2002) while the annual amount of scrap from electronic equipment is estimated to be 2.1 metric megatons in the United States (US EPA, 2002 in Kohler and Erdman, 2004)), which can be mitigated to an extent through directives and legislation enforcing recycling and take-back schemes (EITO, 2002). Recycling technology is improving, becoming safer and increasingly

more efficient, which is assisting with current problematic disposal of ICT equipment (EITO, 2002).

3.3.1.2   Second Order Impacts

Under Second order impacts, the application of ICT has a more ambiguous effect on the environment, in that it may create efficiencies leading to a reduction in the amount of natural resources needed to support human activity – termed dematerialization by EITO (2002).

An increase and decrease in the use of transport is expected in the following areas:

- An increase in home deliveries as a result of E-Commerce will have significant environmental impact unless it is well co-ordinated (for example, a study by the National Economic Research Associates (2000) indicated that home shopping will reduce car-based shopping travel by 5% by 2005 and by 10% by 2010, but as delivery traffic and extended supply lines are factored in a different picture emerges. This is supported by a Netherlands study that predicted that if E-Commerce makes up 11.5% of retail sales by 2005, road traffic will increase by 17% (EITO, 2002)).

- Telework (remote working using the Internet to access office systems, teleconferencing and videoconferencing) reduces travel kilometres (km) for employees (for example, in a case study by Forsebäck (2000) a Swedish company with 200 employees reduced home-to-work travel by 74,000 km a year and Wilsdon and Miller (2001) report that a European telecommunications organisations has reported that in 2001 it had 4000 home-workers who, between them, save approximately 20 million commuter km per annum, equating to a saving of 1000 tonnes of carbon dioxide emissions).

- Telematics (efficient transport using ICT, using GPS tracking and wireless communications with access to the Internet) reduces traffic congestion and journey times, and therefore reduces pollution (EITO, 2002).

- Rebound effects (what people do with the resources saved from aspects like Telework and Telematics) will be experienced from increased leisure travel (EITO, 2002).

ICT is used in business systems where Business to Business (B2B) in E-Commerce and ICT-managed control systems creates efficiencies and reduces environmental impact. An example of this is efficiency programmes using heating, ventilation and air-conditioning control systems (EITO, 2002). The virtualisation of material products creates possible environmental savings from increased trade in intangibles like mp3 music and videos, and electronic books (EITO, 2002). These benefits are counteracted by de-virtualisation of printing out books and making copies of CDs (EITO, 2002). ICT has an effect on product lifetimes with some E-Commerce business models extending product lifetimes and some product development cycles being reduced by use of ICT, for example, an online auction house state that they put large amounts of buyers and sellers in contact with each other and that at any one time they have 30 million registered users and 5 million items for sale (EITO, 2002). The distribution and manipulation of environmental information is significantly enhanced by ICT, for example, ICT has been used to collect, collate and deliver data that shows evidence of environmental decline in the rainforests of Brazil, the amount of Greenhouse gas emissions in Europe and the reduction of the ozone over the Antarctic (EITO, 2002). The information assists decision and policy makers to carry out their work and put the environment on the agenda.

3.3.1.3   Third Order Impacts

Under Third order impacts, the aggregated effects of widespread use of ICT on the environment are difficult to identify and quantify without considering the effects of ICT on social and economic factors (EITO, 2002). The use and application of ICT, particularly dematerialization, telework, and E-Commerce could have far reaching effects on the patterns of human and industrial settlement. This creates two conflicting pressures, namely Agglomeration and Dispersion. Agglomeration can lead to a more compact settlement and fewer demands on natural resources. This is achieved through the effective use of ICT to use space more efficiently. For example, E-Commerce reduces the space needed for shops and offices and reducing traffic so better use can be made of car parks and roads (EITO, 2002). Dispersion can lead to a spreading out of activities and an increase in demands on natural resources. This can be the result of ICT reducing the need to congregate, with more people moving away from main centres into peripheral regions and still being able to do the same work (EITO, 2002).

3.4   Effects of ICT on the Environment

Kohler and Erdmann (2004) believe that present ICT has already become a serious threat to the environment. Three types of environmental risks or hazards caused by ICT products and infrastructures have been identified: global resource depletion, energy use, and the emission of toxic substances over the lifecycle of ICT. ICT has become a mass product and its share in electricity consumption has continuously increased during the past decades (Kohler and Erdmann, 2004). The rapidly growing amount of ICT equipment is causing increasing problems in the disposal or end-of-life phase of the electronic waste. Recycling or disposal of ICT equipment is an issue as electronic equipment includes a multitude of components causing human and ecological risks, such as heavy metals and halogenated organic compounds (Kohler and Erdmann, 2004). Inadequate disposal or recycling of electronic equipment causes the emission of toxic substances into water, soil and the air (Kohler and Erdmann, 2004).

The Institute for Prospective Technological Studies (IPTS) of the European Commission's Joint Research Centre commissioned a project "The future impact of ICT on environmental sustainability" to explore qualitatively and to assess quantitatively the way that ICT can influence future environmental sustainability (Arnfalk, Erdmann, Goodman and Hilty, 2004). The project measured environmental impact using six indicators, namely:

1. Greenhouse gas emissions

2. Energy intensity of the economy

3. Volume of transport to gross domestic product

4. Modal split of transport

5. Urban air quality

6. Municipal waste collected, landfilled and incinerated

The project also examined the share of renewable energy sources in electricity consumption (Arnfalk *et al.*, 2004).

The project highlighted eleven areas where ICT, and projected developments in ICT, have a significant effect on the environment (Arnfalk *et al.*, 2004). In Arnfalk *et al.* (2004), the areas were listed in order of significance:

1. ICT can be used for the rational use of heating energy. Heating accounts for roughly 30% of total energy consumption. The use of ICT applications for heat management should be prioritised.

2. ICT can be used to enable the shift from product centred industries to service centred industries. Energy can be saved through dematerialization effects.

3. ICT can be used for passenger transport efficiency.

4. ICT can be used for mobile work. Personal time will be saved; however, how that time will be spent is uncertain.

5. ICT can be used for freight transport efficiency. However, by making transport more cost efficient, ICT can create freight transport demand, with severe environmental effects, unless measures are taken to limit demand for transport.

6. ICT can contribute to material savings in industry. There is a considerable potential to save materials by more intelligent process control. What the response to material usage (or rebound effect) will be is uncertain.

7. ICT contributes to E-Waste, which can create problems in disposal or recycling. Ways to reduce E-Waste streams and slowing down the replacement of functioning ICT products by newer products are needed.

8. ICT can be used to manage distributed power plants. Although it is uncertain how much ICT can contribute to decentralised electricity production from renewable sources or small Combined Heat and Power (CHP) devices.

9. Teleshopping can create additional packaging waste and additional freight transport, which may counterbalance the passenger transport saved.

10. Virtual meetings can save passenger transport, which pays off for long distances and is much more effective than telework in environmental terms.

11. ICT consumes electrical energy and could dramatically increase its share in the near future. However, this effect is not the most significant compared with the others mentioned in this list (positive or negative).

ICT will encroach more and more on daily life, leading to an ever-higher environmental effect occurring over the whole lifecycle of the products affected (Kohler and Erdmann, 2004). Kohler and Erdmann (2004) believe that consumption of scarce raw materials for the production of electronics and the energy consumption of stationary infrastructure may increase. Furthermore, pervasive computing will change electronic waste streams in their amount and quality - Kohler and Erdmann define pervasive computing as "…a vision of future applications of ICT in which highly miniaturized, embedded, networked microprocessors equipped with sensors pervade our daily lives" (Kohler and Erdmann, 2004:831). Kohler and Erdmann (2004) are concerned that if no adequate solution is found for the end-of-life treatment of the electronic waste generated by millions of very small components, precious raw materials will be lost and pollutants will be emitted to the environment. Greater challenges may arise in developing countries without well-developed systems of waste treatment and recycling, as these countries are increasingly used as "dumping grounds" for old technologies. An increasing concentration of electronic waste in household waste streams will aggravate waste-related impacts on the environment and health (Kohler and Erdmann, 2004).

A greater understanding of the role of ICTs in environmental sustainability is required in order to increase the positive impact of ICT on the environment. Casal *et al.* (2005) believe a holistic approach is needed that encompasses the following areas:

- E-Materialisation: the shift from products to services, dematerialisation and re-materialisation

- Intelligent transport systems' impact on increasing transport performance and promoting a shift from passenger car to public transport

- ICT equipment's electricity consumption in the domestic and tertiary sector

- Efficiency in electricity production and supply

- ICT supported facility for the management of energy savings

- The use of virtual utility promoting renewable energies

- ICT supported systems for recovery and recycling of municipal solid waste in general

- Waste from electrical and electronic equipment in particular

3.5   Conclusion

The intensified use of ICT now, in the future and in the era of pervasive computing might result in certain advantages to the environment, specifically efficiencies resulting from ICTs being applied to business processes. Intensified use of information services instead of physical goods can contribute to higher ecological efficiency in economics and consumption. Although ICT could bring a potential for dematerialization, it has to be expected that energy and resource savings will not be realisable in every case due to a growth in demand that will counteract any savings (rebound effects). Policies that exploit the environmental opportunities of ICT and pervasive computing, while avoiding the risks at an early stage of technological and market development, are needed.

Chapter 4: Assessment Tool

Chapter Three analysed the impacts of ICT on environmental sustainability. This chapter describes the assessment tool to be used to assess the extent of environmental sustainability reporting in annual reports.

4.1 Introduction

This chapter describes the assessment tool to be used to assess environmental sustainability reporting. The tool is based on the GRI G3 draft guidelines and the JSE SRI index. The tool comprises two parts: The first part assesses the disclosure of an organisation's management approach to the seven (7) core environmental aspects and focuses on evidence on the relevant context, management practices, operational responsibilities, awards, non-conformances, environmental policies and environmental goals of the reporting organisation. The second part measures the reporting performance of the organisation against nine (9) environmental aspects containing thirty (30) environmental performance indicators. The results of the application of the assessment tool highlight areas of significant environmental reporting in the particular industry as well as those areas that have little or no bearing on the particular industry that is being assessed.

4.2 Developing the Tool

The tool is designed to be generic to all industries and is used to measure the extent of environmental reporting of organisations in any particular industry (for example, the ICT sector) that disclose their performance through annual reporting. The tool does not consider other aspects of triple bottom line reporting, for example, economic and social aspects. Environmental reporting is typically part of an organisation's annual reporting. The content of the environmental report could be a standalone sustainability report or part of the organisation's annual report. Publicly listed organisations in South Africa are expected to make their annual reports available to the public. Typically these can be found in electronic form on the individual organisations' web sites. The tool evaluates report content and the quality of the reported information as well as standard disclosures through performance indicators. It is important to note that the tool only evaluates what evidence is present in the annual report or sustainability report and not what the actual practices are of the reporting organisation.

The tool is based on the GRI G3 draft guidelines and the JSE SRI index. The GRI guidelines were selected due to their internationally accepted presence and the JSE SRI index was selected due to the relevance to the South African environment. The

GRI is an organisation that promotes sustainability reporting and the guidelines have been developed through a multi-stakeholder consultative process involving representatives from reporting organisations and report information users from around the world (GRI, 2006b). The GRI guidelines and framework are created and continuously updated using a series of multi-stakeholder working groups that are tasked with revising existing content or developing new content (GRI, 2006c). The representatives on the working groups are from all parts of the world and are from different professional backgrounds, including business, civil society, investment, labour, accounting and academia (GRI, 2006c). The JSE SRI index is used to identify those organisations listed on the JSE that integrate the principles of the triple bottom line into their business activities (JSE, 2004). The SRI index is constituted from organisations that form part of the FTSE/JSE All Share Index which meet set criteria (JSE, 2004). The FTSE Group is an index company that calculates over 100,000 indices covering more than 48 countries and all major asset classes (FTSE, 2005). The criteria are determined by the JSE in consultation with the SRI Index Advisory Committee and are periodically reviewed to reflect the ongoing development of sustainability (JSE, 2004).

In January 2006, the GRI released a set of draft guidelines called the G3 guidelines, so called as they are the third generation of guidelines to be developed (GRI, 2006c). G3 are an update and upgrade of the G2 guidelines released in 2002. The final G3 guidelines are expected to be released in October 2006 (GRI, 2006c). The draft G3 guidelines were chosen for the tool over the G2 guidelines as it is expected that the tool will be easier to adjust from the draft guidelines than the soon-to-be outdated G2 guidelines.

The tool consists of two separate sections, Part 1 and Part 2.

4.3   Assessment Tool - Part 1:

Part 1 assesses the disclosure of the organisation's management approach to the following seven environmental aspects:

1. Materials

2. Energy

3. Water

4. Biodiversity

5. Emissions, Effluents and Waste

6. Products and Services

7. Transport

Part 1 consists of questions which can be answered either as "Yes" or "No", with an option of "Not Applicable" where necessary. Part 1 focuses on evidence on the relevant context, management practices, operational responsibilities, awards, non-conformances, environmental policies and environmental goals of the reporting organisation. For each of these focus areas, the following disclosures are examined and marked with a "Yes" or a "No" (and where necessary "Not Applicable"):

Relevant Context: The report has a significant environmental report component and, if it does not, reasons are provided for no significant reporting. The report discloses any other relevant information required for the user to understand organisational performance, including:

- Key successes and shortcomings

- Major organisational risks and opportunities related to environment issues

- Major changes in the reporting period to systems or structures to improve performance

Operational responsibilities: The report identifies the most senior position with operational responsibility for environment areas. How operational responsibility is divided at the senior level for environment areas is explained.

Management practices: The key elements of management's approach are identified. The presence of an Environmental Management System is noted, as is adherence to any certified standards like ISO 14001. The percentage of operations covered by certifications is also indicated.

Awards: The report indicates relevant awards related to performance on environmental issues that the organisation has received from external parties.

Non-conformances: The report indicates the total amount and number of environment related civil and criminal fines and other penalties assessed against the

organisation. The response to resolve any issue for which significant fines were paid is reported.

Environmental policies: The report has a brief organisation-wide policy (or policies) that define the organisation's overall commitment on the seven environmental aspects. A "Yes" / "No" score for each of the aspects is assigned.

Environmental goals: The report lists the organisation-wide goals set regarding performance against the seven environmental aspects. A "Yes" / "No" score for each of the aspects is assigned.

4.4　Assessment Tool - Part 2:

Part 2 measures the reporting performance of the organisation. Each of the seven environmental aspects, plus two additional aspects, Transport and Overall, is measured in terms of core and additional indicators. The core indicators are considered to be material and should be reported fully on, unless demonstrated otherwise. Materiality is the threshold at which an indicator becomes sufficiently important that it should be reported (GRI, 2006b). Additional indicators provide an opportunity for organisations to report on less material issues and can be used to indicate priority of aspects. The indicators are shown in the third column in Table 4.4-1. In the tool, the core indicators are in bold type while the additional indicators are in normal type. Each of the environmental indicators is given a number prefixed by EN. The indicators range from EN 1 to EN 30. For each indicator, there is a description of the indicator. The aspects, indicator number and descriptions are listed again in Table 4.4-1.

Aspect	Indicator number	Core indicators in Bold face Additional indicators in normal type face
Materials	**EN 1**	**Weight of materials used**
	EN 2	**Percentage of materials used that are recycled**
Energy	**EN 3**	**Direct energy consumption broken down by primary energy source.**
	EN 4	**Indirect energy consumption broken down by primary source**
	EN 5	**Percentage of total energy consumption met by renewable resources.**
	EN 6	**Total energy saved due to conservation and efficiency improvements**
	EN 7	Initiatives to provide energy-efficient products and services
	EN 8	Initiatives to reduce indirect energy consumption.
Water	**EN 9**	**Total water withdrawal by source.**
	EN 10	**Water sources and related habitats significantly affected by withdrawal of water**
	EN 11	Percentage and total volume of water recycled and reused.
Biodiversity	**EN 12**	**Location and size of land owned, leased, or managed in, or adjacent to, protected areas.**
	EN 13	**Description of significant impacts of activities on protected areas.**
	EN 14	Area of habitats protected or restored.
	EN 15	Programs for managing impacts on biodiversity
	EN 16	Number of IUCN Red List species with habitats in areas affected by operations broken down by level of extinction risk
Emissions, Effluents and Waste	**EN 17**	**Greenhouse gas emissions.**
	EN 18	**Emissions of ozone-depleting substances.**
	EN 19	**NO_x, SO_x, and other significant air emissions by weight**
	EN 20	**Total amount of waste by type and destination**
	EN 21	**Total water discharge and quality**
	EN 22	**Total number and volume of significant spills**
	EN 23	Other relevant indirect greenhouse gas emissions.

	EN 24	Weight of transported, imported, or exported waste deemed hazardous under the terms of the Basel Convention Annex I, II, III and VIII.
	EN 25	Water sources and related habitats significantly affected by discharges of water and runoff.
Products and services	**EN 26**	**Initiatives to manage the environmental impacts of products and services and extent of impact reduction.**
	EN 27	**Percentage of products sold that is reclaimed at the end of the products' useful life by product category**
Compliance	**EN 28**	**Incidents of, and fines or non-monetary sanctions for, non-compliance with applicable environmental regulations**
Transport	EN 29	Significant environmental impacts of transportation used for logistical purposes.
Overall	EN 30	Total environmental protection expenditures by type

Table 4.4-1: Environmental aspects and performance indicators (GRI, 2006b)

Each of the indicators is associated with a register of protocols which become the criteria against which to assess the performance of the report. For each indicator, a score must be assigned against the set criteria. One of five (5) options is used to score each indicator, namely "None", "Partial", "Full/Complete", "Exceeding" and "Acceptable Omission". The scale used to assess the level of reporting is contained in Table 4.4-2. The levels of reporting, except the "Acceptable Omission", are adapted from the levels used by the JSE SRI index to score organisations that qualify for the SRI index.

Score	Level of reporting against set criteria
0	**None:** *No evidence in report*
1	**Partial:** *Evidence exists that objectives are being partially reported on as set out by the criteria. At least 1 protocol reported.*
2	**Full / Complete:** *Objectives / systems are being reported on, fully meeting the level set by the criteria. At least 2 protocols reported.*
3	**Exceeding:** *Objectives / systems are reported on, exceeding the level set by the criteria. All protocols reported.*
AO	**Acceptable Omission:** *Indicator not reported on, but an acceptable reason is provided*

Table 4.4-2: Performance indicators score criteria

An example of protocols associated with indicator EN 1 is shown in Table 4.4-3. The complete set of protocols associated with each indicator is contained in Appendix D. To score an indicator for a particular report, the content of the report is compared to the protocols listed for the indicator and the protocols matched or partly matched are ticked. The number of ticks for the indicator is summed and this result is the score for the indicator. There are three protocols for each indicator and the protocols within an indicator generally build on the preceding protocol of that indicator. As per Table 4.4-2, the maximum score is a "3" and the minimum score is a "0".

Env aspect	Indicator number	Indicator	Protocols
Materials	**EN 1**	**Weight of materials used**	Report identifies materials used, including materials purchased from external suppliers, non-renewable materials and major materials used. *This can include: Associated process materials (i.e. materials that are needed for the manufacturing process, but are not part of the final product such as lubricants for manufacturing machinery); Semi-manufactured goods or parts, including all forms of materials and components other than raw materials that are part of the final product; Materials for packaging purposes.*
			Report states the total weight of materials used (metric tonnes) in terms of direct materials and non-renewable materials.
			Report states how materials used were obtained and what is being done to minimise environmental damage

Table 4.4-3: Protocols for Indicator EN 1 (GRI, 2006d)

If there is no evidence of reporting for the indicator, the indicator scores a "0". If the report has evidence of at least one of the relevant protocols, the indicator scores a "1". If the report has evidence of at least two protocols, the indicator scores a "2". If the report has evidence that all the protocols have been reported, the indicator scores a "3". If the report indicates with acceptable reasons why there is no report, the indicator is allocated an "AO". There is only one score for each indicator. In other words, an indicator cannot be scored as both "Partial" and "Full". The score allocated should always coincide with the highest level of performance.

For each of the indicators not reported on, an explanation stating the reason for the omission must be provided. The GRI (2006e) suggest guidelines for "Acceptable Omission". Some examples of explanation of omissions that are not acceptable include: "*not included*" and "*not reported*". Some examples of explanations that are considered incomplete: "*not available*" and "*discussed elsewhere*". The incomplete examples need to be supported by further explanations: *"not available due to lack of data systems to generate the required information, aim to report on this indicator in*

2006" and *"discussed elsewhere"* (including the exact hyperlink or page number to other reference material where the information seeker may find the data). Some examples of explanation of omissions that are acceptable include: *"protection of proprietary information"* and *"the indicator is determined not relevant to the reporting organisation <and a description within the report of the multi-stakeholder process used to draw conclusions on report content>"*. In providing these explanations, reporting organisations should indicate their future reporting plans, if any, relative to each excluded indicator. Indicators omitted for the same reason may be clustered and linked to the relevant explanation.

4.5   Expected Results of the Research

It is expected that the research will determine environmental aspects that are being significantly reported on, as well as those that have little or no bearing on the particular industry that is being assessed. This will highlight trends for the particular industry. Each industry will have significant, specific and in some cases unique impacts on the environment. A theoretical study of a particular industry's impact on the environment will highlight significant areas of impact and thus identify core indicators for the industry to report on. The results of the research and a theoretical study will highlight common areas of significant reporting and highlight the environmental aspects that should be significantly reported on. This information could be incorporated into the further development of sector specific GRI guidelines.

Other results expected will be issues (global pressure, local legislation, international certifications, and supply chain directives) that drive organisations to report on their environmental impact.

4.6   Conclusion

This chapter described the assessment tool that will be used to assess the environmental sustainability reporting. The tool is based on the GRI G3 draft guidelines and the JSE SRI index. The tool consists of two separate parts. Part 1 focuses on evidence on the relevant context, management practices, operational responsibilities, awards, non-conformances, environmental policies and environmental goals of the reporting organisation. Part 2 measures the reporting performance of the organisation against nine (9) environmental aspects which contain

thirty (30) environmental indicators altogether. The expected results from using the tool should indicate which of the environmental aspects are being significantly reported on, as well as those that have little or no bearing on the particular industry that is being assessed.

Chapter 5: Research Methodology

Chapter 4 described the assessment tool to be used in the research. This chapter describes the research methodology inclusive of the research approach, sources of data, treatment of the data and presentation of the results.

5.1   Introduction

This chapter describes how the research is to be conducted. It describes the sector to be assessed using the assessment tool described in Chapter 4. A document analysis is used as a methodology to research the data. The sources of data, treatment of the data and presentation of the results are described.

5.2   Methodology

5.2.1 Document Analysis

The research method employed is Evaluation Research with a document analysis of organisation's 2005 annual reports against the assessment tool described in Chapter 4 (Babbie and Mouton, 2004). The research is situated within a Post-positivist orientation paradigm (Guba and Lincoln, 1994). It includes critical realism to get as close to reality as possible, but perhaps never quite getting there (Guba and Lincoln, 1994). The research takes an objective stance on the analysis and achieves approximate knowledge through a quantitative and qualitative approach (Guba and Lincoln, 1994).

The data collection and analysis is done via an assessment of only the environmental sustainability portion of the target group's 2005 annual reports. The relevant section of the reports is assessed against the research assessment tool. The objective is to assess the level of environmental sustainability reporting evident in the target groups' 2005 annual reports.

5.2.2 Research Process

The reports are downloaded from the relevant organisations' web sites. Each report is assessed as follows:

1. Read through report to understand the context of the organisation.

2. Write a short summary of the organisation's operations.

3. Read through report again and identify and highlight areas that are relevant to environmental reporting.

4. Write a summary of the organisation's environmental reporting. Identify:

   a. what areas are being reported on,

      b.   whether or not environmental management systems are being used,

      c.   what areas of operation have been identified by the organisation as having significant impacts on the environment,

      d.   what initiatives have been implemented or planned to reduce environmental impact,

      e.   any factors that are driving reporting, and

      f.   what indicators have been reported on.

5. Apply the assessment questionnaire contained in Appendix D to the report.

6. Record the scores in a spreadsheet.

7. Analyse the data for reporting trends.

5.3   Population

The publicly listed South African ICT sector is the population of intent, but following preliminary data analysis of this sector, a selection of the international ICT and service sectors is also considered.

5.3.1 South African ICT Sector

The publicly listed South African ICT sector, as previously indicated, has been reported as lagging behind other sectors with regard to sustainability reporting. A suitable tool was designed to assess this industry and was described in Chapter 4. The 2005 annual reports were chosen as the documents to assess as opposed to the 2006 reports of which only a small percentage were available during the research. The South African ICT sector is divided into two main sections, namely Information Technology and Telecommunications, and consists of twenty-four (24) organisations. Each of these sections is further sub-divided into two sections each:

- Information Technology
    - o Software & Computer Services (ITSW)
    - o Hardware (ITHW)
- Telecommunications
    - o Fixed Line (TF)
    - o Mobile (TM)

5.3.2 Selected International ICT and Services Sectors

Preliminary data analysis of the South African ICT sector showed that limited evidence of environmental reporting was found in the South African ICT sector reports. Reports from international organisations from the ICT sector were selected to be assessed using the assessment tool. The reports were selected from the list of "In Accordance" with the GRI G2 guidelines reports maintained by the GRI. The reports selected were generally from large organisations in developed economies.

5.4 Presentation of the Research Data

A narrative of each individual organisation is recorded. This narrative includes a brief description of the nature of the reporting organisation's operations, for example, the types of services and products it provides. This is followed by a summary of the organisation's environmental sustainability reporting, which includes:

- What areas are being reported on

- Whether or not environmental management systems are being used

- What areas of operation have been identified by the organisation as having significant impacts on the environment

- What initiatives have been implemented or planned to reduce environmental impact

- What factors that are driving reporting

- What environmental aspects and indicators have been reported on

The results of the assessment questionnaire are divided into two parts. Part 1 focuses on organisational management issues and is further sub-divided into seven (7) sections, namely

- Relevant Context

- Operational Responsibility

- Management Practices

- Awards

- Compliance

- Environmental Policies

- Environmental Goals

Part 2 focuses on environmental performance indicators and is further sub-divided into seven (7) sections, namely

- Materials

- Energy

- Water

- Biodiversity

- Emissions, Effluents and Waste

- Products and Services

- Compliance, Transport and Overall

Commentary is provided on each section which is supported by a histogram graph for each question within the relevant section.

A summary of the entire sector is provided, which includes the highlights and lowlights, as well as any trends that may be present.

5.5   Conclusion

The South African ICT sector is lagging behind other sectors with regards to sustainability reporting. This research, using a suitably designed tool, assesses the extent of the environmental sustainability reporting in this sector. The results of the data are graphically displayed and commented on to provide an overall assessment of the South African ICT sector and selected international ICT organisations.

Chapter 6: Results

Chapter 5 described the research methodology and the manner in which the environmental sustainability reports are to be assessed. This chapter describes the population and sample, and presents the results of the assessment. The assessment of the South African ICT sector as a whole indicates little or no significant environmental reporting. The assessment of the selected international reports indicates a far more mature and significant level of reporting.

6.1 Introduction

This chapter describes the results of the assessment of the sustainability reports and describes the population and sample used in the assessment. The initial population and sample was the publicly listed South African ICT sector. An additional set of international "GRI In Accordance" reports was also assessed. The chapter divides the presentation of the results into two parts, the South African ICT sector and the international sector. Within each section a qualitative narrative summary of each the reports is provided followed by a quantitative analysis of the reports as a whole. Finally, a comparison between the two sets of reports is listed. The South African ICT sector population was found to be significantly lacking in environmental sustainability reporting. The selection of international reports was found to have a significant level of environmental sustainability reporting.

6.2 Population and Sample

The South African ICT sector is divided into "Information Technology" and "Telecommunications" sections. Each of these sections is further sub-divided into two sections each:

- Information Technology

  o Software & Computer Services (ITSW)

  o Hardware (ITHW)

- Telecommunications

  o Fixed Line (TF)

  o Mobile (TM)

The publicly-listed South African ICT sector comprises twenty-four (24) organisations. Eighteen (18) are from the ITSW section, two (2) are from the ITHW section, one (1) from the TF section and three (3) from the TM section. Two of these organisations have been suspended, one from ITSW (Top Info Technology Holdings Ltd.) and one from TM (Shawcell Telecommunications Ltd.), and the reports from these two organisations were not considered. All reports were available in electronic form on the organisations' web sites, except for one ITSW organisation – Vesta Technologies Ltd. Attempts to obtain the report via e-mail and via post proved unsuccessful. As such twenty-one (21) reports were assessed. The full list of

organisations listed in the ICT sector on the South African JSE Securities Exchange is listed in Table 6.2-1. Added to the list is the organisational web site from which the reports were downloaded.

Information Technology - Software & Computer Services	
Business Connexion Group Ltd	http://www.bcx.co.za/
Bytes Technology Group Ltd	http://www.btgroup.co.za/
Compu-Clearing Outsourcing Ltd	http://www.compu-clearing.co.za/
Datacentrix Holdings Ltd	http://www.datacentrix.co.za/
Datatec Ltd	http://www.datatec.co.za/
Dimension Data Holdings plc	http://www.dimensiondata.com/za/
Enterprise Outsourcing Holdings Ltd	http://www.eoh.co.za/
ERP.com Holdings Ltd	http://www.erpcom.co.za/
Faritec Holdings Ltd	http://www.faritec.co.za/
Gijima AST Group Ltd	http://www.ast.co.za/
Idion Technology Holdings Ltd	http://www.idion.co.za/
InfoWave Holdings Ltd	http://www.infowave.co.za/
Paracon Holdings Ltd	http://www.paracon.co.za/
Spescom Ltd	http://www.spescom.co.za/
Square One Solutions Group Ltd	http://www.sq1.co.za/
Top Info Technology Holdings Ltd	(Suspended)
UCS Group Ltd	http://www.ucs.co.za/
Vesta Technology Holdings Ltd	no report available
Information Technology - Information Technology Hardware	
Mustek Ltd	http://www.mustek.co.za/
Pinnacle Technology Holdings Ltd	http://www.pinnacle.co.za/
Telecommunications - Fixed Line Telecommunications	
Telkom SA Ltd	http://www.telkom.co.za/
Telecommunications - Mobile Telecommunications	
Allied Technologies Ltd	http://www.altech.co.za/
MTN Group Ltd	http://www.mtn.co.za/
Shawcell Telecommunications Ltd	(Suspended)

Table 6.2-1: List of organisations in the JSE ICT sector (Sharenet, 2006)

While assessing the reports, it became apparent that limited evidence of environmental reporting was found in the South African ICT sector reports. It was decided to consider reports from international organisations from the ICT and service

sectors. Six organisations were chosen, listed in Table 6.2-2, to be assessed using the assessment tool. The six (6) reports were selected due to their "In Accordance" status with the GRI G2 guidelines. Added to the list is the organisational web site from which the reports were downloaded. As expected from "In Accordance" reports these international reports were rich in evidence of environmental reporting.

Services	
GRI	http://www.globalreporting.org/
Telecommunications	
BT Group plc	http://www.bt.com/
Telefónica SA	http://www.telefonica.com/
Computers	
HP company	http://www.hp.com/
Intel corp.	http://www.intel.com/
IBM corp.	http://www.ibm.com/us/

Table 6.2-2: International In Accordance reports

6.3   Assessment Results

The assessment results are divided into two sections namely the South African ICT sector and the international selection. Each section is introduced with a brief summary of the reports, followed by a qualitative report narrative on each organisation, followed by quantitative summary, using charts, of the section as a whole.

6.3.1 South African ICT Sector 2005

The twenty-one (21) South African ICT 2005 reports that were assessed indicated that they were being driven to report by the King II code of conduct on corporate governance which encourages reporting to their stakeholders not only on their economic performance, but also on their environmental and social performance – termed sustainability reporting. The reports support economic performance and showed a substantial effort in social performance, but were generally lacking in reporting on environmental performance. The sustainability reporting that was present was dominated by HIV/AIDS related programmes and initiatives, Corporate Social Investment (CSI) programmes and initiatives, community training, employment equity and Black Economic Empowerment (BEE) successes. These are all critical issues that need to be dealt with in South Africa.

The report narratives of each of the twenty-one (21) reports are listed followed by summary charts consisting of histograms for each of the questions asked, after which a dialogue on the summary results is presented.

6.3.1.1 Report Narratives

The report narratives of each of the twenty-one (21) reports are categorised by ITSW, ITHW, TF and TM, and are listed below.

6.3.1.1.1 Information Technology Software & Computer Services (ITSW)

Business Connexion Group Ltd (BCX)

BCX provides business solutions based on ICT and they have offices in all major centres throughout South Africa. The company has more than 4 000 employees. Their solutions are developed and implemented by drawing on expertise from their supporting competencies: technology infrastructure, business applications, professional services and outsourcing.

BCX reports that it runs mission-critical ICT systems for JSE-listed organisations and manages products, services and solutions for public sector organisations, parastatal organisations and medium sized emergent organisations.

BCX reports that corporate governance remains a key focus and that the fundamental requirements of King II report and other global governance standards are continually reviewed by their board. It reports that it strives to be an early adopter of these standards and that they should add meaningful value to the group's initiatives in this regard.

BCX has recycling and waste separation programmes in place.

No goals are reported on and thus no performance against the goals is reported.

Bytes Technology Group Ltd (BTG)

BTG provides a broad range of products, technical skills and specialised services to support enterprise-wide IT infrastructure and telecommunications across Africa and in the United Kingdom.

BTG offers several services: managed and outsourced services (programme management office, service level management, change management, problem

management, configuration management and third party vendor management, ICT infrastructure support, call centres, business process outsourcing, specialist skills outsourcing), software licensing, site services, support (the provision of contractual or ad hoc support services based around manufacturer-backed helpdesk, remote network management and short-term onsite skill requirements), strategic business consultancy, platform consultancy, project services, storage solutions, people solutions and product supply.

BTG have a separate sustainability report in which they state that their reports are prepared in accordance with the guidelines of the GRI. They report that their environmental impact is minimal in comparison to manufacturing or mining industries.

BTG report that they have a waste paper recycling program, safe battery disposal and initiatives to convert electricity powered fences to solar-powered fences. They report that energy consumption is for basic office use and water consumption is for office cleaning and drinking. They indicate that they have no impact on ground water withdrawal, no impact on biodiversity, protected areas, heritage sites, fresh water resources or related ecosystems.

BTG have a GRI content index which indicates their performance against the GRI indicators.

No goals are reported on and thus no performance against the goals is reported.

Compu-Clearing Outsourcing Ltd

Compu-Clearing provides IT products and services to South Africa's customs clearing, freight forwarding, air cargo and related industries. They focus on providing information technology solutions, along with technology.

Compu-clearing offers no reporting on their environmental impact.

No goals are reported on and thus no performance against the goals is reported.

Datacentrix Holdings Ltd

Datacentrix operates as a technology reseller, and business solutions and services provider in South Africa.

Datacentrix offers large-scale IT infrastructure hardware and software solutions, provides a wide range of business solutions and related services to the enterprise market and offers service accreditations.

Datacenrix does not report on its environmental impacts as it claims its operations have no discernable impact on the environment.

No goals are reported on and thus no performance against the goals is reported.

Datatec Ltd

Datatec is an international networking and IT services company. They focus on investing in and developing lines of business which are complementary to its positioning as a networking, integration service provider and consultancy group.

Datatec report that they have a formal environmental policy and indicate that they are a predominantly office and warehouse based operation.

Datatec's environmental objectives are to:

- Minimise waste, energy use and transport impacts

- Comply with legal requirements

- Maximise understanding of environmental issues

- Purchase environmental sensitive products

- Support environmental initiatives

No goals are reported on and thus no performance against the goals is reported.

Dimension Data Holdings plc (Didata)

Didata plans, builds, supports and manages IT infrastructure solutions for clients. They focus on connecting businesses, their customers, partners and suppliers over local and wide area networks. Their solution line of business includes converged communications, customer interactive solutions – including contact centre technologies, data centres and storage, operating environments and messaging and security.

Didata report that they have an environmental policy. They have recycling initiatives for paper, boxes, toner cartridges and the environmentally safe disposal of computer

equipment. They report that they have water and electricity conservation programmes. No goals are reported on and thus no performance against the goals is reported.

Enterprise Outsourcing Holdings Ltd (EOH)

EOH operates as an integrated business in consulting (strategic and business process consulting program and project services, change management, supply chain optimisation, education, IT strategy, advice on enterprise architecture, IT governance and risk management), technology (sell, implement and support business applications including ERP, CRM, business intelligence, advanced planning and scheduling, E-Commerce, manufacturing execution systems and technology performance management solutions), and outsourcing (maintenance and support of client's IT infrastructure and applications).

EOH do not report on their environmental impact. However they report that they have a manager responsible for ensuring compliance with environmental legislation.

No goals are reported on and thus no performance against the goals is reported.

ERP.COM Holdings Ltd

ERP.COM brings together the implementation, integration and management of enterprise wide IT solutions in an E-Business environment. They focus on enterprise applications (SAP), content and data management (Knowledge management solutions) and information security.

ERP.COM report that their activities do not pose a significant threat to the environment. They report that their board is responsible for environmental policy issues.

No goals are reported on and thus no performance against the goals is reported.

Faritec Holdings Ltd

Faritec is an IT services and solutions company, providing managed business and technology infrastructure solutions for clients.

Faritec do not report on their environmental impact.

No goals are reported on and thus no performance against the goals is reported.

Gijima AST Group Ltd

Gijima AST offers service delivery options in the infrastructure, solutions, system integration and networking arenas. Gijima AST has market penetration in the manufacturing, mining, telecommunications and financial services markets, as well as national and provincial government departments and parastatals. They develop vertically integrated, industry-focused solutions for their clients. They focus management consulting, technology consulting, ICT plan/build assignments, ICT run solutions, hosting services and business services.

Gijima AST do not report on their environmental impact.

No goals are reported on and thus no performance against the goals is reported.

Idion Technology Holdings Ltd

Idion is a technology investment holding company. Its operating subsidiary, Vision Solutions International, Inc, is a vendor of high availability software and services. Vision provides solutions to support application and data availability on server platforms. Vision services industries like banking, finance, government, education, healthcare, distribution, manufacturing, transportation and telecommunications.

Idion reports that it does not report on environmental management policies as it believes the organisation operates in an entirely office-based environment.

No goals are reported on and thus no performance against the goals is reported.

InfoWave Holdings Ltd

InfoWave is a South African software development company offering solutions using Oracle and Java technology. They specialise in the implementation and support of their own applications, in custom-built solutions, niche software products, system integration services and IT support services to complement their clients' in-house IT departments. They also provide full IT outsourcing, particularly in remote areas.

InfoWave report that as a service organisation their business does not have any significant impact on the immediate environment. They report that they have a paper recycling programme.

No goals are reported on and thus no performance against the goals is reported.

Paracon Holdings Ltd

Paracon is an international company providing IT services and solutions. Paracon focuses on business solutions using technology and resourcing by providing organisations with skilled IT resources.

Paracon report that due to the nature of the organisation as a service provider they do not lend themselves to environmental reporting. They report that they have initiatives to reduce the use of paper and to recycle paper.

No goals are reported on and thus no performance against the goals is reported.

Spescom Ltd

Spescom is a provider of ICT to the global market, with products and solutions that manage information and connect businesses to the networked knowledge economy. They operate in the connectivity and enterprise content management markets.

Spescom report that they adhere to a triple bottom line philosophy which includes effects on the environment. However, no evidence exists of environmental reporting.

No goals are reported on and thus no performance against the goals is reported.

Square One Solutions Group Ltd

Square One is a South African IT solutions provider. They focus on infrastructure security solutions, integrated mobile solutions, enterprise storage solutions, enterprise policy solutions, infrastructure optimisation solutions, coding and marking solutions, channel services solutions, enterprise power and facility solutions, lawful intercept solutions, telecommunications and service provider solutions, finance and rental services.

Square One reports that its operations that deal with specialist chemicals and solvents, follow international guidelines and regulations (like ISO 14001) to maximise safety of the environment.

No goals are reported on and thus no performance against the goals is reported.

UCS Group Ltd

UCS is an investment holding company for a group of IT businesses focused on the provision of software solutions and outsourcing services in the retail and other niche

markets. Customers include apparel, furniture, food and speciality retailers and quick service restaurants.

UCS does not report on their environmental impact.

No goals are reported on and thus no performance against the goals is reported.

6.3.1.1.2 Information Technology - Hardware (ITHW)

Mustek Ltd

Mustek is an assembler and distributor of personal computers (PCs), notebooks and related products. The group's PC and notebook division, Mecer, is one of South Africa's PC brands. Other divisions within Mustek support the PC assembly operation by importing and distributing components and peripherals, or providing networking and specialised services.

Mustek report that their operations and activities fall within the scope of their Quality Management System (QMS) which conforms to ISO 9001 standards. They report that they are in the process of achieving full compliance with the revised ISO 14001 standard across their operations.

Mustek report on their impact on the environment through the following indicators:

- Materials: Mustek recognise the damaging material used in computer manufacture and are looking to ways to reduce environmentally harmful materials.

- Energy: They purchase electricity from local municipalities and that it is only used for domestic consumption. Their energy use is reported in kilowatts (kW).

- Water: They purchase water from local municipalities and that it is only used for domestic consumption. Their water use is reported in kilolitres (kl).

- Impact on biodiversity: There were no instances of non-compliance with their operations reported.

- Emissions, effluents and waste: They categorise their waste as follows; hazardous (computer waste, non-recyclable waste) and non hazardous (recyclable waste, non-recyclable waste, recyclable computer waste).

- Transport: Mustek report that they have started monitoring fuel consumption.

Mustek reports that they strive to comply with national environmental legislation (NEMA[3]) through a service provider and are also aiming to be in accordance with international directives like those from the European Union.

No goals are reported on and thus no performance against the goals is reported.

Pinnacle Technology Holdings Ltd

Pinnacle is an assembler and distributor of PCs, notebooks and related products. Pinnacle provides infrastructure and support, software and storage, ICT services and telecommunication services (delivery of telecommunication hardware platforms) for the IT market in Southern Africa.

Pinnacle do not report on their environmental impact.

No goals are reported on and thus no performance against the goals is reported.

6.3.1.1.3 Telecommunications – Fixed Line (FL)

Telkom SA Ltd

Telkom is a telecommunications services provider and offers fixed line, voice and data services, branded as Telkom, and mobile communications services through Vodacom.

Telkom report that their sustainability reporting is guided by the King II Report 2002, the JSE SRI index and the BEE Charter for the ICT sector (the ICT Charter). They indicate that their report was recognised as an outstanding performer in 2005 by the JSE SRI index.

Telkom has a separate section of their annual report dedicated to sustainability reporting. They report efforts are being made to track and measure performance in environmental management. Telkom believe that their largest contributing factors to environmental impacts are waste management and the visual implications of the network infrastructure.

Telkom report that no contraventions or penalties for environmental non-conformances were recorded during this fiscal year, that they have an ISO 14001

[3] NEMA – National Environmental Management Act

accredited EMS, and that they have implemented energy and water management programmes to recover, reduce and recycle where possible.

Telkom report on the following indicators:

- Energy consumption in Giga Joules (GJ)

- CO_2 emissions in metric tonnes (tonnes)

- Recovered waste in tonnes

- SO_x and NO_x emissions in tonnes

- Water consumption in kl

Telkom report that they have a conservation project to manage the invasion of Red-billed Buffalo Weavers on Telkom masts and towers without endangering these birds.

No goals are reported on and thus no performance against the goals is reported.

6.3.1.1.4 Telecommunications – Mobile (TM)

Allied Technologies Ltd (Altech)

Altech is a high-technology group involved in the design, development, convergence, manufacture, installation and distribution of telecommunications equipment, multimedia systems, IT solutions, electronic components, cellular telephony and industrial electronic products.

Altech indicates that it has adopted the Global Reporting Initiative (GRI) sustainability guidelines on economic, environmental and social performance as a benchmark for the group's sustainability reporting, that their report materially complies with the requirements of King II and that their report qualifies for the JSE SRI index.

Altech has a separate section of their annual report dedicated to sustainability reporting and report that they are implementing a formal environmental management reporting system.

Altech reports that the organisations within the group that operate manufacturing facilities have waste management programmes in place which separates hazardous and non-hazardous waste. All waste is recycled where possible and disposal is done via approved contractors.

Altech indicates that it considers its operational impact on the environment to be low to medium and that water and electricity use is for an office environment.

Altech have a GRI content index as part of their report which highlights their economic and social performance, but they do not measure their environmental performance.

No goals are reported on and thus no performance against the goals is reported.

MTN Group Ltd

MTN is a leading provider of communications services, offering cellular network access and business solutions.

MTN has a separate stand-alone sustainability report. MTN report that they have implemented a formal environmental management system supported by ISO 14001 and 9001 certifications. MTN report that they have dedicated environmental managers and group level representation for environmental concerns.

MTN report on the following environmental aspects:

- Energy: MTN uses electricity for office buildings and power for base stations. They use diesel and petrol for network vehicles and standby generators.

- Water: MTN report that the minimal water they use is for office consumption and network operations (like vehicle cleaning).

- Materials: MTN has procedures in place to monitor and regulate the use of hazardous materials such as ozone depleting substances, asbestos, lead based paints and batteries containing heavy metals.

- Waste: MTN recycles cellphone batteries, printer cartridges, batteries, electronic equipment and paper as standard practice where appropriate facilities exist. They manage the waste associated with their network infrastructure activities.

- Emissions: MTN report that they have limited emissions to air and water. They are phasing out air conditioning units that emit ozone depleting substances. Fuel consumption management and related emissions from their company fleet are not considered critical. Spillage prevention measures are put in place around all fuel storage tanks.

- Product stewardship: MTN promotes responsible use, recycling and disposal of cellphone components. They have material reduction initiatives in place. MTN measure the collection of cellphone components and batteries and report in tonnes.

- Compliance: No prosecutions or fines pertaining to contravention of environmental laws were brought against or paid by MTN.

No goals are reported on and thus no performance against the goals is reported.

6.3.1.2 Summary Charts and Section Commentary Part 1

A summary chart consisting of histograms for each of the questions asked is presented, after which an analysis of the summary results is presented.

6.3.1.2.1 *Relevant Context*

Ques no.		Context, responsibility, management, awards and compliance		Results			Graph			
				No	Yes	NA	No	Yes	NA	
1		Organisation has significant environmental report	Count	16	5	0				21
			Percentage	76	24	0				0
2		Indicates reason for not reporting if there is no significant reporting	Count	9	7	5				21
			Percentage	43	33	24				0
3	Relevant Context	Key successes and shortcomings	Count	19	2	0				21
			Percentage	90	10	0				0
4		Major organisational risks and opportunities related to environment issues	Count	15	6	0				21
			Percentage	71	29	0				0
5		Major changes in the reporting period to systems or structures to improve performance	Count	19	2	0				21
			Percentage	90	10	0				0

Table 6.3-1: Part 1 Relevant Context

Only five (5) of the reports had significant reports on their environmental performance. Seven (7) of the remaining sixteen (16) reports supplied a reason for not having a significant report. Eight (8) of the remaining nine (9) had no environmental reporting at all. The last remaining one (1) had a short mention on the environment, but did not supply a reason for not reporting significantly. The reasons given for not reporting, particularly in the ITSW section, revolved around the organisations indicating that they were office and service based organisations and as such had no significant impact on the environment. However, the use of ICTs, the production of

ICTs and the production of ICT services do have a significant impact on the environment. These impacts can be both negative and positive and organisations could be reporting on them.

6.3.1.2.2 Operational Responsibility

Ques no.		Context, responsibility, management, awards and compliance		Results			Graph		
				No	Yes	NA	No	Yes	NA
6	Operational Responsibilty	Most senior position with operational responsibility for environment areas identified.	Count	10	11	0			21
			Percentage	48	52	0			0
7		How operational responsibility is divided at the senior level for environment areas explained.	Count	20	1	0			21
			Percentage	95	5	0			0

Table 6.3-2: Part 1 Operational Responsibility

Eleven (11) of the twenty-one (21) reports indicated the most senior position with operational responsibility for the environmental areas. However, only one (1) explained how the responsibility is divided at the senior level. Identifying the senior operational responsibility indicates that environmental issues are being taken seriously by the organisation. Showing how the organisation divides its environmental operational responsibilities informs stakeholders who is responsible for the success or shortcomings in environmental issues.

6.3.1.2.3 Management Practices

Ques no.		Context, responsibility, management, awards and compliance		Results			Graph		
				No	Yes	NA	No	Yes	NA
8	Management practices	Key elements of management approach identified (EMS etc)	Count	16	5	0			21
			Percentage	76	24	0			0
9		Percentage of operations covered by certifications indicated.	Count	17	4	0			21
			Percentage	81	19	0			0

Table 6.3-3: Part 1 Management Practices

Only five (5) of the reports indicated that the relevant organisations used any form of Environmental Management Systems (EMS). This could be an indicator as to why there is so little environmental reporting in the sector. The ICT sector is classified as having medium environmental impact by the JSE SRI (JSE, 2004). The JSE SRI indicates that EMSs should be present in medium impact organisations and cover no

less 50% of organisational activities and at least those aspects of the organisations activities with direct environmental impacts (JSE, 2004).

An EMS provides a mechanism to apply management practices that minimise negative environmental impacts while increasing positive impacts and provide processes to report on this performance. Four (4) of the reports indicated that their EMSs are aligned to and accredited by international accreditation programmes like ISO 14001, or are in the process of being aligned and accredited. Telecommunication organisations' reports indicated a higher emphasis on EMS and certifications. They also reported on the influence that the JSE SRI and the BEE charter for ICT are having on their reporting.

6.3.1.2.4 Awards

Ques no.		Context, responsibility, management, awards and compliance		Results			Graph			
				No	Yes	NA	No	Yes	NA	
10	Awards	Relevant awards related to performance on environmental issues that the organisation has received from external parties indicated.	Count	21	0	0				21
			Percentage	100	0	0				0

Table 6.3-4: Part 1 Awards

No reports had any indication of awards for environmental issues. This is expected as the sector is not reporting significantly on its environmental performance.

6.3.1.2.5 Compliance

Ques no.		Context, responsibility, management, awards and compliance		Results			Graph			
				No	Yes	NA	No	Yes	NA	
11		Total amount and number of environment related civil and criminal fines and other penalties assessed against the organisation indicated.	Count	21	0	0				21
	Compliance		Percentage	100	0	0				0
12		Response to resolve any issue for which significant fines were paid is reported	Count	21	0	0				21
			Percentage	100	0	0				0

Table 6.3-5: Part 1 Compliance

No reports indicated a "non-compliance". Environmental impact monitoring in South Africa appears to focus on the "High impact" industries like mining, forestry, oil and gas, steel and other metals (JSE, 2004).

6.3.1.2.6 Environmental Policies

Ques no.	Environmental policies		Results			Graph			
			No	Yes	NA	No	Yes	NA	
13	Policy on Materials	Count	16	5	0				21
		Percentage	76	24	0				0
14	Policy on Energy	Count	17	4	0				21
		Percentage	81	19	0				0
15	Policy on Water	Count	19	2	0				21
		Percentage	90	10	0				0
16	Policy on Biodiversity	Count	19	2	0				21
		Percentage	90	10	0				0
17	Policy on Emissions, Effluents, and Waste	Count	11	10	0				21
		Percentage	52	48	0				0
18	Policy on Products and Services	Count	20	1	0				21
		Percentage	95	5	0				0
19	Policy on Transport	Count	20	1	0				21
		Percentage	95	5	0				0

Table 6.3-6: Part 1 Environmental Policies

Policy on materials was reported on mainly by the ITHW and the telecommunications organisations. This is expected as they have a greater impact in this area.

Policy on energy was only reported on in four (4) reports. It was expected that more organisations in this sector would have energy policies.

Policy on emissions, effluents and waste was reported on by ten (10) of the organisations. These policies focused mainly on recycling and waste management programmes.

Within the ICT sector, it would be expected that organisations, ITSW in particular, would report on their products and services policies, however, only one (1) report has evidence of this.

Policies for the water, biodiversity and transport were poorly reported on; however, this is expected as these are areas of low significance to the ICT sector.

The JSE SRI indicates that medium impact organisations should have policies that cover at least that part of the organisation with the most significant environmental impacts (JSE, 2004).

6.3.1.2.7 Environmental Goals

Ques no.	Environmental goals		Results			Graph		
			No	Yes	NA	No	Yes	NA
20	Goals set for Materials	Count	21	0	0			
		Percentage	100	0	0			
21	Goals set for Energy	Count	21	0	0			
		Percentage	100	0	0			
22	Goals set for Water	Count	21	0	0			
		Percentage	100	0	0			
23	Goals set for Biodiversity	Count	21	0	0			
		Percentage	100	0	0			
24	Goals set for Emissions, Effluents, and Waste	Count	21	0	0			
		Percentage	100	0	0			
25	Goals set for Products and Services	Count	21	0	0			
		Percentage	100	0	0			
26	Goals set for Transport	Count	21	0	0			
		Percentage	100	0	0			

Table 6.3-7: Part 1 Environmental Goals

No goals were evident in any of the reports. Without setting goals, it is difficult to measure performance as there is no benchmark against which to compare. The JSE SRI indicates that medium impact organisations should be reporting on its targets (goals), plans and programmes / initiatives at the different organisational levels (JSE, 2004).

6.3.1.3 Summary Charts and Section Commentary – Part 2

Part 2 evaluates the performance of the reporting against the environmental performance indicators. The core indicators are shown in **bold** type and the additional indicators are shown in *italics.*

6.3.1.3.1 Materials

The material indicators describe the contribution of the reporting organisation to the conservation of the global resource base and efforts to reduce the materials intensity (and increase the efficiency) of the economy (GRI, 2006b).

Ques no.	Env Aspects	Performance indicators		No evidence	Partial	Full	Exceeding	Acceptable Omission	No evidence	Partial	Full	Exceeding	Acceptable Omission
				0	1	2	3	AO	0	1	2	3	AO
27		**EN 1 Weight of materials used**	Count	18	3	0	0	0					
	Materials		Percentage	86	14	0	0	0					
28		**EN 2 Percentage of materials used that are recycled**	Count	20	1	0	0	0					
			Percentage	95	5	0	0	0					

Table 6.3-8: Part 2 Materials EPIs

Only three (3) reports partially reported on EN 1. The production of ICT equipment does not place the same level of demands on natural resources, nor is it as polluting as many other industries. The design, manufacture, operation and disposal of ICT do, however, have an overall negative impact on the environment (EITO, 2002).

According to EITO (2002), damaging materials are used in ICT components, for example:

- The batteries in mobile telephones contain toxic metals such as lithium or cadmium. The ores of such metals must be quarried and then undergo lengthy and expensive refinement processes, causing significant environmental disruption.

- Cathode ray tubes (CRT) contain large amounts of lead, shown to have high levels of toxicity.

- Many devices are coated with flame retardants that contain toxic compounds.

Only one (1) report partially reported on EN 2. This indicator seeks to identify the reporting organisation's ability to use recycled materials and therefore contribute to

lowering the demand for virgin material (GRI, 2006b). The rapidly growing amount of ICT equipment is causing increasing problems in the disposal (end-of-life) phase of the electronic waste (Kohler and Erdman, 2004). In 2000, the European Commission estimated that the EU produces six million tonnes of Waste Electrical and Electronic Equipment (WEEE) a year (EITO, 2002). The annual amount of scrap from electronic equipment is estimated to be 2.1 metric megatons in the United States (US EPA, 2002 in Kohler and Erdman (2004)).

Dealing with electronic waste without damaging the environment is a major challenge. Recycling or disposal of computers and telecommunication hardware is problematical, because electrical and electronic equipment includes a multitude of components causing human and ecological risks, such as heavy metals and halogenated organic compounds (Kohler and Erdman, 2004). Much ends up eventually in landfill sites, where polluting substances used in ICT components can leach into the ecosystem (EITO, 2002).

It is expected that telecommunication and ITHW organisations, at least, should be reporting fully on the EN 2 indicator.

6.3.1.3.2 Energy

Measurement of energy consumption is relevant to Greenhouse gas emissions and climate change. According to the GRI (2006b), the burning of fossil fuels to generate energy results in emissions of carbon dioxide (a Greenhouse gas). Energy demand needs to be lowered through activities such as more efficient energy use (measured under EN 6 and EN 7) and the replacing of fossil energy sources by renewable ones (measured under EN 5). Design of energy-efficient product and services (EN 7) and reduction of indirect energy consumption is required.

Ques no.	Env Aspects	Performance indicators		No evidence 0	Partial 1	Full 2	Exceeding 3	Acceptable Omission AO	No evidence 0	Partial 1	Full 2	Exceeding 3	Acceptable Omission AO
						Results					Graph		
29	Energy	**EN 3 Direct energy consumption broken down by primary energy source**	Count	18	2	0	1	0					
			Percentage	86	10	0	5	0					
30		**EN 4 Indirect energy consumption broken down by primary source**	Count	21	0	0	0	0					
			Percentage	100	0	0	0	0					
31		**EN 5 Percentage of total energy consumption met by renewable resources**	Count	20	1	0	0	0					
			Percentage	95	5	0	0	0					
32		**EN 6 Total energy saved due to conservation and efficiency improvements**	Count	21	0	0	0	0					
			Percentage	100	0	0	0	0					
33		*EN 7 Initiatives to provide energy-efficient products and services*	Count	20	1	0	0	0					
			Percentage	95	5	0	0	0					
34		*EN 8 Initiatives to reduce indirect energy consumption*	Count	21	0	0	0	0					
			Percentage	100	0	0	0	0					

Table 6.3-9: Part 2 Energy EPIs

For EN 3, one (1) report exceeds requirements, while two (2) reports partially report. The extended environmental footprint of an organisation is linked to its choice of energy sources, and changes in the balance of sources used can indicate an organisation's efforts to minimise environmental impacts. The consumption of fossil fuels is a major source of Greenhouse gas emissions and energy consumption is directly linked to an organisation's Greenhouse gas emissions (GRI, 2006b). It is expected that ICT organisations should report at least partially on this core indicator.

For EN 4, no evidence of reporting was found. The reporting organisation could report the energy needed to produce and deliver purchased electricity and any other intermediate energy products that entail significant energy consumption upstream of the organisation's reporting boundary (GRI, 2006b). This information also enables the calculation of indirect Greenhouse gas emissions. It is not expected that the ICT sector should report on this core indicator.

For EN 5, one (1) report partially reported. Replacing fossil fuel energy sources with renewable ones is an essential driver to combat climate change and other

environmental issues surrounding the extraction and processing of energy (GRI, 2006b). It is not expected that the ICT sector should report on this core indicator.

For EN 6, no evidence of reporting was found. This indicator demonstrates the results of proactive efforts to improve energy efficiency through technological improvements of processes and other energy conservation initiatives (GRI, 2006b). It is expected that the ICT sector should report on this core indicator.

For EN 7, one (1) report partially reported. Providing energy efficient products and services is relevant in the context of product stewardship initiatives. Energy-efficient technologies can also reduce costs to the consumer of using products (GRI, 2006b). It is expected that the ICT should report partially on this additional indicator. Efforts are being made to minimise the amount of resource needed in the production of ICT, which makes economic as well as environmental sense, for example, mobile telecommunication network operators using renewable or low-impact energy sources to power base stations (EITO, 2002).

For EN 8, no evidence of reporting was found. Indirect energy use occurs through purchasing materials and components or services such as travel, commuting, and subcontracted production (GRI, 2006b). It is expected that the ICT should report partially on this additional indicator. Organisations could minimise the amount of resource needed in the production of ICT, for example, more efficient chips means more processing power for the amount of resource/energy required (EITO, 2002).

6.3.1.3.3 Water

Organisational water use directly affects the human and natural environment depending on the amount withdrawn, the source used for withdrawal, the amount and quality discharged, and the locations to which water is discharged (GRI, 2006b).

				Results					Graph				
Ques no.	Env Aspects	Performance indicators		No evidence	Partial	Full	Exceeding	Acceptable Omission	No evidence	Partial	Full	Exceeding	Acceptable Omission
				0	1	2	3	AO	0	1	2	3	AO
35	Water	EN 9 Total water withdrawal by source	Count	19	1	1	0	0					
			Percentage	90	5	5	0	0					
36		EN 10 Water sources & related habitats significantly affected by withdrawal of water	Count	21	0	0	0	0					
			Percentage	100	0	0	0	0					
37		EN 11 Percentage and total volume of water recycled and reused	Count	21	0	0	0	0					
			Percentage	100	0	0	0	0					

Table 6.3-10: Part 2 Water EPIs

For EN 9, one (1) report reported fully, while one (1) report reported partially. The total volume withdrawn provides an indication of the relative size and importance of an organisation as a user of water, and provides a baseline figure for other calculations relating to efficiency and use (GRI, 2006b). According to Pulver (2001 in EITO, 2002), the manufacture of ICT equipment can be resource-intensive, for example, the production of the average computer chip requires 45.46 litres of water, used primarily for washing. One chip plant in the USA uses between 4.5 and 13.5 million litres of water a day. Although a large proportion of this water can be reused for other purposes, Pulver (2001 in EITO, 2002) indicated in 2001 that no microchip manufacturers recycle water for reuse in the washing process, as the water must be pure and particle-free. It is not expected that the ICT sector should report on this core indicator unless the relevant organisations are using a significant amount of water in their processes.

For EN 10 and EN 11, no evidence of reporting was found. Increased reuse and recycling can result in a reduction of water consumption, treatment, and disposal costs. The reduction of water consumption through reuse and recycling can also contribute to local, national, or regional goals for managing water supplies (GRI, 2006b). It is not expected that the ICT sector should report on the core indicator EN 10, however, the ICT sector could be reporting at least partially on the additional indicator EN 11.

6.3.1.3.4 Biodiversity

The biodiversity of an area is of importance for the stabilization of its complex ecosystems. Biodiversity refers to the number and variety of living organisms; including genetic diversity, species diversity, and ecological diversity (GRI, 2006b). The indicators provide a flow of disclosures that focus on; which areas may be subject to impacts (EN12); the impacts that are occurring (EN13 and EN16); the programs that are in place for managing impacts (including both protecting habitats and species and restoring damaged areas) (EN15); and the results of specific actions to restore or protect habitats (EN14) (GRI, 2006b).

Ques no.	Env Aspects	Performance indicators		Results: No evidence (0)	Partial (1)	Full (2)	Exceeding (3)	Acceptable Omission (AO)	Graph: No evidence (0)	Partial (1)	Full (2)	Exceeding (3)	Acceptable Omission (AO)
38		EN 12 Location and size of land owned, leased, or managed in, or adjacent to, protected areas	Count	21	0	0	0	0					
			Percentage	100	0	0	0	0					
39		EN 13 Description of significant impacts of activities on protected areas	Count	19	2	0	0	0					
			Percentage	90	10	0	0	0					
40	Biodiversity	EN 14 Area of habitats protected or restored	Count	20	1	0	0	0					
			Percentage	95	5	0	0	0					
41		EN 15 Programs for managing impacts on biodiversity	Count	19	2	0	0	0					
			Percentage	90	10	0	0	0					
42		EN 16 No. of IUCN Red List species with habitats in areas affected by operations	Count	21	0	0	0	0					
			Percentage	100	0	0	0	0					

Table 6.3-11: Part 2 Biodiversity EPIs

No evidence of reporting for EN 12 and EN 16 was found. For EN 14, one (1) report partially reported. For EN 13 and EN 15, there were two (2) reports that each reported partially. Reporting on the organisation's potential impact on land that lies within, contains or is adjacent to legally protected areas allows the organisation to identify and understand part of their risk exposure in relation to biodiversity (GRI, 2006b). Monitoring which activities are taking place in protected areas makes it possible for the reporting organisation to reduce the risks of impacts and to manage, or avoid mismanagement of, the impacts on biodiversity (GRI, 2006b). It is not expected that the ICT sector would report significantly on biodiversity.

6.3.1.3.5 Emissions, Effluents and Waste

The emissions, effluents, and waste includes indicators that measure standard releases to the environment that are considered to be pollutants. The indicators are based on the breakdown of different types of pollutants (for example, air emissions, effluent and solid waste) that are typically recognized in regulatory frameworks (EN 19 – EN 22 and EN 24) (GRI, 2006b). In addition, indicators for two types of emissions are the subject of international conventions – Greenhouse gases (EN 17 and EN 23) and ozone depleting substances (EN 18) (GRI, 2006b).

Ques no.	Env Aspects	Performance indicators		Results					Graph				
				No evidence	Partial	Full	Exceeding	Acceptable Omission	No evidence	Partial	Full	Exceeding	Acceptable Omission
				0	1	2	3	AO	0	1	2	3	AO
43		**EN 17 Greenhouse gas emissions**	Count	19	2	0	0	0					
			Percentage	90	10	0	0	0					
44		**EN 18 Emissions of ozone-depleting substances**	Count	21	0	0	0	0					
			Percentage	100	0	0	0	0					
45		**EN 19 NOx, SOx, and other significant air emissions by weight**	Count	20	1	0	0	0					
			Percentage	95	5	0	0	0					
46		**EN 20 Total amount of waste by type and destination**	Count	16	1	3	1	0					
			Percentage	76	5	14	5	0					
47	Emissions, Effluents and Waste	**EN 21 Total water discharge and quality**	Count	20	1	0	0	0					
			Percentage	95	5	0	0	0					
48		**EN 22 Total number and volume of significant spills**	Count	21	0	0	0	0					
			Percentage	100	0	0	0	0					
49		*EN 23 Other relevant indirect greenhouse gas emissions*	Count	21	0	0	0	0					
			Percentage	100	0	0	0	0					
50		*EN 24 Weight of transported, imported, or exported waste deemed hazardous*	Count	21	0	0	0	0					
			Percentage	100	0	0	0	0					
51		*EN 25 Water sources & related habitats significantly affected by discharges of water & runoff*	Count	21	0	0	0	0					
			Percentage	100	0	0	0	0					

Table 6.3-12: Part 2 Emissions, Effluents, and Waste EPIs

For EN 17, two (2) reports partially reported. Greenhouse gas emissions are the main cause of climate change, and are governed by the United Nations agreement on the

Framework Convention on Climate Change and the subsequent Kyoto Protocol (GRI, 2006b). The manufacture of a personal computer (PC) in the European Union (EU) has been calculated to produce 0.19 tonnes of Greenhouse gases and the use phase of a PC has been calculated to produce 0.45 tonnes of Greenhouse gases, while the disposal phase is calculated to produce 0.022 tonnes of Greenhouse gases (EITO, 2002). It is expected that the ICT sector should report fully on this core indicator.

For EN 20, one (1) report partially reported, three (3) fully reported and one (1) exceeded criteria. Land filling and recycling results in very different types of environmental impacts and residual effects associated with the waste (GRI, 2006b). The manufacture of a PC in the EU has been calculated to produce 36 kg of waste; the use phase of a PC in the EU has been calculated to produce 108 kg of waste, while the disposal phase is calculated to produce 21 kg of waste (EITO, 2002). Dealing with electronic waste without damaging the environment is a major challenge. Much of the waste ends up in landfill sites, where polluting substances used in ICT components can leach into the ecosystem (EITO, 2002). It is expected that the ICT sector report fully on this core indicator.

For EN 18, EN 22, EN 23, EN 24 and EN 25, no evidence of reporting was found. For EN 19 and EN 21, one (1) report partially reported on each. It is not expected that the ICT sector should report significantly on these indicators.

6.3.1.3.6 Products and Services

Ques no.	Env Aspects	Performance indicators		Results					Graph				
				No evidence	Partial	Full	Exceeding	Acceptable Omission	No evidence	Partial	Full	Exceeding	Acceptable Omission
				0	1	2	3	AO	0	1	2	3	AO
52	Products and services	EN 26 Initiatives to manage the environmental impacts of P&S & extent of impact reduction	Count	20	1	0	0	0					
			Percentage	95	5	0	0	0					
53		EN 27 % of products sold that is reclaimed at the end of products' useful life by product category	Count	20	1	0	0	0					
			Percentage	95	5	0	0	0					

Table 6.3-13: Part 2 Products and Services EPIs

For EN 26, one (1) report partially reported. This measure assesses actions relating to product and service design and delivery to reduce negative environmental impacts and enhance positive impacts. Design for Environment (DfE) can help to identify new business opportunities, differentiate products and services, and stimulate technology

innovation. Integrating environmental considerations into product and service design can also reduce the potential for incompatibility with future environmental legislation and enhance organisational reputation (GRI, 2006b). According to EITO (2002), definite areas exist where ICT products and services can influence the impact on the environment. Some of these areas are:

- Business-2-Business E-Commerce and ICT managed control systems which create efficiencies and reduce environmental impact.

- Virtualisation of material products which make environmental savings possible from increased trade in intangibles.

- Some E-Commerce business models extend product lifetimes.

- Product development cycles are often reduced by the use of ICT.

- Distribution and manipulation of environmental information is significantly enhanced by ICT.

It is expected that the ICT sector should report fully on this core indicator.

For EN 27, one (1) report partially reported. Establishing effective recycling and reuse systems to close product cycles can significantly contribute to an increase of material and resource efficiency and mitigates problems and costs connected to disposal (GRI, 2006b). Product buy-back programmes for ICT products reduces the amount of E-Waste indiscriminately dumped at land fills (Kohler and Erdman, 2004). It is expected that the ICT sector should report fully on this core indicator.

6.3.1.3.7 Compliance, Transport and Overall

Ques no.	Env Aspects	Performance indicators		No evidence 0	Partial 1	Full 2	Exceeding 3	Acceptable Omission AO	No evidence 0	Partial 1	Full 2	Exceeding 3	Acceptable Omission AO	
54	Compliance	**EN 28 Incidents of non-compliance with applicable environmental regulations**	Count	21	0	0	0	0						21
			Percentage	100	0	0	0	0						0
55	Transport	*EN 29 Significant env impacts of transportation used for logistical purposes*	Count	21	0	0	0	0						21
			Percentage	100	0	0	0	0						0
56	Overall	*EN 30 Total environmental protection expenditures by type*	Count	21	0	0	0	0						21
			Percentage	100	0	0	0	0						0

Table 6.3-14: Part 2 Compliance, Transport and Overall EPIs

For EN 28, no incidents of non-compliance were reported. Several reports indicated that no incidents had occurred. The level of non-compliance helps indicate the ability of management to ensure that the organisation's operations stay within certain performance parameters (GRI, 2006b). From an economic perspective, this ability helps to reduce financial risks that occur either directly through fines or indirectly through impacts on reputation. Non-compliance can lead to clean-up obligations or other costly environmental liabilities. The strength of an organisation's compliance record can also affect its ability to expand operations or gain permits (GRI, 2006b). It is expected that the ICT sector should report fully on this core indicator.

For EN 29, no evidence of reporting was found. Transportation systems contribute to a wide range of environmental impacts at all geographical scales from global warming to local smog and noise (GRI, 2006b). There is conflicting evidence of the impact of ICT on travel. While E-Commerce reduces need to travel to shops, Teleworking reduces need to travel to work and Telematics reduces congestion and shortens journeys, counter trends like more deliveries, geographically longer supply chains and rebound effects increase the negative impact of transport (EITO, 2002). It is expected that the ICT sector report at least partially on this additional indicator.

For EN 30, no evidence of reporting was found. The combination of data on environmental performance against expenditures offers insights into the effectiveness of the organisation's use of resources to improve performance (GRI, 2006b). It is

expected that the ICT sector should report at least partially on this additional indicator.

6.3.1.4   South African ICT Sector Summary

The overwhelming impression that is created by this qualitative analysis is that very little is being done by the South African ICT sector with respect to environmental sustainability reporting. Many organisations would appear to be using their office and service based existence as reasons for having little or no impact on the environment. Not much is being reported on in terms of environmental policies. The policies that are in place tend to focus on waste management and recycling programmes. As the South African ICT sector is predominantly made up of service type organisations, it is an opportunity for these organisations to set up environmental policies on their products and services. None of the organisations assessed had any evidence of environmental sustainability goals being set. As medium impact organisations, they should be setting and measuring environmental goals.

The majority of the organisations indicate that they do not have a significant impact on the environment and as a result do not report on their environmental performance in detail. It is evident that the organisations that are using a reporting framework, like the GRI guidelines, have far more significant reports, namely, BTG, Mustek, Altech and MTN. Organisations that have an EMS in place tend to have significant reports, namely, Mustek, Telkom, Altech and MTN. Square One has an ISO 14001 certified system, but does not have a significant environmental sustainability report. Organisations that qualify for the JSE SRI index have significant reporting, namely, Telkom, Altech and MTN.

Telecommunication organisations tended to have more significant level of reporting, with their reports indicating a higher emphasis on EMS and certifications. They also reported on the influence that the JSE SRI and the BEE charter for ICT are having on their reporting. No awards or compliance issues were noted. This is indicative of the state of regulation on environmental issues in South Africa which tends to focus on the high impact industries (JSE, 2004).

The Materials, Water, Biodiversity environmental indicators are not well reported on. However, this is acceptable as the nature of the sector is one of medium to low impact. The Energy, Emissions, Effluents and Waste, Products and Service, and

Transport environmental indicators are not well reported on either; however, it is in these areas that ICT organisations can make significant attempts to improve reporting. The ICT sector needs to explore the positive and negative environmental impacts of their industry and use the reporting process to highlight how they are minimising their negative impacts while increasing their positive impacts.

6.3.2 Selected International ICT and Service Organisations 2005

The six (6) international reports were selected from the "Computer", "Telecommunications" and "Services" industries. The reports that were assessed indicated that their reporting is being driven by regional regulations, directives, supply chain pressures and public pressure.

Organisations based in the United States of America (USA) are strongly compelled to adhere to environmental regulations by the US Environmental Protection Agency (US EPA). According to the US EPA web site (2006), the EPA works to develop and enforce regulations that implement environmental laws enacted by USA Congress. EPA is responsible for researching and setting national standards for environmental programs, and delegates to states the responsibility for issuing permits and for monitoring and enforcing compliance. Where national standards are not met, EPA can issue sanctions and take other steps to assist the states in reaching the desired levels of environmental quality.

Organisations based in Europe are strongly driven by European Union (EU) directives. The Waste, Electrical and Electronic Equipment (WEEE) and the Restriction of Hazardous Substances (RoHS) directives are examples of this. The WEEE directives restrict the use of certain hazardous substances in electrical and electronic equipment and govern electrical and electronic equipment waste (Europa, 2006). Europa (2006) state that the WEEE directives indicate that producers are responsible for taking back and recycling electrical and electronic equipment. This, Europa (2006) says, provides incentives to design electrical and electronic equipment in an environmentally more efficient way, which takes waste management aspects fully into account. Consumers are able to return their equipment free of charge. In order to prevent the generation of hazardous waste, the RoHS directive requires the substitution or reduction of various heavy metals (lead, mercury, cadmium, and hexavalent chromium) and brominated flame retardants (polybrominated biphenyls

(PBB) or polybrominated diphenyl ethers (PBDE)) in new electrical and electronic equipment put on the market from 1 July 2006 (Europa, 2006, RoHS, 2005).

The report narratives of each of the six (6) reports are listed followed by summary charts consisting of histograms for each of the questions asked, after which a dialogue on the summary results is presented.

6.3.2.1 Report Narratives

The report narratives of each of the six (6) reports are categorised by "Services", "Computers" and "Telecommunications" and are listed below.

6.3.2.1.1 Services

Global Reporting Initiative (GRI)

The "Global Reporting Initiative" refers to the large multi-stakeholder network of experts, of countries worldwide, who participate in GRI's working groups and governance bodies, who use the GRI Guidelines to report, or contribute to the development of the GRI reporting framework in other ways – both formally and informally. The formal components of GRI are coordinated by a small secretariat located in Amsterdam, the Netherlands. The secretariat executes the work plan as developed by the GRI Board of Directors. This includes engaging and building the network and coordinating working group processes that lead to new or improved reporting framework components.

GRI report on the management of their environmental impact. They indicate which indicators are relevant to their organisation and they monitor and review their performance against the selected indicators. They have identified the following indicators as useful to monitor: water, energy, travel and transport, purchasing and suppliers, and materials.

- Water and energy use: They have programmes in place to reduce the use of water and energy.

- Travel and transport: They monitor and analyse travel patterns, encourage teleconferencing and encourage use of public transport. They report on indirect Greenhouse gas emissions (CO_2) in tonnes.

- Purchasing and suppliers: They are purchasing energy efficient office products. They report on their impact on sensitive areas (their office is an historical monument).

- Materials: GRI report on paper use in Kilograms (kg), the amount of material used from waste in kg and on the total amount of waste by type and destination in kg.

GRI have performance evaluations against each of the reported indicators. They have a GRI content index which reports on their performance against all environmental indicators. They have a three level score ("reported", "partially reported" and "not reported"). Each indicator is measured against this score and a results summary or an explanation of omission is supplied. GRI provide a clear reason why they have not reported on a particular indicator. An example of the GRI content index in contained in Appendix C.

The report is in accordance with the GRI guidelines.

6.3.2.1.2 Computers

International Business Machines Corporation (IBM)

IBM manufactures and sells computer hardware, software, infrastructure services, hosting services, and consulting services in areas ranging from mainframe computers to nanotechnology.

IBM's business operations include: hardware (servers, storage, personal systems, printing systems, retail store solutions), software (connect operating systems, business processes, and applications), services (IT services integrated with business insight), financing (provider of financing and asset management services to organisations selling or acquiring IT related products and services.), research and technology (develop, market and deliver chip technologies and services).

IBM report on the following initiatives to aid environmental protection:

- Reducing Greenhouse gas emissions from operations: IBM have clear goals to reduce emissions through various initiatives. CO_2 emissions and reductions, perfluorocompound (PFC) emissions are reported in tonnes.

- Transport: IBM have several initiatives and incentives ("e-commute", banking and full cafeteria facilities at offices) to reduce commuter transport. CO_2 emissions avoided are reported in tonnes. Logistics transport initiatives are reported on.

- Product energy efficiency: Initiatives for energy efficient products are reported on. IBM set goals and measure its performance in terms of these goals. Reductions are reported in percentages.

- Product stewardship: IBM reports that it has a product stewardship program. The program incorporates product design for the environment (restriction in the use of hazardous substances - RoHS, management of product content information, educating the supply chain on RoHS, performance against other product design for environment goals), product packaging, product end-of-life management (product landfill use goal and performance, product recovery and reuse analysis – measured in tonnes)

IBM report that they are influenced by EU environmental directives and US EPA directives with regards to their product stewardship.

IBM's report is in accordance with the GRI guidelines.

Intel Corporation

Intel Corporation is a semiconductor company. Intel makes PC microprocessors, motherboard chipsets, network cards and other networking interface cards, flash memory, embedded processors, and other devices related to communications and computing. Intel is involved in the research, design and manufacturing of its products.

Intel report the following highlights: quarterly publication of environmental performance indicators, energy efficiency (a key focus in product development), working with industry peers to reduce the energy consumption of notebook LCD screens, reduction of energy consumption per production unit from 2004, reduction of hazardous materials in products and increased recycling of chemical waste and solid waste.

Intel report on the following initiatives:

- Their Greenhouse gas emissions reductions.

- Their energy efficient products initiatives. Savings are reported in US Dollars.

- Initiatives to further reduce their impact on the environment.

- Water management and conservation (collaborations with other businesses, local communities, universities, water suppliers, governments and water users are highlighted). Expenditure of conservation programmes is reported.

- Reduction in the amount of waste generated.

- Eco-efficient improvements in buildings, manufacturing and products.

- Minimising the impact of packaging.

- Improving operational recycling.

- A sustainable food service programme.

Intel reports their performance against the following environmental indicators:

- Energy use by type in tonnes

- Water use in gallons

- Waste generated by solid and chemical in tonnes

- Waste recycled by solid and chemical in tonnes

- Global warming emissions (PFCs) in tonnes

- NO_x and CO emissions in metric tonnes

- VOC (Volatile Organic Compounds) and HAP (Hazardous Air Pollutants) emissions in tonnes and inspections and compliance

Intel's report is in accordance with the GRI guidelines.

6.3.2.1.3 Telecommunications

British Telecommunications Group Plc (BT)

BT is a provider of communications solutions serving customers in Europe, the Americas and Asia Pacific. Its principle activities include networked IT services, local, national and international telecommunications services, and higher-value broadband and internet products and services.

BT Group consists of four lines of business: BT Retail (communication products and services, including voice, data, internet and multimedia services, and a range of

managed and packaged communications solutions), BT wholesale (provides network services and solutions), Openreach (operates the physical assets of the local access and backhaul networks) and BT global services (provides global reach and a complete range of networked IT solutions and services).

BT report the following highlights: sourcing nearly all their power from environmentally friendly sources (hydro, wind, heat and power plants), reduced waste sent to landfill, certification achieved for EMS to ISO 14001.

BT report on the following initiatives:

- EMS certified to ISO 14001

- Energy and fuel: Energy management and efficiency program

- Emissions to air: Energy and transport program

- Waste: Recycling programme

- Transport: Incentives and benefits for opting out of company car ownership and / or, using lower emission cars

- Product stewardship: Support EU directives WEEE (to reuse materials) and RoHS (to reduce use of hazardous materials)

- Procurement: Environmental purchasing policy

BT reports that they have an EMS which complies with the ISO 14001 standard. They report that they have an environmental policy which establishes their targets in sustainable environmental improvement and compels them to measure and monitor their performance regularly. BT reports that in the UK during the 2005 financial year, it was not subjected to any environmental prosecutions.

BT reports performance against the following environmental indicators:

- Fuel, energy & water: Energy consumption by type and in kW, energy initiatives, energy benchmarking and surveys (savings in GkW and investment in Pounds Stirling), energy management (reductions in percentages), premises energy (offices and buildings – reductions in percentages), process energy (networks – electricity generated in GkW), fuel tanks (testing investment amount in Pounds Stirling) and water use (reductions in cubic metres).

- Waste: The types of waste generated (not harmful, non hazardous, hazardous), the BT Waste Forum, recycling (in tonnes), performance against key waste targets (increases and decreases in percentages) and working with property partners.

- Transport: Commercial vehicle fleet operation (savings in percentages), company car policy, the use of alternative fuels and fuel efficiency devices (types and devices), noise suppression efforts, electric vehicle trials and awards.

- Emissions to air: Action on climate change (reductions in percentages) and ozone depletion and refrigerants (reductions in percentages).

- Product Stewardship: The importance of product stewardship (reducing the use of hazardous materials in the manufacture of products, minimising the energy consumed during their life and enabling their reuse, recycling and safe disposal), legal drivers, product stewardship in BT, product stewardship in action, partnerships, achievements and future plans.

- Local impacts: Visual amenities, street furniture (telephone booths), street works, wires and cables, radio masts, biodiversity action, environmental management, campaigning and public debate, environmental complaints and special projects in the UK.

BT's report is in accordance with the GRI guidelines.

Telefónica SA

Telefónica is a telecommunications company. Telefónica is an operator in the Spanish and Portuguese speaking markets, with access to more than 550 million potential clients. Its activities are centred mainly on the provision of fixed and mobile telephony services, having broadband as a key tool for the development of both businesses.

Telefónica has a presence Spain and in Latin America with Brazil, Mexico, Argentina and Peru being the most relevant markets.

Telefónica report that they have an EMS that is in the process of being aligned with ISO 14001 standards.

Telefónica report that they have joined the Global e-Sustainability Initiative (GeSI), an initiative fostered by the United Nations Environment Programme (UNEP) and the

International Telecommunications Union (ITU) aimed at promoting the sustainable development of the information society. They are also participants in the environment group of European Telecommunications Network Operators Association (ETNO).

Telefónica have crafted a minimum set of standards with which all organisations in the group must comply, considering their particular environments and operations. These environmental requirements regulations are implemented through a five (5) step programme:

1. Environmental commitment: Communication of the environmental commitment, preliminary evaluation, environmental indicators, awareness-raising and training.

2. Identifying legal requirements: Identification, monitoring and fulfilment of the environmental requirements applicable to the organisation. Methodology.

3. Follow-up and measuring: Identifying and evaluating environmental aspects, establishing objectives and establishing operational controls.

4. Improving behaviour: Defining responsibilities, generating plans and registers, documenting processes resulting from environmental management, establishing channels of communication, capacity to respond to emergencies.

5. ISO Certification: Audits to verify the level of implementation, management system for those aspects that are off course.

Telefónica report that they identify relevant environmental aspects to their operations and activities. This is followed up by reporting on the environmental impact of the aspects:

- Electromagnetic emissions: Measured in number of sites. Informing society of electromagnetic emissions.

- Impact of installations: Land occupations by mobile and fixed telephony, visual impact and acoustic impact by mobile and fixed telephony and spillages.

- Control and management of waste: Separated by hazardous, non-hazardous and electrical and electronic waste. Measured in kg.

- Fuel consumption: Fuel used by vehicles and by generators measured in kl, electrical energy measured in kW by operations and by office, direct energy by type measured in joules and energy efficiency measured in percentages.

- Emissions into the atmosphere: Reduction initiatives, total energy consumption measured in joules, energy efficiency programmes and SO_x, NO_x, NMOVC (Non Methane Organic Volatile Compounds), CO, CO_2, CH_4, N_2O (CO_2 equivalents) measured in tonnes.

- Paper consumption: Office and billing initiatives, total consumption measured in kg.

- Water consumption: Total consumption measured in kl.

- Masts consumption: Material used by type measured in kg.

- Environmental impact of their services: Both positive and negative impacts reported.

Telefónica's report is in accordance with the GRI guidelines.

Hewlett Packard Company (HP)

HP is an IT corporation. Headquartered in the United States, it has a global presence in the fields of computing, printing, and digital imaging, and also provides software and services.

HP has a successful line of printers, scanners, digital cameras, calculators, PDAs, servers, workstations, and home-small business computers. HP offers a range of services to architect, implement and support IT infrastructure.

HP's report describes their global citizenship activities worldwide. HP report that they use the GRI guidelines as a basis for reporting, as well as using the London Stock Exchange – Corporate Reporting Exchange service that provides social, environmental and ethical performance to the SRI benchmarking and investment communities.

HP report that they have an EMS which is based on recognized international models including ISO 14001 and OHSAS 18001.

HP report on the following environmental aspects:

- Product environmental impacts

- o Design for Environment:

  - ▪ Energy efficiency – reduce the energy needed to manufacture and use products (Energy management programme, savings from initiatives in CO_2 and kW).

  - ▪ Materials innovation – reduce the amount of materials used in products and develop materials that have less environmental impact and more value at end-of-life (RoHS directive). Specific goals set.

  - ▪ Design for recyclability – design equipment that is easier to upgrade and/or recycle.

  - ▪ Packaging – reduce packaging material, eliminate the use of restricted materials and ozone-depleting substances (ODS), ease of disassembly by the end-user, use of post-consumer recycled content, and reduce packaging size and weight to improve transportation fuel efficiency.

  - ▪ Product reuse and recycling – take-back options for hardware, recycling, hardware recycling, print cartridge recycling.

- ▪ Operations

  - o Managing environmental impacts and ensuring employee health and safety (EMS)

  - o Climate change – Greenhouse gas emissions, PFCs, travel (business and employee commuting)

  - o Energy – energy management programme, electricity use, gas use and sustainable building design

  - o Ozone-depleting substances

  - o Water – office use and cooling

  - o Waste – hazardous, non-hazardous, recycling programme, and paper purchase and recycling

  - o Emissions – toxic release emissions (required by US EPA), air emissions

  - o Compliance

  - o Remediation

- Supply chain

  ○ Logistics - Clean cargo and green freight groups and slip sheets

HP report that their highest priority for environmental issues is reducing product environmental impacts. They report that the greatest impact on the environment is through their products. They seek to minimise that impact by designing products that reduce the amount and impact of the materials used, reduce the amount of energy used by products, and designing products to be recycled more effectively at the end of their life.

HP report that they offer several end-of-life options: product and HP print cartridge recycling services as well as hardware donation, reuse and provide asset recovery services.

HP reports performance on the following environmental aspects:

- Energy efficient products – savings in CO_2 emissions measured in tonnes

- Reduction in material used in percentages

- Compliance with RoHS requirements in percentages

- Packaging material by type in tonnes

- Recycling by type in tonnes

- Greenhouse gas emission by site type in tonnes

- PFC emissions by type in tonnes

- CO_2 impact from business travel in tonnes

- Telework program CO_2 savings in tonnes

- Electricity use in kW

- Natural gas use in kW

- Ozone depletion potential of estimated emissions in kg of CFC11 equivalent

- Water consumption in litres

- Hazard and Non-hazardous waste by type and destination in tonnes

- Emissions of TRI (Toxics Release Inventory) substances by type and destination in tonnes

- Air emissions by type (CO, NO$_x$, PM$_{10}$, SOx and VOC) in tonnes

- Violations resulting in fines in US Dollars

HP's report is in accordance with the GRI guidelines.

6.3.2.2 Summary Charts and Section Commentary – Part 1

6.3.2.2.1 *Relevant Context*

Ques no.		Context, responsibility, management, awards and compliance		Results			Graph		
				No	Yes	NA	No	Yes	NA
1		Organisation has significant environmental report	Count	0	6	0			
			Percentage	0	100	0			
2		Indicates reason for not reporting if there is no significant reporting	Count	0	0	6			
			Percentage	0	0	100			
3	Relevant Context	Key successes and shortcomings	Count	0	6	0			
			Percentage	0	100	0			
4		Major organisational risks and opportunities related to environment issues	Count	0	6	0			
			Percentage	0	100	0			
5		Major changes in the reporting period to systems or structures to improve performance	Count	0	6	0			
			Percentage	0	100	0			

Table 6.3-15: Part 1 Relevant Context – International

All reports reported on their relevant context. This is significant as it provides the relevant stakeholders with the necessary information to analyse the environmental performance of the reporting organisation.

6.3.2.2.2 *Operational Responsibility*

Ques no.		Context, responsibility, management, awards and compliance		Results			Graph		
				No	Yes	NA	No	Yes	NA
6		Most senior position with operational responsibility for environment areas identified.	Count	4	2	0			
	Operational Responsibilty		Percentage	67	33	0			
7		How operational responsibility is divided at the senior level for environment areas explained.	Count	5	1	0			
			Percentage	83	17	0			

Table 6.3-16: Part 1 Operational Responsibility – International

Two (2) organisations indicated the most senior position while one indicated how the operational responsibility is divided at senior level. It is expected that the organisations would have reported more significantly on this area.

6.3.2.2.3 Management Practices

Ques no.		Context, responsibility, management, awards and compliance		Results			Graph		
				No	Yes	NA	No	Yes	NA
8	Management practices	Key elements of management approach identified (EMS etc)	Count	3	3	0			
			Percentage	50	50	0			
9		Percentage of operations covered by certifications indicated.	Count	3	3	0			
			Percentage	50	50	0			

Table 6.3-17: Part 1 Management Practices – International

Three (3) organisations indicated that they used certified EMSs to assist in environmental management.

6.3.2.2.4 Awards

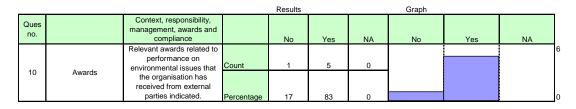| Ques no.		Context, responsibility, management, awards and compliance		Results			Graph		
				No	Yes	NA	No	Yes	NA
10	Awards	Relevant awards related to performance on environmental issues that the organisation has received from external parties indicated.	Count	1	5	0			
			Percentage	17	83	0			

Table 6.3-18: Part 1 Awards – International

Five (5) of the organisations reported on their awards received. BT was awarded two 2004 London Liveable City Awards, which recognise and promote sustainable business, for their efforts to reduce the environmental impact of their worldwide operations on air quality and their efforts to cut CO_2 emissions. Intel was awarded the U.S. EPA's Clean Air Innovation Award and New Mexico's Green Zia Environmental Award. IBM was awarded a "World Wildlife Fund and the Center for Energy & Climate Solutions Award" for significantly exceeding their Climate Savers goal. HP was awarded the analogZONE 2004 – Best Green Computing Product Award. HP was awarded Recycling Council Awards in Canada. HP was awarded several waste minimisation awards worldwide. Telefónica was awarded the 2005 AUTELSI prize for the care and protection of the environment.

6.3.2.2.5 Compliance

Ques no.		Context, responsibility, management, awards and compliance		Results			Graph			
				No	Yes	NA	No	Yes	NA	
11	Compliance	Total amount and number of environment related civil and criminal fines and other penalties assessed against the organisation indicated.	Count	3	3	0				6
			Percentage	50	50	0				0
12		Response to resolve any issue for which significant fines were paid is reported	Count	3	3	0				6
			Percentage	50	50	0				0

Table 6.3-19: Part 1 Compliance – International

Three (3) of the organisations had non-compliance issues and all three (3) indicated how the issues where resolved. BT had six (6) oil-related incidents recorded, three (3) of which were classified as serious. No fines were issued. The issues were resolved by conducting remedial work and recommendations were made to avoid similar incidents. Ground water monitoring was conducted at some of the sites. Intel had two environmental non-compliances, one in Ireland for a sanitary sewer overflow and the other in India for non-conformance to permit conditions on sewage treatment facilities and rain water capture. Neither non-conformance attracted a fine or penalty. The non-conformance in Ireland was resolved by removing contaminated soils, monitoring for environmental impact, completing sewer inspections, banning the use of heavy towels that caused the blockage and installing alarm sensors. The non-conformance in India was resolved by clarifying and renegotiating permit conditions. HP had one fine in 2005 for improper labelling of hazardous waste drums by a contractor at a California site. HP resolved the issues by updating several processes for the site and conducted additional training with the contractor.

6.3.2.2.6 Environmental Policies

Ques no.	Environmental policies		Results			Graph		
			No	Yes	NA	No	Yes	NA
13	Policy on Materials	Count	3	3	0			
		Percentage	50	50	0			
14	Policy on Energy	Count	0	6	0			
		Percentage	0	100	0			
15	Policy on Water	Count	2	4	0			
		Percentage	33	67	0			
16	Policy on Biodiversity	Count	6	0	0			
		Percentage	100	0	0			
17	Policy on Emissions, Effluents, and Waste	Count	1	5	0			
		Percentage	17	83	0			
18	Policy on Products and Services	Count	1	5	0			
		Percentage	17	83	0			
19	Policy on Transport	Count	2	4	0			
		Percentage	33	67	0			

Table 6.3-20: Part 1 Environmental Policies – International

Three (3) organisations had a policy on Materials. All six (6) had Energy polices. Four (4) had Water policies and policies on Transport. None of the six (6) had Biodiversity policies. Five (5) had policies on Emissions, Effluents and Waste, and policies on Products and Services. The focus of the policies is on reducing emissions of Greenhouse gasses through energy, emissions, waste and transport management.

6.3.2.2.7 Environmental Goals

Ques no.	Environmental goals		Results			Graph		
			No	Yes	NA	No	Yes	NA
20	Goals set for Materials	Count	3	3	0			
		Percentage	50	50	0			
21	Goals set for Energy	Count	1	5	0			
		Percentage	17	83	0			
22	Goals set for Water	Count	5	1	0			
		Percentage	83	17	0			
23	Goals set for Biodiversity	Count	6	0	0			
		Percentage	100	0	0			
24	Goals set for Emissions, Effluents, and Waste	Count	1	5	0			
		Percentage	17	83	0			
25	Goals set for Products and Services	Count	4	2	0			
		Percentage	67	33	0			
26	Goals set for Transport	Count	4	2	0			
		Percentage	67	33	0			

Table 6.3-21: Part 1 Environmental Goals – International

Three (3) organisations set goals for Materials, five (5) for both Energy, and Emissions, Effluents and Waste, one (1) for Water, none for Biodiversity, two (2) for both Products and Services, and Transport. Focus, once again, is on measuring the reduction in emissions of Greenhouse gases through energy use, emissions and transport.

6.3.2.3   Summary Charts and Section Commentary – Part 2

Part 2 shows the performance of the reporting against the environmental performance indicators. The core indicators are shown in **bold** type and the additional indicators are shown in *italics.* All the Acceptable Omissions (AO) scores in the summary charts were recorded by the GRI organisation.

6.3.2.3.1 Materials

Ques no.	Env Aspects	Performance indicators		Results					Graph				
				No evidence	Partial	Full	Exceeding	Acceptable Omission	No evidence	Partial	Full	Exceeding	Acceptable Omission
				0	1	2	3	AO	0	1	2	3	AO
27	Materials	**EN 1 Weight of materials used**	Count	2	2	1	1	0					
			Percentage	33	33	17	17	0					
28		**EN 2 Percentage of materials used that are recycled**	Count	0	2	3	1	0					
			Percentage	0	33	50	17	0					

Table 6.3-22: Part 2 Materials EPIs – International

Two (2) organisations did not report on EN 1. All six (6) reported on materials used that were recycled, three (3) fully and one (1) exceeding. Refer to section 6.3.1.3.1 on Materials for an analysis of the Materials indicators.

6.3.2.3.2 Energy

Ques no.	Env Aspects	Performance indicators		Results					Graph				
				No evidence	Partial	Full	Exceeding	Acceptable Omission	No evidence	Partial	Full	Exceeding	Acceptable Omission
				0	1	2	3	AO	0	1	2	3	AO
29		EN 3 Direct energy consumption broken down by primary energy source	Count	0	1	3	1	1					
			Percentage	0	17	50	17	17					
30		EN 4 Indirect energy consumption broken down by primary source	Count	3	0	2	0	1					
			Percentage	50	0	33	0	17					
31	Energy	EN 5 Percentage of total energy consumption met by renewable resources	Count	0	0	3	2	1					
			Percentage	0	0	50	33	17					
32		EN 6 Total energy saved due to conservation and efficiency improvements	Count	0	1	1	3	1					
			Percentage	0	17	17	50	17					
33		EN 7 Initiatives to provide energy-efficient products and services	Count	0	0	3	3	0					
			Percentage	0	0	50	50	0					
34		EN 8 Initiatives to reduce indirect energy consumption	Count	2	0	0	3	1					
			Percentage	33	0	0	50	17					

Table 6.3-23: Part 2 Energy EPIs – International

All indicators are reported on except for EN 4 and EN 8. For EN 4, three (3) organisations did not report and for EN 8, two (2) did not report. It is evident that there is a strong focus on energy management as well as initiatives to provide energy efficiency. Refer to section 6.3.1.3.2 on Energy for an analysis of the Energy indicators.

6.3.2.3.3 Water

Ques no.	Env Aspects	Performance indicators		Results No evidence 0	Partial 1	Full 2	Exceeding 3	Acceptable Omission AO	Graph No evidence 0	Partial 1	Full 2	Exceeding 3	Acceptable Omission AO
35		**EN 9 Total water withdrawal by source**	Count	2	0	3	0	1					
			Percentage	33	0	50	0	17					
36	Water	**EN 10 Water sources & related habitats significantly affected by withdrawal of water**	Count	3	1	1	0	1					
			Percentage	50	17	17	0	17					
37		*EN 11 Percentage and total volume of water recycled and reused*	Count	4	0	1	0	1					
			Percentage	67	0	17	0	17					

Table 6.3-24: Part 2 Water EPIs – International

For EN 9, three (3) organisations reported fully. For EN 10, one (1) reported partially and one (1) reported fully. For EN 11, one (1) organisation reported fully. Refer to section 6.3.1.3.3 on Water for an analysis of the Water indicators.

6.3.2.3.4 Biodiversity

Ques no.	Env Aspects	Performance indicators		Results No evidence 0	Partial 1	Full 2	Exceeding 3	Acceptable Omission AO	Graph No evidence 0	Partial 1	Full 2	Exceeding 3	Acceptable Omission AO
38		**EN 12 Location and size of land owned, leased, or managed in, or adjacent to, protected areas**	Count	5	0	1	0	0					
			Percentage	83	0	17	0	0					
39		**EN 13 Description of significant impacts of activities on protected areas**	Count	3	2	0	0	1					
			Percentage	50	33	0	0	17					
40	Biodiversity	*EN 14 Area of habitats protected or restored*	Count	5	0	0	0	1					
			Percentage	83	0	0	0	17					
41		*EN 15 Programs for managing impacts on biodiversity*	Count	4	1	0	0	1					
			Percentage	67	17	0	0	17					
42		*EN 16 No. of IUCN Red List species with habitats in areas affected by operations*	Count	5	0	0	0	1					
			Percentage	83	0	0	0	17					

Table 6.3-25: Part 2 Biodiversity EPIs – International

For EN 12, one organisation, the GRI, reported fully. The GRI offices reside in an historical monument. For EN 13, two (2) organisations reported with one (1) reporting

on EN 15. EN 14 and EN 16 were not reported on. Refer to section 6.3.1.3.4 on Biodiversity for an analysis of the Biodiversity indicators.

6.3.2.3.5 *Emissions, Effluents and Waste*

				Results					Graph				
Ques no.	Env Aspects	Performance indicators		No evidence	Partial	Full	Exceeding	Acceptable Omission	No evidence	Partial	Full	Exceeding	Acceptable Omission
				0	1	2	3	AO	0	1	2	3	AO
43		**EN 17 Greenhouse gas emissions**	Count	0	2	1	2	1					
			Percentage	0	33	17	33	17					
44		**EN 18 Emissions of ozone-depleting substances**	Count	3	0	0	2	1					
			Percentage	50	0	0	33	17					
45		**EN 19 NOx, SOx, and other significant air emissions by weight**	Count	1	0	3	1	1					
			Percentage	17	0	50	17	17					
46		**EN 20 Total amount of waste by type and destination**	Count	0	0	3	3	0					
			Percentage	0	0	50	50	0					
47	Emissions, Effluents and Waste	**EN 21 Total water discharge and quality**	Count	3	1	1	0	1					
			Percentage	50	17	17	0	17					
48		**EN 22 Total number and volume of significant spills**	Count	3	1	0	1	1					
			Percentage	50	17	0	17	17					
49		*EN 23 Other relevant indirect greenhouse gas emissions*	Count	1	0	0	5	0					
			Percentage	17	0	0	83	0					
50		*EN 24 Weight of transported, imported, or exported waste deemed hazardous*	Count	5	0	0	0	1					
			Percentage	83	0	0	0	17					
51		*EN 25 Water sources & related habitats significantly affected by discharges of water & runoff*	Count	5	0	0	0	1					
			Percentage	83	0	0	0	17					

Table 6.3-26: Part 2 Emissions, Effluents and Waste EPIs – International

For EN 17, two (2) organisations reported partially, one (1) reported fully. For EN 18, three (3) did not report, while two (2) exceeded reporting criteria. For EN 19, one (1) did not report, three (3) reported fully and one (1) exceeded reporting criteria. For EN 20, three (3) reported fully and three (3) exceeded reporting criteria. For EN 21, three (3) did not report, one (1) reported partially and one (1) reported fully. For EN 22, three (3) did not report, one (1) reported partially and one (1) exceeded reporting criteria. For EN 23, one (1) did not report, while five (5) exceeded reporting criteria. For EN 24 and EN 25, no reporting was found. It is evident that the focus is on

measuring and managing Greenhouse gas emissions. Refer to section 6.3.1.3.5 on Emissions, Effluents and Waste for an analysis on the Emissions, Effluents and Waste indicators.

6.3.2.3.6 Products and Services

Ques no.	Env Aspects	Performance indicators		Results					Graph				
				No evidence	Partial	Full	Exceeding	Acceptable Omission	No evidence	Partial	Full	Exceeding	Acceptable Omission
				0	1	2	3	AO	0	1	2	3	AO
52	Products and services	EN 26 Initiatives to manage the environmental impacts of P&S & extent of impact reduction	Count	0	0	1	5	0					
			Percentage	0	0	17	83	0					
53		EN 27 % of products sold that is reclaimed at the end of products' useful life by product category	Count	1	1	2	1	1					
			Percentage	17	17	33	17	17					

Table 6.3-27: Part 2 Products and Services EPIs – International

For EN 26, one (1) organisation reported fully, while five (5) exceeded reporting criteria. For EN 27, one (1) did not report, one (1) reported partially, two (2) reported fully and one (1) exceeded reporting criteria. It is evident that the focus is on managing environmental impacts through products and service. Refer to section 6.3.1.3.6 on Products and Services for an analysis of the Products and Services indicators.

6.3.2.3.7 Compliance, Transport and Overall

Ques no.	Env Aspects	Performance indicators		Results					Graph				
				No evidence	Partial	Full	Exceeding	Acceptable Omission	No evidence	Partial	Full	Exceeding	Acceptable Omission
				0	1	2	3	AO	0	1	2	3	AO
54	Compliance	EN 28 Incidents of non-compliance with applicable environmental regulations	Count	2	0	1	2	1					
			Percentage	33	0	17	33	17					
55	Transport	EN 29 Significant env impacts of transportation used for logistical purposes	Count	2	1	2	1	0					
			Percentage	33	17	33	17	0					
56	Overall	EN 30 Total environmental protection expenditures by type	Count	2	2	1	0	1					
			Percentage	33	33	17	0	17					

Table 6.3-28: Part 2 Compliance, Transport and Overall EPIs – International

For EN 28, two (2) organisations did not report, one (1) reported fully and two (2) exceeded reporting criteria. For EN 29, two (2) did not report, one (1) reported partially, two (2) reported fully and one (1) exceeded reporting criteria. For EN 30,

two (2) did not report, two (2) reported partially and one (1) reported fully. Refer to section 6.3.1.3.7 on Compliance, Transport and Overall for an analysis on the Compliance, Transport and Overall indicators.

6.3.2.4 Selected International ICT and Service Organisations Summary

The overall impression created by the international reports is that something is being done to perform in the environmental sphere of sustainable development. The focus of the international reports is to manage Greenhouse gas emissions. Greenhouse gas emissions assist in global warming and the international organisations have identified that it is in this area that they can make a difference. Evidence exists in the reporting of policies and programmes to reduce energy use and reduce energy sourced from non-renewable energy sources like coal. The focus is on alternative energy sources like hydro, solar and wind. Evidence in the reports indicates that the international organisations are aware of the environmental benefits to be gained from teleconferencing and telework, and the use of public transport systems.

All the international reports assessed were In Accordance with the GRI guidelines. It is evident that using a set of reporting guidelines or frameworks enhances the quality and significance of the report. The international organisations are subject to tight regional and international regulations and directives. This appears to enhance the significance of the reports.

It is evident that the reports identify clearly what their impacts are on the environment and it is these areas that are significantly reported on. Both positive and negative impacts are reported on. In some cases, the reports identify areas of economic and social benefits as a result of environmental management.

6.4 South African ICT Reports versus International Reports

It is not the intention of the research to make a comparison between the South African ICT sector reporting and the international reporting. It is clear that the international organisations are in a different league to the South African ICT sector. Examining the results of the international reporting in relation to the South African ICT reporting gives an indication of the potential level of reporting that the South African ICT organisations could aim for.

The South African ICT 2005 reports indicated that the King II code of conduct on corporate governance served as the impetus for sustainability reporting. The reports support economic and social performance, but were generally lacking in reporting on environmental performance. The sustainability reporting, when present, was dominated by HIV/AIDS related programmes and initiatives, CSI (community upliftment and outreach programmes and initiatives), community training, employment equity and BEE successes.

The international reports indicated that they were being driven to report by regulations, directives, supply chain pressures and investors. Those based in the USA are compelled to adhere to environmental regulations by the US Environmental Protection Agency (US EPA). Those based in Europe are driven by European Union (EU) directives like the WEEE and RoHS directives.

6.4.1 Context, Responsibility, Management, Awards and Compliance

The international organisations all had significant environmental reports and all provided relevant context that included their key shortcomings and successes, and their major risk and opportunities related to environmental issues. Only 24% of the South African organisations had significant environmental reports, while 40% of the organisations had no environmental reporting of any kind. 10% of the South African organisations described their key shortcomings and successes, and 24% provided major organisational risks and opportunities related to environmental issues.

Two (2) of the six (6) international organisations listed their most senior position with operational responsibility for environment issues, with one (1) of the six (6) explaining how operational responsibility is divided at senior level. Eleven (11) of the twenty-one (21) South African organisations listed the position, with one (1) of the twenty-one (21) explaining how operational responsibility is divided at senior level. It is unexpected that the international organisations scored low in these areas considering the significance of their reporting.

No awards for performance and no compliance issues were listed for the South African organisations, while five (5) international organisations listed their awards. Three (3) international organisations listed their compliance issues. It is evident from

the reports that there is more government and public attention given to environmental concerns in the international arena than in South Africa.

6.4.2 Environmental Policies and Goals

The environmental policies in the international reports focused on Energy, Emissions, Effluents and Waste, Products and Services, and Transport. In South Africa, policies focused on Emissions, Effluents and Waste.

The environmental goals in the international reports focused on Energy and Emissions, Effluents and Waste. The international organisations set goals in areas relevant to their operations and that can be clearly and effectively measured. No environmental goals were set in the South African reports.

6.4.3 Environmental Aspects and Indicators

For the Material Aspect (EN 1 – EN 2), little or no evidence of reporting existed in the South African reports, whereas good levels of reporting existed in the international reports, particularly in EN 2 – Percentage of materials used that are recycled.

For the Energy Aspect (EN 3 – EN 8), little or no evidence of reporting existed in the South African reports, whereas good levels of reporting existed in the international reports. Key focus areas in the international reports are: EN 3, 4 & 6 – Energy savings programmes, EN 5 – The replacing of conventional goal burning energy with more environmentally friendly energy sources like hydro, solar and wind, EN 7 & 8 – Initiatives to provide energy-efficient products and services.

For the Water Aspect (EN 9 – EN 11) and the Biodiversity Aspect (EN 12 – EN 16), little or no evidence of reporting existed in the South African reports and low levels existed in the international reports. The ICT sector has a relatively low impact on these two aspects and a high level of reporting is not expected.

For the Emissions, Effluents and Waste Aspect (EN 17 – EN 25), little or no evidence of reporting existed in the South African reports except for the five (5) organisations that reported on EN 20 – The total amount of waste by type and destination. Good levels of reporting existed for the international reports, particularly EN 23 – the use of telecommuting and teleconferencing to reduce indirect Greenhouse gas emissions.

For the Products and Services Aspect (EN 26 – EN 27), little or no evidence of reporting existed in the South Africa reports, whereas good levels of reporting existed in the international reports. A key focus area for the international reports was EN 26 – Organisational initiatives to manage the environmental impacts of their products and services as well as the extent of the impact reduction (when the impact is negative). This is evident through the virtualisation of products, E-Commerce programmes and the distribution and manipulation of environmental information that exists in the international reports.

For the Compliance Aspect (EN 28), no evidence existed in the South African reports, whereas three international organisations reported on their non-compliance. The reports suggest that environmental regulations are tightly controlled and monitored in the international arena leading to more non-compliance incidences.

For the Transport Aspect (EN 29), no evidence existed in the South African reports, whereas four international organisations reported on significant environmental impacts of transportation. The international reports indicate that pressure is exerted on and by supply chain links which includes transport used for logistical purposes.

For the Overall Aspect (EN 30), no evidence existed in the South African reports, whereas four international organisations reported on their overall expenditure on environmental protection. This shows commitment to environmental issues.

6.5   Conclusion

The organisations in the publicly listed SA ICT sector as a whole are not reporting significantly on their environmental performance. The organisations that are using internationally accepted reporting guidelines, like the GRI guidelines, and environmental management systems are presenting more significant reports. The selected international ICT organisations presented rich and significant reports that show real environmental performance. The international organisations are demonstrating sustainable development through their reporting.

Chapter 7: Conclusion and Future Research

Chapter six described the results of the research. This chapter reviews the contribution of the research and identifies areas for future research.

7.1   Introduction

Corporate sustainability and sustainable performance is recognised and adopted in a business context to mean the achievement of balanced and integrated economic, social and environmental performance, known as the "triple bottom line". The King II report provides emphasis and direction for "Integrated Sustainability" between organisations and the communities in which they exist. Organisations are encouraged to report openly on their performance on the triple bottom line. Research of environmental sustainability reporting in the ICT sector has indicated that South African organisations are particularly poor with regards to their reporting. With the rapid growth of ICT, organisations increasing reliance on ICT, the pervasiveness of ICT, the convergence of ICTs and the integration of the information society with sustainable development, a greater understanding is needed of the positive and negative impact that ICT has on the environment. This increased understanding will encourage and allow the ICT sector to improve its positive impact on the environment while reducing its negative impact, and reporting this progress to their stakeholders. Greater understanding will also assist in formulating sector specific guidelines for environmental sustainability reporting.

This chapter considers the contribution of the research. The importance of sustainability reporting and the impact that ICT has on environmental sustainability are reviewed. The contribution of the research assessment tool is discussed followed by a review of the status of reporting in the South African ICT sector and the selected international ICT and service organisations. The value of assessing environmental sustainability in isolation and the relevance of the research to the ICT sector is reviewed. To enhance and encourage environmental sustainability reporting a seven (7) step summary of the GRI guidelines is provided along with a proposed set of ICT specific performance indicators. Finally, the chapter is concluded by identifying areas of future research.

7.2   Contribution of the Research

7.2.1 The Importance of Sustainability Reporting

King II recognizes the need to move away from only profit for shareholders to a triple bottom line approach, which embraces the economic growth, environmental impact

and social involvement of an organisation. The three spheres (economic, environment and society) of the triple bottom line are interconnected where society depends on the economy and the economy depends on the global ecosystem. The principles of fairness, accountability, responsibility and transparency are common to all three spheres of the triple bottom line. These principles are also the fundamental concepts that lie at the root of corporate governance. Corporate governance is the foundation in which each sphere of the triple bottom line is embedded. Corporate governance is an attempt to create structured dialogue between organisations and their stakeholders, inclusive of shareholders, in order to pave the way for understanding an organisation's strategic and operational goals which could include critical success factors for achieving organisational goals. For South African organisations to embrace the spirit of the triple bottom line and sustainable development, they must adopt the King II codes of conduct which promotes sustainability reporting.

To promote sustainable development, organisations need to ensure that their economic, social and environmental dimensions are equally vital and inter-connected. Economic sustainability means economic growth without making undue demands on social or natural resources. Environmental sustainability means not only minimising impacts on the environment, but building natural resources and safeguarding them for the future. Social sustainability means building, and not undermining, social equity.

Long term sustainability is vital for the world and technology, specifically ICT, will play a major role in sustainable development by being able to substitute information and services for goods and products, and using miniaturization and dematerialization to use less of goods. Sustainable development is not a cheap and easy option; it is fundamentally difficult and expensive with return on investments that are not always clear. There is a paradox in sustainable development of the conflicting requirement of providing the flows of production and consumption needed to maintain a good quality of life for all people - in perpetuity, while at the same time sustaining the local and global environment and bio-diversity. This is the challenge for the organisations to embrace in order to achieve sustainable development. Organisational development in this area should be reflected in their sustainability reporting, informing all stakeholders of the progress being made by the organisation to sustainable development.

7.2.2 ICT Impacts on Environmental Sustainability

The intensified use of ICT and the pervasiveness of computing, results in both advantages and disadvantages to the environment. Intensified use of information services instead of physical goods can contribute to higher ecological efficiency in economics and consumption. Although the use of ICT highlights the potential for dematerialization, it must be expected that energy and resource savings will not be realisable in every case due to a growth in demand that will overcompensate for the savings (rebound effects). The rebound effects are unclear: the application of ICT in business operations could cut the demands of transport on the environment, but what people do with the freed up time, for example, leisure travel, could counteract the drop in demands for transport.

ICT impacts on the environment in three ways, namely First-order, Second-order and Third-order effects. First-order effects include all environmental impacts resulting from ICT hardware during the product lifecycle which covers the design, manufacture, use, and disposal of ICT equipment. The environmental impacts include:

- The use of toxic materials in monitors, batteries and chip boards
- The intensive use of natural resources like water
- The emissions of Greenhouse gases
- The energy required to operate ICT systems
- The electrical and electronic equipment waste produced

Second-order effects include the use of ICT that causes effects to processes like traffic or industrial production. The effects tend to impact the environmental indirectly and can be both negative and positive. The environmental impacts include:

- Transport efficiencies through teleworking, telematics and E-Commerce (could lead to decreases, offset by increases, in the use of transport)
- Heating, ventilation and air-conditioning efficiencies
- Dematerialization of goods and products, offset by devirtualization of electronic goods
- Increases and decreases in product life cycles

- Decreases in product development cycles

- Enhanced dissemination of environmental information

Third-order effects include the widespread use of ICT in daily life and economic structures. This leads to lifestyle changes which indirectly affect the expression of First- and Second-order effects. Changing patterns of human and industrial settlement result in agglomeration and / or dispersion. The environmental impacts include:

- Increases in demands on natural resources through dispersion

- Decreases in demands on natural resources through agglomeration

Policies, regulations and directives that exploit the environmental opportunities of ICT and pervasive computing while avoiding the risks at an early stage of technological and market development are needed. ICT needs to be used to enhance sustainability, and sustainability reporting should be used to manage and measure progress in this regard.

7.2.3 The Assessment Tool

The tool used to assess the extent of sustainability reporting was developed from the internationally recognised GRI G3 Draft guidelines and GRI protocols which were combined to form a questionnaire. The South African JSE SRI Index scoring method was used to rate the reporting of each indicator depending on how many of the protocols were reported on.

Application of the Tool

The tool was able to measure successfully the level of environmental sustainability reporting in the South African ICT sector against the set assessment criteria. Preliminary scanning of the target group's annual reports indicated that the level of environmental sustainability reporting was low. The results of the application of the tool confirmed this early indication, indeed the level of reporting was even lower than expected. The tool was used to identify evidence of environmental sustainability reporting and was not influenced by marketing "talk" or terminology. The tool is designed using a globally accepted set of reporting guidelines. Those organisations that used reporting guidelines for their reporting, presented a more significant level of reporting than those that did not. Only five (5) of twenty-one (21) South African ICT reports that were assessed, made use of reporting guidelines. In most cases there was

no evidence of reporting against the indicators and their protocols. It is difficult to identify reporting trends, relevant sector indicators and highlights with only 24% of the sample, according to the tool, with some level of significant reporting. When evidence did exist in a report, rating the evidence was applicable as the evidence could be compared to the protocols in the tool.

The result of the application of the tool on the international reports indicated high levels of environmental sustainability reporting. The results did highlight relevant sector indicators and reporting trends. This is expected as the reports are In Accordance with the GRI guidelines, which implies that the reports are recognised as outstanding in their sector.

Reports that made use of reporting guidelines made application of the tool more applicable and easier to assess. In these cases the structure of the reports was similar to the structure of the assessment tool. This made the identification of evidence far easier as the information in the reports was contained under similar sections and headings to the assessment tool.

The Measurement Scale

The tool used two sets of measurements scales.

Part 1 of the tool used "Yes", "No" and "Not Applicable". The "Not Applicable" scale was only relevant for Question 2 – (*Indicates reason for not reporting if there is no significant reporting*) of the questionnaire which related directly to Question 1 – (*Organisation has significant environmental report*). The "Not Applicable" could have been left out of the other questions.

The "Yes" and "No" scale worked well for Part 1 except for the section on Environmental Policies (Questions 13 – 19), where it would have been beneficial to indicate that a relevant policy was "being planned", "being implemented" or "in operation". The scale could be changed to include these for this section.

Part 2 of the tool used a four point scale, "No evidence", "Partial", "Full" and "Exceeding", with an additional "Acceptable Omission" score. In most cases it was applicable to score the indicators with this scale except the "Acceptable Omission" score. The "Acceptable Omission" score was only relevant to one organisation, the GRI. In reviewing the assessment tool, it would be better for the "Acceptable Omission" score to be eliminated from the scale. Acceptable omissions could be

noted in a separate section of the assessment tool. The differentiation between "Full" and "Exceeding" was at times negligible. These two scores could be merged into one score, leaving the scale with three points, "No evidence", "Partial" and "Full".

Relevance of the Tool to the ICT sector

The tool was not designed to be specific. Rather, it is a generic tool with which to measure levels of environmental sustainability reporting. This has the advantage of being usable to assess several sectors. It also has the disadvantage of assessing organisations on indicators that have no relevance to their industry. This can create the impression that a particular sector as a whole is reporting poorly, but they may be reporting very well on the indicators that are relevant to their industry. This highlights the need for sector or industry specific reporting guidelines.

In summary, the assessment tool achieved the objective of assessing the extent of environmental sustainability reporting in the target population. This was achieved through a qualitative narrative summary of each report and a quantitative assessment of the sample as a whole. The assessment tool adds value by assessing the extent of environmental sustainability reporting and can add further value by identifying sector specific performance indicators and industry trends for those sectors that are using reporting guidelines as a whole.

7.2.4 Status of Reporting in South Africa

The level of environmental sustainability reporting in the South African ICT sector in 2005 was assessed to be low. Many organisations did not report on environmental issues, while others reported that they have no significant impact on the environment. The telecommunication organisations tended to have more significant reports. Two main influences on the telecommunication organisations that have encouraged significant reporting are the high public visibility of the sector and the Independent Communications Authority of South Africa (ICASA). Telecommunication organisations in South Africa are highly visible to the public and investors through their marketing and advertising campaigns, and they are under the authority of ICASA, which is the regulator of telecommunications and the broadcasting sectors in South Africa. ICASA was established to regulate the telecommunications and broadcasting industries in the public interest. One of its key functions is to monitor

the environment and enforce compliance with rules, regulations and policies (ICASA, 2006).

Those organisations with environmental management systems (EMSs), and those using guidelines (like the GRI or the JSE SRI) had more significant reports. Most of the environmental reporting in the South African ICT sector focused on waste management and recycling initiatives. Priorities in the South African reports focus on the social sphere of sustainable development and transformation issues. The reports indicate that Black Economic Empowerment (BEE) is a key focus which is being driven by the BEE charter for the ICT sector. The BEE charter stresses that organisations should focus on specific indicators and draw up a scorecard against which empowerment credentials of an organisations can be weighted and measured. Another key issue being reported on is Corporate Social Investment (CSI). Organisations are committing specific percentages of their turnover to social investment to support various initiatives like ICT education and training, ICT infrastructure development and HIV/AIDS programmes. This is understandable as SA has major social issues to redress the legacies of Apartheid.

Context, Responsibility, Management, Awards and Compliance

- 24% of the organisations had significant environmental reports

- 40% of the organisations had no environmental reporting of any kind

- 10% of the organisations described their key shortcomings and successes

- 24% provided major organisational risks and opportunities related to environmental issues

- Eleven (11) of the twenty-one (21) organisations listed the most senior position with operational responsibility for environment issues

- One (1) of the twenty-one (21) explained how operational responsibility is divided at senior level.

- No awards for performance and no compliance issues were listed

Environmental Policies and Goals

- Policies focused on Emissions, Effluents and Waste

- No environmental goals were set

Environmental Aspects and Indicators

- Material Aspect (EN 1 – EN 2) – little or no evidence of reporting

- Energy Aspect (EN 3 – EN 8) – little or no evidence of reporting

- Water Aspect (EN 9 – EN 11) – little or no evidence of reporting

- Biodiversity Aspect (EN 12 – EN 16) – little or no evidence of reporting

- Emissions, Effluents and Waste Aspect (EN 17 – EN 25) – little or no evidence of reporting existed in the South Africa reports except for five (5) organisations that reported on EN 20 – The total amount of waste by type and destination

- Products and Services Aspect (EN 26 – EN 27) – little or no evidence of reporting

- Compliance Aspect (EN 28) – no evidence of reporting

- Transport Aspect (EN 29) – no evidence of reporting

- Overall Aspect (EN 30) – no evidence of reporting

7.2.5 Status of Reporting in Selected International Reports

The selected organisations in the international ICT and service sector in 2005 were all "In Accordance" with the GRI G2 Guidelines. These organisations are all from more developed economies than South Africa and are in general much larger than the organisations in the South African ICT sector. As expected the level of environmental sustainability reporting in these reports was assessed to be high. The selected international organisations all had significant environmental reports and all provided relevant context that included their key shortcomings and successes, and their major risk and opportunities related to environmental issues. The reports that were assessed indicated that their reporting is being driven by regional regulations, directives, supply chain pressures and public pressure. US based organisations are compelled to adhere to environmental regulations by the US Environmental Protection Agency (US EPA). European based organisations are driven by European Union (EU) directives like the WEEE and RoHS. All the international reports assessed were In Accordance with the GRI guidelines. It is evident that using a set of reporting guidelines or frameworks enhances the quality and significance of the report.

Highlights from the international environmental reporting include replacing conventional energy with "green" energy (hydro, wind and solar), creating product

energy efficiencies, reducing waste sent to landfill sites, appropriate treatment of hazardous and non-hazardous waste, reducing Greenhouse gas emissions from operations, advances in product stewardship (cradle-to-grave product lifecycle), increased reuse and recycling of used products (take-back and buy-back initiatives), designing products and services for the environment and recyclability, and improved packaging.

Context, Responsibility, Management, Awards and Compliance

- 100% of the organisations had significant environmental reports

- 100% of the organisations provided relevant context that included their key shortcomings and successes, and their major risk and opportunities related to environmental issues

- Two (2) of the six (6) organisations listed their most senior position with operational responsibility for environment issues

- One (1) of the six (6) organisations explained how operational responsibility is divided at senior level

- Five (5) of the six (6) organisations listed their awards

- Three (3) of the six (6) organisations listed their compliance issues

Environmental Policies and Goals

- The environmental policies in the reports focused on Energy, Emissions, Effluents and Waste, Products and Services, and Transport

- Environmental goals focused on Energy and Emissions, Effluents and Waste

The international organisations set goals in areas relevant to their operations and that can be clearly and effectively measured.

Environmental Aspects and Indicators

- Material Aspect (EN 1 – EN 2) – good levels of reporting evident, particularly in EN 2 – Percentage of materials used that are recycled

- Energy Aspect (EN 3 – EN 8) – good levels of reporting evident. Key focus areas are: EN 3, 4 & 6 – Energy savings programmes, EN 5 – The replacing of conventional goal burning energy with more environmentally friendly energy

    sources like hydro, solar and wind, EN 7 & 8 – Initiatives to provide energy-efficient products and services

- Water Aspect (EN 9 – EN 11) – low levels evident

- Biodiversity Aspect (EN 12 – EN 16) – low levels evident

- Emissions, Effluents and Waste Aspect (EN 17 – EN 25) – good levels of reporting evident, particularly EN 23 – the use of telecommuting and teleconferencing to reduce indirect Greenhouse gas emissions

- Products and Services Aspect (EN 26 – EN 27) – good levels of reporting evident. A key focus area for the international reports was EN 26 – Organisational initiatives to manage the environmental impacts of their products and services as well as the extent of the impact reduction (when the impact is negative)

- Compliance Aspect (EN 28) – three (3) of six (6) organisations reported on their non-compliance

- Transport Aspect (EN 29) – four (4) of six(6) organisations reported on significant environmental impacts of transportation

- Overall Aspect (EN 30) – four (4) of six (6) organisations reported on their overall expenditure on environmental protection

Lessons from International Reporting

The reports assessed showed a major focus on reducing Greenhouse gas emissions (like CO_2). The programmes involve shifting from traditional coal generated energy to energy generated by renewable sources like hydro, wind and solar. The focus is on reducing the number of kilometres driven by personnel as car engines emit CO_2 into the atmosphere. The organisations promote telework and teleconferencing, car pools, public transport and have incentives for using energy efficient cars. The international reports are able to show economic and social benefits to their environmental programmes. International organisations have strict international and regional directives and legislation with which to comply, which is reflected in the reporting.

7.2.6 Assessing Environmental Sustainability in Isolation

The environmental sphere should ideally be assessed in conjunction with the other two spheres of sustainable development to obtain a full picture of an organisation's

sustainability reporting. Organisations that have reports that qualify for the JSE SRI index must meet overall criteria as well as criteria for each sphere of the triple bottom line. Organisations are able to score relatively high overall scores for the JSE SRI index, while paying little attention to environmental issues. Isolating the environmental sphere from the other two identified the lack of focus being placed on the environmental issues.

7.2.7 Relevance of the Research to the ICT Industry

The research highlights the importance of sustainable development and how reporting can be used to measure and manage sustainable development. It shows the importance of using reporting guidelines in conjunction with an accredited EMS as well as the impacts that ICT organisations can have on environmental sustainability. It also shows the positive and negative impacts that an organisation can have on environmental sustainability. It highlights to organisations what other organisations in their sector are reporting on, providing a benchmark for them to use in their future reporting.

7.2.8 Environmental Sustainability Reporting Guidelines for the South African ICT Sector

Based on this research, to encourage significant environmental sustainability reporting, an organisation should use a set of globally accepted reporting guidelines, like the GRI guidelines. The GRI guidelines contain several steps in implementing sustainability reporting. Listed below is a seven (7) step process that summarises the GRI G3 Draft guidelines for environmental sustainability reporting. Within the summary, a set of ICT sector specific performance indicators is proposed based on the results of the research conducted.

1. Identify relevant stakeholders and appoint an executive member to be accountable for the environmental sustainability concerns.

2. Identify and select a set of reporting guidelines (for example, the GRI guidelines).

3. Determine the report content. This includes identifying relevant topics and environmental aspects for the specific organisation to report on. The principles for defining the report content should be applied at this step. The principles are contained in Appendix A - Table A.1-1.

4. Establish the report boundary. This includes establishing which entities of the organisations will be represented by the report

5. Ensure the quality of the reported information. The principles for quality reporting should be applied at this step. The principles are contained in Appendix A - Table A.2-1.

6. Determine Standard Disclosures which consists of two parts. Part 1 includes determining the organisation's strategic view its relationship to sustainability, the nature of its business environment, the report parameters (including a content index), and the organisation's commitment to corporate governance and stakeholder engagement. Part 2 includes the organisation's management approach, which provides context for understanding performance in a specific area, and environmental performance indicators, which involves compiling information on the environmental performance of the organisation. A proposed set of sector specific environmental performance indicators for the ICT sector is listed in section 7.2.9 below.

7. Generate the environmental sustainability report

The environmental sustainability report forms part of the larger sustainability report for the organisation, which includes economic and social sustainability. The steps for the other two spheres of sustainability are similar and differ mainly in identifying the topics and indicators.

7.2.9 Proposed ICT Sector Specific Environmental Indicators

A set of ICT sector specific indicators are proposed to enhance environmental sustainability reporting in the ICT sector. The indicators are based on the GRI G3 draft guidelines and include the indicators that are most relevant to the ICT sector based on this research project. In determining the most relevant indicators, the following factors were considered: The First, Second and Third order effects of ICT on environmental sustainability, the environmental sustainability reporting trends highlighted by this research, and the indicators that the international reports focused on. Each performance indicator is accompanied by technical protocols which the reporting organisation should use when reporting on the indicators. The technical protocols give basic guidance on interpreting and compiling reporting information for

each indicator. Examples of how they can be applied are provided with the protocols.
These are contained in Table 7.2-1.

Aspect	Indicator number	Indicators	Protocols
Materials	EN 2	Percentage of materials used that are recycled	Identify materials recycled State the total weight of materials recycled in tonnes e.g. Recycling or disposal of computers and telecommunication hardware
Energy	EN 6	Total energy saved due to conservation and efficiency improvements	Identify and state the total amount of energy saved in joules. e.g. Monitor and measure electricity consumption, and set goals for reduction
	EN 7	Initiatives to provide energy-efficient products and services	Describe existing initiatives to reduce the energy requirement of major products/product groups or services. State quantified reductions in the energy requirements of products and services that have been achieved during the reporting period. e.g. Production of energy efficient ICT equipment Monitors that switch off after a period of non-use Networks and systems that reduce energy requirements Product stewardship
	EN 8	Initiatives to reduce indirect energy consumption.	Describe initiatives to reduce indirect energy use. State quantitatively to what extent indirect energy use has been reduced during the reporting period. e.g. Telework, teleconferencing, Network energy savings Indirect energy use occurs through purchasing materials and components or services such as travel, commuting, and subcontracted production
Emissions, Effluents, and Waste	EN 17	Greenhouse gas emissions.	Identify direct emissions of greenhouse gases from all sources owned or controlled by the reporting organisation, including: • Generation of electricity, heat, or steam • Transportation of materials, products, and waste; • Venting; and • Fugitive emissions. Identify indirect emissions of greenhouse gases resulting from the generation of purchased electricity, heat, or steam State the total greenhouse gas emissions as the sum of direct and indirect emissions in tonnes of CO_2 equivalent. e.g. Measure and monitor emissions from the production of ICT equipment (computers and cellphones)
	EN 20	Total amount of waste by type and destination	Identify the amounts of waste resulting from the organisation's operations (hazardous and non-hazardous) State the total amount of waste in tonnes State how the destination of the waste has been determined. e.g. Polluting substances used in ICT components can leach into the ecosystem
Products and Services	EN 26	Initiatives to manage the environmental impacts of products	Describe initiatives in the reporting period to reduce the most significant environmental impacts of products/service groups

		and services and extent of impact reduction.	State quantitatively to what extent environmental impacts of products and services have been reduced during the reporting period. E.g. B2B E-Commerce and ICT managed control systems create efficiencies and reduce environmental impact. Virtualisation of material products makes environmental savings possible from increased trade in intangibles. Some E-Commerce business models extend product lifetimes Product development cycles are often reduced by use of ICT Distribution and manipulation of environmental information is significantly enhanced by ICT
	EN 27	Percentage of products sold that is reclaimed at the end of the products' useful life by product category	Identify the amount of products reclaimed (i.e., recycled or reused) at the end of their useful life within the reporting period. State the percentage of reclaimed products per category of products. e.g. Product buy-back programmes for ICT products
Compliance	EN 28	Incidents of, and fines or non-monetary sanctions for, non-compliance with applicable environmental regulations	Identify and state incidents that resulted in sanctions for failure to comply with environmental regulations State if no incidents have occurred.
Transport	EN 29	Significant environmental impacts of transportation used for logistical purposes.	Identify the significant environmental impacts of the transportation modes used Describe significant environmental impacts of transportation used for logistical purposes. e.g. Monitor and measure impacts of supply chain
Overall	EN 30	Total environmental protection expenditures by type	State total environmental protection expenditures broken down by: - waste disposal, emission treatment, and remediation costs; and - prevention and environmental management costs.

Table 7.2-1: Proposed ICT sector specific environmental indicators

7.3 Future Research

Future research includes the following:

- The research assessment tool is based on the GRI Draft G3 guidelines. The final version of the G3 guidelines was released in October 2006. The research had already been conducted prior to the release of the final G3 guidelines. Should the tool be used for any further research, the tool should be modified to reflect minor changes made to the G3 Draft guidelines.

- The research was conducted on the environmental sphere of sustainable development. A similar set of tools should be developed for the social and economic spheres of the triple bottom line. A similar approach can be implemented to incorporate the other two spheres into the assessment tool. A

study of the impact of ICT on economic and social sustainability should be conducted as part of the extended research.

- The research tool should be applied to an organisation to measure their progress year on year and in relation to organisations in the industry. The tool should be used to get a snapshot of the level of reporting for a particular sector for a specified reporting period. Thereafter the tool should be used to assess reporting for that sector on an annual basis to check for changes, improvements and sector specific trends. This will assist in developing applicable sector specific guidelines for reporting.

- Research should be conducted in other JSE Securities Exchange sectors. A study of the relevant sector and its impact on environmental sustainability is required to understand the context and identify the relevant environmental indicators which are needed to interpret the results of the application of the tool.

7.4   In Closing

Measuring and communicating environmental performance is critical to measuring performance of the triple bottom line. Environmental sustainability reporting has been shown to be lacking in the South African ICT sector, while the selected international reports had much higher levels of reporting. Organisations that are not producing reports with significant levels of environmental sustainability reporting are not aligning themselves with the spirit and intention of the King II code of good corporate governance. This research provides a tool for organisations to assess the level of their reporting so that reporting can be improved in line with international standards.

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Appendix A: GRI Reporting Principles and Tests

Appendix A contains the GRI reporting principles and associated tests

A.1 Principles for Defining Report Content

Principles for Defining Report Content	
Principle	Tests
Inclusivity Principle Requires that relevant stakeholders are identified and how they have responded to their issues in their report is explained	The organisation can describe the stakeholders to whom it considers itself to be accountable, and identifies the stakeholders that it expects to use the report. The report content draws upon the outcomes of stakeholder engagement processes used by the organisation to manage its activities. The report content draws upon the outcomes of any stakeholder engagement processes undertaken specifically for the report. The stakeholder engagement processes that inform decisions about the report are consistent with the scope and boundary of the report.
Relevance and Materiality principle Requires that information in their report that covers issues and indicators that substantially influence the decisions of the stakeholders using the report is included	**External Factors** In defining material issues, the reporting organisation takes into account external factors, including: Major sustainability interests/issues raised by stakeholders. The main issues for the sector reported by peers and competitors. Local, regional, national and international regulations, laws, or voluntary agreements with strategic significance to the organisation. Reasonably estimable sustainability risks or opportunities (e.g., global warming, HIV-AIDS, poverty) identified through sound investigation by people with recognized expertise or by expert bodies with recognized credentials in the field. **Internal Factors** In defining material issues, the reporting organisation takes into account internal factors, including: Key organisational values, policies, strategies, operational management systems, goals, and targets. Major risks to the organisation.

	Critical factors for enabling organisational success. The organisation's core competencies and the manner in which they contribute to sustainable development. **Prioritizing** The report prioritizes material issues and indicators.
Sustainability Context principle Requires that the organisation's performance in the wider context of sustainability, where such context has significant interpretative value, is presented	The organisation presents its understanding of sustainable development and draws on the best available information and measures of sustainable development for the issues covered in the report The organisation presents its performance with reference to broader sustainable development conditions and goals as reflected in recognized local, regional, and/or global publications. The organisation presents its performance in a manner that attempts to communicate the magnitude of its impact and contribution in appropriate geographical contexts. The report describes how major sustainability issues relate to long-term organisational strategy, risks, and opportunities, including supply-chain issues.
Completeness principle Requires that the relevant and material issues and indicators are covered	The report covers issues and indicators prioritized on the basis of materiality, sustainability context, and stakeholder engagement, and was developed taking into account the whole value chain. The report includes all entities controlled or significantly influenced by the organisation unless otherwise declared. The information in the report includes all significant actions or events in the period reported on, and reasonable estimates of significant future impacts of past events when those impacts are reasonably foreseeable and may become unavoidable or irreversible. The report does not omit relevant information.

Table A.1-1: Principles for defining report content (GRI, 2006b)

A.2 Principles for Ensuring the Quality of Reported Information

Principles for Ensuring the Quality of Reported Information	
Principle	**Tests**
Balance Principle Requires that a balanced and reasonable presentation of the reporting organisation's performance is provided	The report discloses both favourable and unfavourable results and issues. The information in the report is presented in a format that allows users to see positive and negative trends in performance. The emphasis on different content of the report is proportionate to the relative materiality of the issues or information.
Comparability Principle Requires that the information reported should remain consistent and be complied and presented in a manner that enables stakeholders using the report to analyse changes in the organisation's performance over time as well as relative to other organisations	The report and the information contained within it can be compared on a year-to-year basis. The organisation's performance can be compared with appropriate benchmarks. Any significant variation in basic report content with respect to boundary, scope, length of reporting period, or information covered year-to-year can be identified and explained. Where they are available, the reporting organisation applies generally accepted protocols for compiling information, including the GRI Technical Protocols for indicators contained in the Guidelines. The report uses GRI Sector Supplements, where available.
Accuracy Principle Requires that the reported information should be accurate and sufficiently detailed for stakeholders using the report to make decisions with a high degree of confidence	The report indicates what data has been measured. The data measurement techniques and bases for calculations are adequately described, and can be replicated with similar results. The margin of error for quantitative data is not sufficient to substantially influence conclusions on performance. The report indicates what data has been estimated and what assumptions and techniques have been used to produce the estimates. The qualitative statements in the report are valid on the basis of other reported information and other available evidence.
Timeliness Principle	Information in the report has been disclosed while it is recent

	relative to the reporting period.
Requires that information is presented in time and on a regular schedule for stakeholders using the report to make informed decisions	The sustainability reporting schedule is aligned with the financial reporting cycle. The collection and availability of key performance information is aligned with the sustainability reporting schedule. The information in web-based reports clearly indicates the time period to which it relates, when it will be updated and when the last updates were made.
Clarity Principle Requires that information be made available in a manner that is understandable by and accessible to stakeholders using the report	The report contains the necessary level of information for the needs of report users, but avoids excessive and unnecessary detail. Report users can find the specific information that they want without unreasonable effort through tables of contents, maps, links, or other aids. The report includes a glossary or explanation for technical terms, acronyms, jargon or other content that is likely be unfamiliar to report users. The data and information in the report is available to major stakeholders including those with particular accessibility needs (differing abilities, language, and technology).
Assurability Principle Requires that information and process used in the preparation of a report should be recorded, compiled, analysed and disclosed in a way that could be subject to review and assurance	There is a statement from management taking responsibility for the content and process of preparing the report. The scope and extent of assurance, and the stakeholders expected to use the report are identified. The original source of all the information in the report can be identified by the organisation. The organisation can attest to the reliability of the original source, and, if not, that fact is disclosed. Representation is available from the original data or information owners, attesting to its reliability or accuracy within acceptable margins of error. There is external evidence available from reliable sources for supporting assumptions or approaches to technically complex calculations.

Table A.2-1: Principles for ensuring the quality of reported information (GRI, 2006b)

Appendix B: GRI Performance Indicators

Appendix B contains the GRI Economic, Environmental and Social performance indicators.

B.1 Economic Performance Indicators

Economic Performance Indicators	
Aspect	**Indicator**
Economic Performance	EC1. Economic value generated and distributed, including revenues, operating costs, employee compensation, donations and other community investments, retained earnings, and payments to capital providers and to governments (core) EC2 Financial implications of climate change (core) EC3 Coverage of the organisation's defined benefit pension plan obligations (core) EC4 Financial assistance received from government (core)
Market Presence	EC5 Entry level wage compared to local minimum wage for significant locations of operation (core) EC6 Practices and proportion of spending on locally-based suppliers at significant locations of operation (core) EC7 Procedures for local hiring, and proportion of senior management in locations of significant operation from the local community" (core)
Indirect Economic Impacts	EC8 Description of infrastructure investments and services supported that provide public benefit (core) EC9 Indirect economic impacts (additional)

Table B.1-1: Economic Performance Indicators (GRI, 2006b)

B.2 Environmental Performance Indicators

Environmental Performance Indicators	
Aspect	**Indicator**
Materials	EN 1 Weight of materials used (core) EN2 Percentage of materials used that are recycled (core)
Energy	EN3 Direct energy consumption broken down by primary energy source (core) EN4 Indirect energy consumption broken down by primary source (core) EN5 Percentage of total energy consumption met by renewable resources (additional) EN6 Total energy saved due to conservation and efficiency improvements (additional)

	EN7 Initiatives to provide energy-efficient products and services (additional) EN8 Initiatives to reduce indirect energy consumption(additional)
Water	EN9 Total water withdrawal by source (core) EN10 Water sources and related habitats significantly affected by withdrawal of water (additional) EN11 Percentage and total volume of water recycled and reused (additional)
Biodiversity	EN12 Location and size of land owned, leased, or managed in, or adjacent to, protected areas (core) EN13 Description of significant impacts of activities on protected areas (core) EN14 Area of habitats protected or restored (additional) EN15 Programs for managing impacts on biodiversity(additional) EN16 Number of IUCN Red List species with habitats in areas affected by operations broken down by level of extinction risk (additional)
Emissions, Effluents, and Waste	EN17 Greenhouse gas emissions (core) EN18 Emissions of ozone-depleting substances (core) EN19 NOx, SOx, and other significant air emissions by weight (core) EN20 Total amount of waste by type and destination (core) EN21 Total water discharge and quality (core) EN22 Total number and volume of significant spills (core) EN23 Other relevant indirect greenhouse gas emissions (core) EN24 Weight of transported, imported, or exported waste deemed hazardous under the terms of the Basel Convention Annex I, II, III and VIII (additional) EN25 Water sources and related habitats significantly affected by discharges of water and runoff (additional)
Products and Services	EN26 Initiatives to manage the environmental impacts of products and services and extent of impact reduction (core) EN27 Percentage of products sold that is reclaimed at the end of the products' useful life by product category (core)
Compliance	EN28 Incidents of, and fines or non-monetary sanctions for, non-compliance with applicable environmental regulations (core)
Transport	EN29 Significant environmental impacts of transportation used for logistical purposes (additional)

Overall	EN30 Total environmental protection expenditures by type (additional)

Table B.2-1: Environmental Performance Indicators (GRI, 2006b)

B.3 Social Performance Indicators

Social Performance Indicators	
Aspect	**Indicator**
Labour Practices & Decent Work Performance indicators	
Employment	LA1 Breakdown of total workforce by employment type and by region (core) LA2 Total number and rate of employee turnover broken down by age group and gender (core) LA3 Minimum benefits provided to full-time employees, which are not provided to temporary or part-time employees (additional)
Labour/Management Relations	LA4 Percentage of employees represented by independent trade union organisations or covered by collective bargaining agreements (core) LA5 Minimum notice period(s) and consultation and negotiation practices with employees and/or their representatives regarding operational changes (core)
Occupational Health and Safety	LA6 Percentage of workforce represented in formal joint management-worker health and safety committees that help monitor and advise on occupational health and safety programs (core) LA7 Rates of injury, occupational diseases, lost days, and absenteeism and number of work-related fatalities (core) LA8 Education, training, counselling, prevention and risk-control programs in place for assisting workforce members, their families or community members affected by HIV/AIDS or other serious communicable diseases (core) LA9 Elements of occupational health and safety management approach (additional) LA10 Health and safety topics covered in formal agreements with trade unions (additional)
Training and Education	LA11 Average hours of training per year per employee broken down by employee category (core) LA12 Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career

	endings (additional)
	LA13 Percentage of employees receiving regular performance and career development review (additional)
Diversity and Opportunity	LA14 Composition of governance bodies' and breakdown of employees per category according to gender, age group, minority group membership, and other indicators of diversity (core)
	LA15 Ratio of average remuneration of men and women broken down by employee category (additional)
Human Rights	
Management Practices	HR1 Percentage of significant investment agreements that include human rights clauses or that underwent human rights screening (core)
	HR2 Percentage of major suppliers and contractors that underwent screening on human rights (core)
	HR3 Type of employee training on policies and procedures concerning aspects of human rights relevant to operations, including number of employees trained (additional)
Non-discrimination	HR4 Incidents of discrimination (core)
Freedom of Association	HR5 Incidents of violations of freedom of association and collective bargaining (core)
Child Labour	HR6 Incidents of child labour (core)
Forced and Compulsory Labour	HR7 Incidents of forced or compulsory labour (core)
Disciplinary Practices	HR8 Procedures for complaints and grievances filed by customers, employees, and communities concerning human rights, including provisions for non-retaliation (additional)
Security Practices	HR9 Percentage of security personnel trained in organisation's policies or procedures regarding human rights (additional)
Indigenous Rights	HR10 Incidents involving rights of indigenous people (additional)
Society	
Community	SO1 Programs and practices for assessing and managing the impacts of operations on communities, including entering, operating and exiting (core)

Corruption	SO2 Extent of training and risk analysis to prevent corruption (core)
	SO3 Actions taken in response to instances of corruption (core)
Public Policy	SO4 Participation in public policy development and lobbying (core)
	SO5 Total value of contributions to political parties or related institutions broken down by country (additional)
Anti-Competitive Behaviour	SO6 Instances of legal actions for anti-competitive behaviour, anti-trust, and monopoly practices and their outcomes (additional)
Product Responsibility	
Customer Health and Safety	PR1 Procedures for improving health and safety across the life cycle of products and services (core)
	PR2 Number and type of instances of non-compliance with regulations concerning health and safety effects of products and services (additional)
Products and Services	PR3 Procedures for product and service information and labelling (core)
	PR4 Number and type of instances of non-compliance with regulations concerning product and service information and labelling (additional)
	PR5 Procedures related to customer satisfaction, including results of surveys measuring customer satisfaction. (additional)
Marketing Communications	PR6 Procedures and programs for adherence to laws, standards, and voluntary codes related to marketing communications including advertising, promotion and sponsorship (additional)
	PR7 Number and type of instances of non-compliance with regulations concerning marketing communications including advertising, promotion and sponsorship. (additional)
Customer Privacy	PR8 Percentage of customer data covered by the data protection procedures (core)
	PR9 Number of substantiated complaints regarding breaches of customer privacy (additional)

Table B.3-1: Social Performance Indicators (GRI, 2006b)

Appendix C: GRI Content Index Example

Appendix C contains the GRI content index example.

C.1   GRI Content Index

The table below contains an example of a content index. This example is taken from the 2005 GRI Sustainability Report. The example provides a brief summary of results for indicators that were reported on the year. For indicators that were not reported on, a brief explanation for why they were omitted is provided, along with their intentions for reporting on them in the future.

Key
● = reported
⊖ = partially reported
○ = not reported

Indicator	Reported	Results summary or explanation of omission
EC1	●	Net sales (revenues) €1,819,052.00
EC2	●	Detailed breakdown of markets by geography and source (foundations, governments, business) provided.
EC3	●	Goods and services purchased totaled €698,698.00
EC4	⊖	GRI met all contractual obligations, but did not track late versus on time payments. Potentially a target for future reporting.
EC5	●	Total personnel expenditure is €1,265,929.00
EC6	○	GRI has not issued shares, therefore no dividends were paid. GRI paid €10,400 in interest on long term loans. Not a target for future reporting.
EC7	○	This indicator is not applicable to a non-profit making organization, not a target for future reporting.
EC8	●	GRI qualifies for a 0% tax status and may qualify for VAT refunds in some cases.
EC9	○	Not applicable since GRI does not receive subsidies from the public sector, not a target for future reporting.
EC10	⊖	GRI recognises its contribution to society as a freely available global public good, but did not attempt to quantify contributions. This indicator is not a direct target for future reporting, but GRI will develop its reporting on organisational outcomes with self-defined indicators in the future.
EC11	●	Although GRI has no supplier representing 10% or more of total purchases, all main suppliers are listed.
EC12	○	Not applicable because investing in infrastructure is outside the mandate and opportunity of GRI. Not a target for future reporting.
EC13	⊖	A basic survey of market research showed economic activity and opportunity created as a result of GRI's main products and services. GRI will better track and quantify this in order to develop its business model for the future.
EN1	●	2370.63 Kg of paper used
EN2	●	1242 kg or 52% of paper purchased is from recycled sources
EN3	○	Data not available this year, target to report next year
EN4	○	Data not available this year, target to report next year

EN5	○	Data not available this year, target to report next year
EN6	○	GRI does not own or operate facilities in biodiversity rich or sensitive areas. Not a target for future reporting.
EN7	○	GRI activities do not have significant impacts on biodiversity. Not a future target for reporting.
EN8	⊖	Upon investigation GRI discovered that emissions associated with the refrigerators and air conditioning system in the office were not significant or nil. Not a target for future reporting.
EN9	⊖	Upon investigation GRI discovered that emissions associated with the refrigerators and air conditioning system in the office were not significant or nil. Not a target for future reporting.
EN10	○	Secretariat activities do not result in emissions of ozone depleting substances. See EN30 for carbon equivalent emissions from flights and commuting. Not a target for future reporting.
EN11	●	Total waste produced is: garbage 295 kg per year to municipal disposal, paper 562 kg per year is recycled, ink cartridges 12 per year recycled. Will considering including glass and battery recycling for next year.
EN12	○	GRI activities do not result in significant waste discharges to water. Not a target for future reporting.
EN13	○	GRI activities do not involve use of chemicals, oils, etc. Not a target for future reporting.
EN14	⊖	The significant environmental impact of GRI's principle products and services is production of paper goods. Quantities are reported under EN1.
EN15	⊖	100% of GRI's products are reclaimable as they exist in paper form. It is not feasible to track the percentage of paper goods distributed to third parties that are recycled. Not a target for future reporting.
EN16	⊖	GRI's environmental impacts are not significant enough to be subject to major international treaties or regulations. No fines or incidents occurred, not a target for future reporting.
EN17	●	GRI purchased energy efficient computers, monitors, printer/photocopier and scanner.
EN18	○	Data to calculate footprint not available, target to report next year.
EN19	⊖	Impacts from organisational travel are reported on under EN30. No other significant indirect upstream/downstream implications to report on. Not a target for future reporting.
EN20	○	GRI activities do not significantly affect water sources or related ecosystems. Not a target for future reporting.
EN21	○	GRI activities do not require significant withdrawals of ground or surface water. Not a target for future reporting.
EN22	○	GRI activities do not require significant use of water, nor does GRI have waste water recycling infrastructure. Not a target for future reporting
EN23	○	GRI does not own, lease or manage land for extractive use. Not a

		target for future reporting.
EN24	●	GRI's leased office building takes up 1000 square meters of impermeable surface. This is not a significant impact and is not a target for future reporting.
EN25	●	GRI's office at Keizersgracht 209 has been designated a historical monument by the Amsterdam Bureau of Monuments and Archeology.
EN26	○	GRI activities do not have significant impacts on biodiversity habitats. Not a target for future reporting.
EN27	○	GRI does not operate businesses in biodiversity sensitive areas. Not a target for future reporting.
EN28	○	GRI does not operate businesses in biodiversity sensitive areas. Not a target for future reporting.
EN29	○	GRI does not operate businesses in biodiversity sensitive areas. Not a target for future reporting.
EN30	●	GRI staff and governance body air travel added 219.23 metric tons of carbon dioxide to the atmosphere. GRI staff daily commuting contributed an additional 14.6 metric tons.
EN31	○	GRI activities do not require the transportation of hazardous waste. Not a target for future reporting.
EN32	○	GRI activities do not result in significant water discharges. Not a future target for reporting.
EN33	⊖	No system in place to monitor the environmental performance of suppliers. This is under consideration for future reporting.
EN34	●	GRI's use of courier services contributed 46.6 metric tons of carbon dioxide into the atmosphere.
EN35	○	GRI does not make environmental expenditures. Not a target for future reporting.
LA1	●	Full break down of GRI's 20 person workforce is provided. Information on definite non-core staff contracts – i.e. project consultants – not provided this year, and is a target for future reporting.
LA2	●	€1,265,929 for a total of 20 jobs.
LA3	●	0% of GRI staff are represented by independent trade union organisations.
LA4	●	Procedure is described in detail, no formal written policy exists yet.
LA5	●	Details are provided on our practices on recording and notification and how they relate to the ILO code.
LA6	⊖	No committee exists for Health and Safety. This is a target for future reporting.
LA7	●	Total sick days 161.5 days, or 3.8%. No occupational injuries or illnesses.
LA8	●	GRI does not have a formal policy on HIV/AIDS. This is a target for future reporting.

LA9	●	Two GRI staff and one volunteer atended language and computer training this year, for a total of 48.00 hours.
LA10	○	There are no formal policies or systems in place around equal opportunities. This is a target for future reporting.
LA11	●	Composition details of staff, Board and Stakeholder Council are provided.
LA12	●	Full description of benefits provided beyond those legally mandated is provided.
LA13	●	Procedures are discussed in full.
LA14	○	Data systems not available this year. Potentially a target for future reporting depending on management goals associated with H&S.
LA15	○	No GRI employees are represented by trade unions, therefore GRI management does not have any agreements in place. Not a target for future reporting.
LA16	●	No formal written policy has been adapted, but GRI does have procedures for providing references, repatriating staff, and assisting with career options after expiration of contracts with GRI.
LA17	○	There are no programmes or procedures in place. Potentially a target for future reporting depending on management goals that emerge in 2004.
HR1	●	GRI does not have a policy dealing with all aspects of human rights relevant to operations. It does adhere to Dutch law which has ratified all elements of the Fundamental Human Rights Conventions of the ILO.
HR2	●	List provided of all suppliers.
HR3	○	Data not available this year, under consideration for reporting next year.
HR4	⊖	No policies and procedures in place. This is a target for reporting in the future.
HR5	⊖	No policies and procedures in place. This is a target for reporting in the future.
HR6	⊖	No policies and procedures in place. This is a target for reporting in the future.
HR7	⊖	No policies and procedures in place. This is a target for reporting in the future.
HR8	⊖	GRI has not provided training on human rights issues relevant to operations for its staff. Under consideration for reporting in the future.
HR9	●	Procedure is in place and is described.
HR10	○	No policy or procedure is in place. Under consideration for reporting in the future.
HR11	○	This indicator is not applicable since GRI does not employ security personnel. Not a target for future reporting.
HR12	○	No policies in place. This is a target for future reporting under

		anti-discrimination practices for the future.
HR13	○	No jointly managed community grievance mechanisms are in place, nor relevant for GRI's operations as a small non profit. Not a target for future reporting.
HR14	○	Since GRI doesn't make a profit, no profit revenues are redistributed to the local community. Not a target for future reporting.
SO1	○	GRI will not report on this indicator directly, but will attempt to measure its outcomes and indirect impacts.
SO2	⊖	GRI does not engage in bribery and corruption activities. The OECD Convention on Combating Bribery was ratified by the Netherlands in 2000, there have been no instances of complaints against the GRI..
SO3	●	GRI does not engage in political lobbying activities.
SO4	●	GRI has not received any awards for its social, ethical and environmental performance. Only a target for future reporting if an award is won!
SO5	●	GRI does not contribute in-kind or financially to any political party
SO6	⊖	There were no court cases pertaining to anti-trust or monopoly regulations. Not a target for future reporting.
SO7	●	It is GRI policy and practice to avoid instances of commercial competition thereby encouraging the opportunity of others to develop businesses around the Guidelines.
PR1	●	GRI does not consistently brief meeting participants on safety or fire procedures in its headquarters or abroad.
PR2	○	There are no regulations in place associated with GRI's main products and services. Not a target for future reporting.
PR3	●	GRI's webmaster enforces and adapts GRI's strict privacy policy, details are provided.
PR4	○	There are no regulations in place associated with GRI's main products and services. Not a target for future reporting.
PR5	○	There are no regulations in place associated with GRI's main products and services. Not a target for future reporting.
PR6	⊖	GRI has voluntarily decided to report on its operational performance using the Sustainability Reporting Guidelines. There are no other labels or codes associated with GRI's main products or services. Not a target for future reporting.
PR7	○	There are no regulations in place associated with GRI's main products and services. Not a target for future reporting.
PR8	●	Results of the Structured Feedback Process are provided.
PR9	●	GRI does not purchase advertising.
PR10	●	GRI does not purchase advertising.
PR11	●	There were no complaints regarding breaches of privacy

Table C.1-1: GRI content index example (GRI, 2005b)

Appendix D: Assessment Tool Questionnaire

Appendix D contains the assessment Tool questionnaire for environmental

sustainability reporting and a glossary of terms used in the assessment questionnaire.

Questionnaire for Environmental reporting

Reporting organisation:	

Part 1

Part 1 part focuses on evidence on the relevant context, management practices, operational responsibilities, awards, non-conformances, the environmental policies and environmental goals of the reporting organisation. For each of these focus areas the following disclosures are examined and marked with a Yes or a No (and where necessary Not Applicable)

Question #	Topic	Results		
	Context, management practices, operational responsibilities, awards, non-conformances	No	Yes	NA
1	Organisation has significant environmental report			
2	Indicates reason for not reporting if there is no significant reporting			
3	Key successes and shortcomings			
4	Major organisational risks and opportunities related to environment issues			
5	Major changes in the reporting period to systems or structures to improve performance			
6	Most senior position with operational responsibility for environment areas identified.			
7	How operational responsibility is divided at the senior level for environment areas explained.			
8	Key elements of management approach identified (EMS etc)			
9	Percentage of operations covered by certifications indicated.			
10	Relevant awards related to performance on environmental issues that the organisation has received from external parties indicated.			
11	Total amount and number of environment related civil and criminal fines and other penalties assessed against the organisation indicated.			
12	Response to resolve any issue for which significant fines were paid is reported			

Question #	Topic	Results		
	Environmental policies	No	Yes	NA
13	Policy on Materials			
14	Policy on Energy			
15	Policy on Water			
16	Policy on Biodiversity			
17	Policy on Emissions, Effluents, and Waste			
18	Policy on Products and Services			
19	Policy on Transport			

Question #	Topic	Results		
	Environmental goals	No	Yes	NA
20	Goals set for Materials			
21	Goals set for Energy			
22	Goals set for Water			
23	Goals set for Biodiversity			
24	Goals set for Emissions, Effluents, and Waste			
25	Goals set for Products and Services			
26	Goals set for Transport			

Part 2

The indicators range from EN 1 to EN 30. For each indicator there is a description of the indicator. For each of the indicators listed there is a register of protocols. These protocols become the criteria against which to assess the performance of the report. For each indicator a score must be assigned against the set criteria. There are five options to score each indicator; None, Partial, Full/Complete, Exceeding and Acceptable Omission. The scale used to assess the level of reporting is contained in the table below.

Score	Level of reporting against set criteria
0	**None:** *No evidence in report*
1	**Partial:** *Evidence exists that objectives are being partially reported on as set out by the criteria. At least 1 protocol reported.*
2	**Full / Complete:** *Objectives / systems are being reported on, fully meeting the level set by the criteria. At least 2 protocols reported.*
3	**Exceeding:** *Objectives / systems are reported on, exceeding the level set by the criteria. At least all protocols reported.*
AO	**Acceptable Omission:** *Indicator not reported on, but an acceptable reason is provided*

Question	Env aspect		Indicators	Protocols	Score
27	Materials	EN 1	**Weight of materials used**	Report identifies materials used, including materials purchased from external suppliers, non-renewable materials and major materials used. This can include: Associated process materials (i.e. materials that are needed for the manufacturing process, but are not part of the final product such as lubricants for manufacturing machinery); Semi-manufactured goods or parts, including all forms of materials and components other than raw materials that are part of the final product; Materials for packaging purposes.	
				Report states the total weight of materials used (metric tonnes) in terms of direct materials and non-renewable materials.	
				Report states how materials used were obtained and what is being done to minimise environmental damage	
28		EN 2	**Percentage of materials used that are recycled**	Report total weight of recycled materials purchased or obtained from internal or external sources (in metric tonnes).	
				Report states the percentage of recycled materials used against virgin materials used	

				Report identifies reporting organisation's ability to use recycled materials and how it is contributing to lowering the demand for virgin material.	
29	Energy	**EN 3**	**Direct energy consumption broken down by primary energy source.**	Report identifies the primary energy sources purchased by the reporting organisation for its own consumption. This includes: *Non-renewable energy sources: Coal, Natural gas; Oil and Nuclear energy.* *Renewable energy sources: Biomass, Solar, Wind, Geothermal and Hydro energy.*	
				Report states the total energy consumption in joules or multiples broken down by primary source.	
				Report indicates the extent to which the organisation might be affected by emerging environmental regulations.	
30		**EN 4**	**Indirect energy consumption broken down by primary source**	Report identifies the amount of intermediate energy purchased from sources external to the reporting organisation in joules or multiples, such as gigajoules. This includes: *Electricity, Heating and Cooling, Fuel distilled from crude oil (including gasoline, diesel, liquefied petroleum gas (LPG), compressed natural gas (CNG), liquefied natural gas (LNG), butane, propane, ethane etc.), Steam; and Other forms of imported energy.* Report identifies the amount of primary fuels consumed to produce intermediate energy such as electricity based on the total amount of energy purchased from external suppliers (EN3 – energy purchased).	
				Report states the total amount of indirect energy used in terms of intermediate energy and the corresponding primary energy consumed in its production.	
				Report indicates the extent that the information is being used to calculate indirect greenhouse gas emissions.	
31		EN 5	Percentage of total energy consumption met by renewable resources.	Report identifies total energy consumption broken down by primary source.	
				Report states the percentage of total energy consumption that is met by renewable resources using the total direct energy use as reported in EN3 as basis.	
				Report indicates the reporting organisation's future potential for replacing fossil fuel energy sources with renewable ones.	
32		EN 6	Total energy saved due to conservation and efficiency improvements	Report identifies total energy saved due to efforts to reduce energy use and increase energy efficiency. Reduced energy consumption due to reduced production capacity or outsourcing should not be included in this indicator.	
				Report states the total amount of energy saved in joules or multiples, such as gigajoules.	
				Report indicates how improved energy efficiency is resulting in cost savings and leading to competitive advantages and market differentiation.	
33		EN 7	Initiatives to provide energy-efficient products and services	Report describes existing initiatives to reduce the energy requirement of major products/product groups or services.	
				Report states quantified reductions in the energy requirements of products and services that have / haven't been achieved during the reporting period. Any assumptions about underlying consumption patterns or normalization factors are stated where necessary.	

				Report demonstrates actions to develop energy efficient products and services.	
34			EN 8	Initiatives to reduce indirect energy consumption.	Report identifies relevant upstream/downstream energy use, such as the following four areas: *Use of energy-intensive materials;* *Energy use in subcontracted production;* *Business related travel; and* *Employee commuting.*	
					Report states quantitatively to what extent indirect energy use has been reduced during the reporting period for the four areas listed above. (Underlying assumptions and methodologies used to calculate other indirect energy use should be mentioned as well as the source of information.)	
					Report describes initiatives to reduce indirect energy use	
35			**EN 9**	**Total water withdrawal by source.**	Report identifies the volume of water withdrawn from any water source either directly withdrawn by the reporting organisation or through intermediaries such as water utilities. This includes the abstraction of cooling water.	
					The report states the total volume of water withdrawn in cubic meters per year (m^3/year).	
					The report states the total volume of water withdrawn in cubic meters per year (m^3/year). broken down by the following sources: *Surface water, including water from wetlands, rivers, lakes, and oceans;* *Ground water;* *Rainwater directly collected and stored by the reporting organisation; and* *Municipal water supplies or other water utilities.*	
36	Water		EN 10	Water sources and related habitats significantly affected by withdrawal of water	Report identifies water sources significantly affected by the reporting organisation's withdrawal of water. If the water is provided by a public or private water supplier, the original water body should be identified and reported accordingly.	
					Report states the total number of significantly affected water sources and states the: *Size of water source in cubic meters (m^3);* *Whether or not the source is designed as a protected area (nationally and/or internationally); and* *Biodiversity value (e.g., number of protected species).*	
					Report indicates the reporting organisation's future plans for reducing water withdrawal.	
37			EN 11	Percentage and total volume of water recycled and reused.	Report indicates both water that was treated prior to reuse and water that was not treated prior to reuse. Grey water (i.e., collected rainwater and wastewater generated by household processes such as washing dishes, laundry and bathing) is excluded.	
					Report states the total volume of water recycled/reused by the organisation in cubic meters per year (m^3/year) and also as a percentage of the total water use reported under indicator EN9.	
					The report states how the reduction of water consumption through reuse and recycling is also contributing to local, national, or regional goals for managing water supplies.	

38	Biodiversity	**EN 12**	**Location and size of land owned, leased, or managed in, or adjacent to, protected areas.**	Report identifies operational sites owned, leased, or managed that are located in, adjacent to or contain protected areas. Include sites for which future operations have formally been announced.	
				Report states the following information for each operational site identified above: *Geographic location; Position in relation to protected area (in the area, adjacent to, or containing portions of the protected area); Type of operation (office, manufacturing/production, or extractive);* •*Size of operational site in km²;* • *Biodiversity value characterized by:* o *The attribute of the protected area (terrestrial, freshwater, or maritime ecosystem); and* o *Listing of protected status*	
				Report shows reporting organisations risk exposure in relation to biodiversity.	
39		**EN 13**	**Description of significant impacts of activities on protected areas.**	Report identifies major impacts on biodiversity that are associated with activities of the reporting organisation, including both direct impacts as well as indirect impacts (e.g., in the supply chain).	
				Report states the nature of major impacts on biodiversity with reference to one or more of the following: *The construction or use of transport infrastructure; Pollution (introduction of substances that do not naturally occur in the habitat from point and non-point sources); Introduction of invasive species, pests, and pathogens; Reduction of species; Habitat conversion; and Changes in ecological processes outside of the natural range of variation (e.g. salinity, changes in the groundwater level).*	
				Report states major positive and negative impacts with reference to the following: *Species affected; Extent of areas impacted (this may not be limited to areas that are formally protected and should include consideration of impacts on buffer zones as well as formally designated areas of special importance or sensitivity); Duration of impacts; and Reversibility or irreversibility of the impacts*	
40		EN 14	Area of habitats protected or restored.	Report state the size and location of all areas of habitat protected and/or restored in hectares. If the area is bigger than one km2, report in km2.	
				Report states if the success of the restoration measure was/is approved by independent external experts.	
				Report states a specific strategy for preventing or redressing negative impacts associated with activities.	

41		EN 15	Programs for managing impacts on biodiversity	Report states the organisation's strategy for achieving its policy including: *Integration of biodiversity considerations into analytical tools such as environmental site impact assessments;* *Methodology for establishing risk exposure to biodiversity;* *Setting of specific targets and objectives;* *Monitoring processes; and* *Public reporting.*	
				Report states actions underway to manage biodiversity risks identified in EN12 and EN13 or plans to undertake such activities in the future.	
				Report states action plans and / or actions to protect or restore habits and species.	
42		EN 16	Number of IUCN Red List species with habitats in areas affected by operations broken down by level of extinction risk	Report identifies habitats which include species listed on the IUCN Red List that are directly affected by the operations of the reporting organisation.	
				Report states the number of species in habitats identified as affected by the reporting organisation, broken down by level of extinction risk as defined in the IUCN Red List: *Critically endangered;* *Endangered;* *Vulnerable;* *Near threatened; and* *Least concern*	
				Report indicates initiatives planned and / or taken to avoid harm and to prevent the extinction of species.	
43	Emissions, Effluents and Waste	**EN 17**	**Greenhouse gas emissions.**	Report identifies direct emissions of greenhouse gases from all sources owned or controlled by the reporting organisation, including: *Generation of electricity, heat, or steam (as reported in EN3);* *Other combustion processes such as flaring;* *Physical or chemical processing;* *Transportation of materials, products, and waste;* *Venting; and* *Fugitive emissions.*	
				Report identifies indirect emissions of greenhouse gases resulting from the generation of purchased electricity, heat, or steam (this corresponds with energy consumption reported under EN4). Other indirect emissions (e.g. from organisational travel) are not included since they are accounted for in EN23.	
				Report describes the standards used and indicates the methodology associated with the data by reference to the following categories: *Direct measurement (e.g. continuous online analyzers etc.);* *Calculation based on site specific data (e.g. for fuel composition analysis etc.);* *Calculation based on default data; and* *Estimations. If estimations are used due to a lack of default figures state on what basis figures where obtained.*	

44		EN 18	**Emissions of ozone-depleting substances.**	Report identifies emissions of ozone-depleting substances	
				Report states the emissions of specific ozone-depleting substances in tonnes and tonnes of CFC-11 equivalents.	
				Report identifies the reporting organisation's plans to phase out ozone depleting substances.	
45		EN 19	**NOx, SOx, and other significant air emissions by weight**	Report identifies significant air emissions.	
				Report states the weight of significant air emissions (in kilograms or multiples such as tonnes) broken down into the following categories: *NOx SOx; Persistent organic pollutants (POP); Volatile organic compounds (VOC); Hazardous air pollutants (HAP); Particulate matter (PM); or Other standard categories of air emissions identified in regulations.*	
				The report indicates the reporting organisation the methodology used for its calculations. E.g. Direct measurement of emissions (e.g. online analyzers etc.); Calculation based on site specific data; Calculation based on default data; or Estimation (states on what basis figures were obtained).	
46		EN 20	**Total amount of waste by type and destination**	Report identifies the amounts of waste resulting from the organisation's operations according to the following types: *Hazardous waste as defined by national legislation at the point of generation; and* *Non-hazardous waste (solid or liquid waste excluding wastewater)*	
				Report states the total amount of waste in tonnes broken down by type and destination according to the list below: *Composting;* *Reuse;* *Recycling;* *Recovery;* *Incineration (or use as fuel);* *Landfill;* *Deep well injection;* *Onsite storage; and* *Other (to be specified by the reporting organisation)*	
				Report states how the destination of the waste has been determined: *Disposed directly by the reporting organisation or other directly confirmed;* *Information provided by the waste disposal contractor; or* *Organisational defaults of the waste disposal contractor.*	
47		EN 21	**Total water discharge and quality**	Report identifies the water discharges, excluding collected rainwater and domestic sewage.	
				Report states the volume of total water discharged in cubic meters per year (m³/year).	
				The report states the quality of water in terms of total volumes of effluent using standard effluent parameters such as biological oxygen demand (BOD), total suspended solids (TSS), etc. The specific choice of quality parameters will vary depending on the organisation's products/services/operations. However, there should be comparability of parameters within a sector.	

48			**EN 22**	**Total number and volume of significant spills**	Report states the total number and total volume of recorded spills.	
					Report states all spills that were reported in the organisation's financial statement and for each such spill state the following information: *Location of spill;* *Volume of spill; and* *Material of spill categorized according to:* *Oil spills (to the soil or water surfaces);* *Fuel spills (to the soil or water surfaces);* *Spills of wastes (to the soil or water surfaces);* *Spills of chemicals (mostly to the soil or water surfaces); and* *Other.*	
					The report indicates the reporting organisation's systematic efforts to avoid spills of hazardous materials.	
49			EN 23	Other relevant indirect greenhouse gas emissions.	The report identifies the greenhouse gas emissions resulting from indirect energy use. (Excluding indirect emissions from imported electricity, heat or steam, as these are covered by EN17.)	
					Report states the sum of indirect GHG emissions identified in tonnes of CO2 equivalents.	
					Report identifies which activities of the reporting organisation cause indirect emissions and assess their amounts (e.g. employee commuting, business travel, etc).	
50			EN 24	Weight of transported, imported, or exported waste deemed hazardous under the terms of the Basel Convention Annex I, II, III and VIII.	Report identifies hazardous wastes transported by or on behalf of the reporting organisation within the reporting period.	
					Report identifies the total weight of transported hazardous waste in kilograms or tonnes: *Total weight of hazardous waste transported;* *Total weight of imported hazardous waste; and* *Total weight of exported hazardous waste.*	
					Report identifies the reporting organisations management plan for transporting (import and export) of hazardous material.	
51			EN 25	Water sources and related habitats significantly affected by discharges of water and runoff.	Report identifies water bodies significantly affected by the reporting organisation's water discharges that meet the following criteria: *Discharges account for an average of 5% or more of the annual average volume of the water body;* *Discharges that on the advice of appropriate professionals (e.g., from municipal authorities) are known to have or highly likely to have significant impacts on the water body and associated habitats;* *Discharges to water bodies that are recognized by professionals or experts to be more particularly sensitive due to their relative size, function, or status as a rare, threatened or endangered system (or to their support of a particular endangered species of plant or animal); or* *Any discharge to a wetland or any other nationally or internationally proclaimed conservation area regardless of the rate of discharge.*	

				Report includes the following information on the water bodies significantly affected according to the criteria above: *Size of receiving water body in cubic meters (m³);* *Whether or not the source is designed as a protected area (nationally and/or internationally); and* *Biodiversity value (e.g., number of protected species).*	
				Report identifies activities in regions of significant concern and/or where the organisation may face specific risks due to community concerns, limited water resources, etc.	
52	Products and services	EN 26	Initiatives to manage the environmental impacts of products and services and extent of impact reduction.	Report describes initiatives in the reporting period to reduce the most significant environmental impacts of products/service groups in relation to: *Materials use (e.g., use of non-renewable, energy-intensive, toxic materials);* *Water use (e.g., volumes used during production and/or use);* *Emissions (e.g., GHG, toxic, ozone-depleting emissions);* *Effluents (e.g., quality of water used during production and/or use); and* *Waste (e.g., non-reclaimable, toxic materials/compounds).*	
				Report states quantitatively to what extent environmental impacts of products and services have been reduced during the reporting period.	
				Report identifies actions relating to product and service design and delivery to reduce negative environmental impacts and enhance positive impacts.	
53		EN 27	Percentage of products sold that is reclaimed at the end of the products' useful life by product category	Report identifies the amount of products reclaimed (i.e., recycled or reused) at the end of their useful life within the reporting period. Report identifies recycling or reuse of packaging.	
				Report states the percentage of reclaimed products per category of products (i.e., a group of related products sharing a common, managed set of features that satisfy specific needs of a selected market)	
				Report indicates the manner in which the data for this indicator has been collected (i.e., data is provided from a collection system that it operates or data is provided by external collection systems reclaiming products on behalf of the organisation).	
54	Compliance	EN 28	Incidents of, and fines or non-monetary sanctions for, non-compliance with applicable environmental regulations	Report identifies incidents that resulted in sanctions for failure to comply with environmental regulations including: *Non-compliance with applicable environmental regulation, including international declarations/conventions/treaties, and national, sub-national, regional, and local regulations. Include non-compliances related to spills as disclosed under EN22 that meet the criteria for EN28;* *Voluntary environmental agreements with regulating authorities that are considered binding and have been made as a substitute for developing new regulation.*	

					Report specifies the following information for each incident of non-compliance: *Subject of the non-compliance;* *Number of occurrences;* *The status of the regulation (e.g., national, local, etc.); and* *Sanctions imposed, including the amount of monetary fines and/or a brief description of non-monetary sanctions.*	
					Report indicates the ability of the reporting organisation's management plan to ensure that the organisation's operations stay within certain performance parameters.	
55	Transport	EN 29	Significant environmental impacts of transportation used for logistical purposes.		Report identifies the significant environmental impacts of the transportation modes used, including consideration of: *Energy use (for example, oil, kerosene, fuel, electricity);* *Emissions (for example, greenhouse gas emissions; ozone-depleting substances; NOx, SOx, and effluents (for example, different kinds of other air emissions); waste (for example, different types of packaging material); chemicals);* *Spills (for example, spills of chemicals, oils, and fuels).*	
					Report describes significant environmental impacts of transportation used for logistical purposes. Where quantitative data is not stated in the report, the reason is disclosed.	
					The report explains the criteria and methodology used to determine which environmental impacts are significant.	
56	Overall	EN 30	Total environmental protection expenditures by type		Report identifies waste disposal, emission treatment, and remediation costs based on expenditures related to the following items: *Treatment and disposal of waste;* *Treatment of emissions (e.g., expenditures for filters, agents);* *Expenditures for the purchase and use of emission certificates;* *Depreciation of related equipment, maintenance and operating material and services, related personnel costs;* *Insurance for environmental liability; and* *Clean-up costs, including costs for remediation of spills as reported in EN22.*	
					Report identifies prevention and environmental management costs based on expenditures related to the following items: *Personnel employed for education and training;* *External services for environmental management;* *External certification of management systems;* *Personnel for general environmental management activities;* *Research and development;* *Extra expenditures to install cleaner technologies (e.g., additional cost beyond standard technologies);* *Extra expenditure on green purchases; and* *Other environmental management costs.*	
					Report highlights organisation's use of resources to improve environmental performance.	

Glossary of Terms for Assessment Tool (GRI, 2006d)

Applicable environmental regulations:	Refers to regulation dealing with all types of environmental issues, (i.e. emissions, effluents and waste as well as material use, energy, water and biodiversity) applicable to the reporting organisation. This includes binding voluntary agreements that are made with regulatory authorities and have been made in place of implementing a new regulation. Voluntary agreements can be applicable due to the reporting organisation directly joining the agreement or by public agencies making the agreement applicable to organisations in their territory through legislation or regulation.
Area protected:	Areas which are protected from any harm during operational activities, and the environment remains in its original state with a healthy functioning ecosystem.
Area restored:	Areas which were used during or affected by operational activities and where remediation measures have restored the environment to its original state or to a state where it is a healthy and functioning ecosystem.
Carbon dioxide equivalent:	CO2 (Carbon Dioxide) equivalent is the measure used to compare the emissions from various greenhouse gases based upon their global warming potential (GWP). The CO2 equivalent for a gas is derived by multiplying the tonnes of the gas by the associated GWP.
CFC-11 equivalents:	CFC-11 is a measure used to compare various substances based upon their relative ozone depletion potential. The reference level of 1 is the potential of CFC-11 and CFC-12 to cause ozone depletion.
Conservation and efficiency improvements:	Organisational or technological innovations that allow a defined process or task to be carried out at a reduced level of energy consumption. This includes process redesign, the conversion and retrofitting of equipment (e.g. energy-efficient lighting), or the elimination of unnecessary energy use due to changes of behaviour.
Destination:	Destination refers to the method by which waste is treated or disposed, and includes composting, reuse, recycling, recovery, incineration, landfill, deep well injection, and onsite storage.
Direct energy:	Direct energy refers to energy that enters the reporting organisation's operational boundaries. It can be consumed by the reporting organisation within its boundaries or can be exported to another user. Direct energy can appear in either primary (e.g., natural gas for heating) or intermediate (e.g., electricity for lighting) forms. It can be purchased, extracted (e.g., coal, natural gas, oil), harvested (e.g., biomass energy), collected (e.g., solar, wind), or brought within the reporting organisation's boundaries by other means.
Direct materials:	Materials that appear in the final product.

Emissions:	Emissions are direct or indirect, defined as follows: *Direct emissions* (From sources that are owned or controlled by the reporting organisation. E.g. direct emissions related to combustion would arise from burning fuel for energy within the reporting organisation's operational boundaries.); *Indirect emissions* (Consequences of the activities of the reporting organisation but which are generated at sources owned or controlled by another organisation. In this context, indirect emissions refer to greenhouse gas emissions resulting from the generation of electricity, heat, or steam that is imported and consumed by the organisation.
Energy saved:	Represent the reduced need for energy for carrying out the same processes or tasks. The term does not include overall reduction in energy consumption due to reduced organisational activities (e.g., partial outsourcing of production).
Environmental protection expenditure:	All expenditure on the environmental protection of the reporting organisation, or on its behalf, to prevent, reduce, control, and document environmental aspects, impacts and hazards, as well as disposal, treatment, sanitation and clean up expenditure.
Greenhouse gas emissions (GHG):	The six main greenhouse gas emissions are: Carbon dioxide (CO_2); Methane (CH_4); Nitrous oxide (N_2O); Hydrofluorocarbons (HFCs – a group of several compounds); Perfluorocarbons (PFCs – a group of several compounds); Sulphur hexafluoride (SF_6).
Indirect emissions:	Indirect emissions are emissions that are consequences of the activities of the reporting organisation, but which are generated at sources owned or controlled by another organisation. In this context, indirect emissions do not include those resulting from imported electricity, heat or steam that is consumed by the reporting organisation.
Indirect energy:	Indirect energy refers to energy outside the reporting organisation's boundaries that is consumed in order to supply the reporting organisation's demand for intermediate energy products. The most common example is fuel consumed outside the reporting organisation's boundary in order to generate electricity that is utilized within the organisation's boundary.
Intermediate energy:	Intermediate refers to forms of energy that are produced by converting primary energy into other forms. For most organisations, electricity will be the only significant form of intermediate energy. For a small percentage of organisations, other intermediate energy products might also be important, such as steam or water provided from a district heating plant or chilled water plant, or refined fuels such as synthetic fuels, bio-fuels, etc.
IUCN Red List species:	An inventory of the global conservation status of plant and animal species developed by the International Union for Conservation of Nature and Natural Resources (IUCN).

Logistical purposes:	Logistical purposes represent the forward or reverse flow and storage of goods and services between the point of origin and the point of consumption.
Non-renewable materials:	Non-renewable materials are resources that do not renew in short time periods, such as minerals, metals, oil, gas, coal etc.
Ozone-depleting substance:	Any substance with an ozone depletion potential (ODP) greater than 0 that can deplete the stratospheric ozone layer. Most ozone-depleting substances are controlled under the Montreal Protocol and its amendments, and include CFCs, HCFCs, halons and methyl bromide.
Primary source:	Primary source refers to the initial form of energy consumed to satisfy the reporting organisation's energy demand. This energy is used either to provide final energy services (e.g., space heating, transport) or to produce intermediate forms of energy such as electricity and heat. Examples of primary energy include non-renewable sources such as coal, natural gas, oil, and nuclear energy as well as renewable sources such as biomass, solar, wind, geothermal, and hydro energy. Primary energy might be consumed on-site (e.g., natural gas to heat the reporting organisation's buildings) or off-site (e.g., natural gas consumed by the power plants that provide electricity to the reporting organisation's facilities).
Protected area:	A geographically defined area of land or sea especially dedicated to the protection and maintenance of biological diversity and of natural and associated cultural resources, and managed through legal or other effective means.
Reclaimed:	Refers to collecting and reusing or recycling products at the end of their useful life. Collection and treatment can be carried out by the manufacturer of the product or by a contractor. This refers to products which are: Collected by or an behalf of the reporting organisation; Separated into raw materials (for example, steel, glass, paper, some kinds of plastic, etc.) or components; and Be used by the reporting organisation or other users.
Recycling/Reuse:	The act of processing used water/wastewater again through a cycle before discharge to final treatment and/or discharge to the environment. In general, there are three types of water recycling/re-use: Wastewater recycled back in the same process or higher use of recycled water in the process cycle; Wastewater recycled/re-used in a different process, but within the same facility; Wastewater re-used at another of the reporting organisation's facilities.
Renewable energy:	Renewable energy is derived from natural processes that are replenished constantly. Included in the definition is electricity and heat generated from solar, wind, ocean, hydropower, biomass, geothermal resources, biofuels, and hydrogen derived from renewable resources.

Renewable resources:	Renewable resources are defined as those capable of being replenished within a short time through ecological cycles as opposed to resources (e.g., such as minerals, metals, oil, gas, coal) that do not renew in short time periods,
Significant air emissions:	Air emissions that are regulated under international conventions and/or national laws or regulations, including those listed on environmental permits for the reporting organisation's operations.
Significant impact:	Impacts that may adversely affect the integrity of a geographical area/region by substantially changing in the long term its ecological features, structures, and functions across its whole area. This means that the habitat, its population level, and/or the particular species that make that habitat important cannot be sustained. On a species level, a major impact affects a population or a species in a manner that causes a population decline and/or change in distribution so that natural recruitment (reproduction or immigration from unaffected areas) cannot return to former levels within a limited number of generations. A major impact can also affect subsistence or commercial resource use to the degree that the well-being of users is affected over the long term.
Spill:	Accidental release of a hazardous substance that can affect human health, land, vegetation, water bodies, and groundwater. Significant spills are those that are included in the reporting organisation's financial statement (e.g. due to resulting liabilities) or recorded as a spill by the reporting organisation.
Total water discharge:	The sum of water effluents over the course of the reporting period to surface waters, sewers that lead to rivers, oceans, lakes, wetlands, treatment facilities, and groundwater either through: A defined discharge point (point source discharge); Over land in a dispersed or undefined manner (non-point source discharge); or Wastewater removed from the reporting organisation via truck. Discharge of collected rainwater and domestic sewage is not regarded as water discharge in this context.
Total water withdrawal:	The sum of all water drawn into the boundaries of the reporting organisation from all sources (including surface water, groundwater, rainwater, and municipal water supply) for any use over the course of the reporting period.