Sustainable Statements: An Investigation of Organisational Green Statements

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Statement

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree to any other university or institution other than Macquarie University.

I hereby declare that this submission is comprised entirely of my own work and to the best of my knowledge contains no materials previously published or written by another person.

Signed:

Date: 7/10/14

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Abstract

Green Statements are at the forefront of public institutional communications. As the key form of environmental organisational disclosure, Green Statements are a valuable tool which can enhance the communicative capacity of an organisation. However, most current studies have fallen short of adequately examining the content of Green Statements. This thesis will aim to investigate the content and evolution of green statements over time. Additionally, this thesis will also investigate the role of IS in influencing green statement development. The thesis will undertake a qualitative thematic analysis in order to identify the key themes present within organisational Green Statements. Data is collected from listed entities within the ASX200 in Australia with an extensive history of environmental reporting.

Following the data collection phase, the data is processed by the thematic analysis software: Leximancer; sorted by the dimensions of industry and year. These results are then viewed through the lens of Engeström's Activity theory, which is utilised as a framework for data analysis. It is revealed that there are three main types of Green Statement themes: Resource, Technological and Initiative-based. The results of this study will have significant implications for future investigations of Green Statements due to the exploratory nature of the research and will greatly contribute to our understanding of environmental reporting practice.

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Chapter 1 – Introduction

1.1 Introduction

This chapter will introduce the thesis, motivate the study and inform readers regarding the layout of the following work. This section will be presented as follows. Firstly, this chapter will provide a background to the research in section 1.2. Then, the research will be motivated and justified in section 1.3. Following on from this, section 1.4 will state the research questions, research aim and research objectives. In section 1.5, the significance of the research will be demonstrated. Section 1.6 will inform readers of the contents of thesis chapters 2-6. Finally, section 1.7 will conclude the introduction chapter of this thesis.

1.2 Research Background

Environmental Sustainability has been regarded as the greatest challenge of the 21st century (Melville, 2010). At the centre of this issue are organisations, which contribute heavily to both the degradation and rehabilitation of the environment (Aoun et al., 2011; Burton, 1997). As the ideals of corporate social responsibility continue to proliferate though the market, organisations have been increasingly turning towards statements in order to communicate their activities to their stakeholders. In recent times, organisations have been increasingly utilising Green Statements as a primary means of communication in order to announce their approaches towards environmental sustainability.

1.2.1 Defining Green Statements

A statement is a means of communication used to express information to external parties. Statements can be utilised to convey a large array of information and as such, organisations make a variety of statements. These can include but are not limited to: Social Statements, Policy Statements, Product Recall Statements and Strategic Statements (Adnani and Nadia, 2010; Cotoc et al., 2013). These statements reflect the policy decisions of these organisations as well as the overarching mindset behind organisational actions.

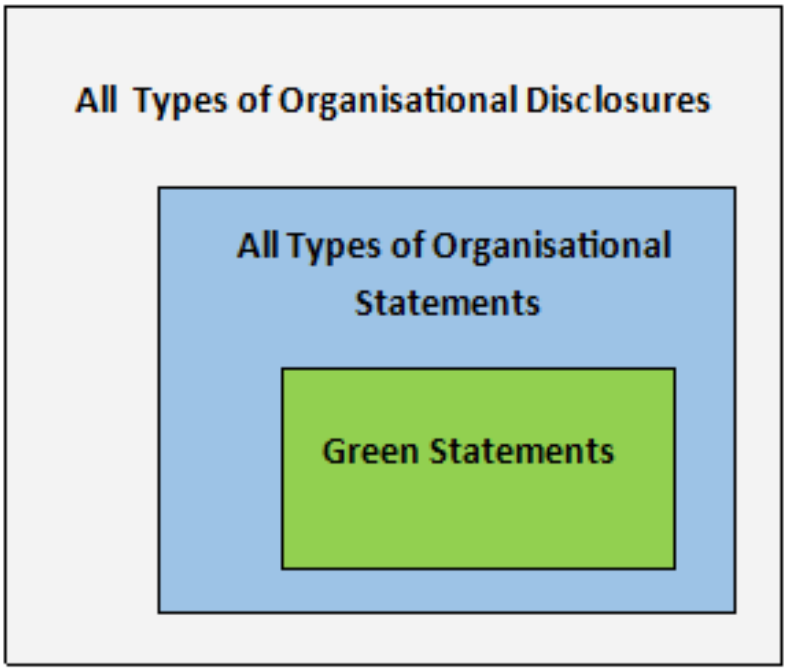

Figure 1.1: Organisational Disclosures

On the other hand, Organisational statements differ from Organisational Policies as organisational statements are derived from Organisational Policies; or more specifically the effect of Organisational Policies on organisational actions and procedures (Yanow, 1996). Thus, while organisational policies are representative of organisational goals, these policies may not necessarily be representative of organisational actions (Yanow, 1996; Blake 1999).On the other hand, statements are often representative of the actions taken by an organisation to uphold its policies. For example, while an organisational policy may be to minimize its environmental impact, an organisational statement may claim this was done by the utilisation of e-reporting systems and the use of recycled paper in its printing systems.

A Green Statement is an organisational statement which discloses environmental information or claims to third parties (Adnani and Nadia, 2010). This may include but is not limited to, information regarding: Climate change, deforestation, resource conservation programs, water efficiency initiatives and carbon monitoring software. These environmental statements represent the key ways through which organisations spread information regarding their environmental aspects and performances (Cotoc et al., 2013). In this present age,

environmental preservation and corporate activity information are areas of great concern. As such, Green Statements are of high importance as they represent one of the few channels of communication between an organisation and its stakeholders.

The term ‘Green Statement’ has been commonly used to describe a variety of environmental statements, including Marketing Statements, Mission Statements, Vision Statements, Policy Statements and reported Environmental Statements. In this study, the focus will primarily be upon Environmental Statements (Adnani and Nadia, 2010; Cotoc et al., 2013). Green Statements have been a topic of great interest in recent times, accompanied by the rise of sustainability reporting initiatives such as the GRI and SASB (G.R.I. Initiative, 2009; Eccles and Serafeim, 2013). However, while these initiatives take a multi-faceted approach to corporate disclosure, this study will primarily focus on environmental statements.

1.2.2 Background to Green Statement literature

Research interest in the area of Green disclosure has dramatically risen the last few years. However, the majority of the research surrounding Green Statements centres on the materiality and relevance aspects of these documents (Deegan and Soltys, 2007; Lee and Hutchison, 2005; Spence et al., 2010). These researchers tended to focus on accounting dimensions and the usefulness of Green Statement claims.

Other strands Green Statement research have focused on Regulatory ideals. However, most of this research has been associated with the idea of applying mandatory, homogenous standards to a diverse and complex set of climate change problems (Boiral, 2013; Ioannou and Serafeim, 2011). The growing trend within these studies seems to indicate that while disclosure systems exist, these systems are vastly underutilised as organisations create and distribute Green disclosures in a manner largely independent of the regulatory guidelines. (Andrew and Cortese, 2011).

This investigation will focus on investigating the information found within organisational Green Statements. While organisational green policy also offers a lens into the actions of the organisation, these policies are not always directly translated into organisational actions. Rather, organisational actions occur using policies as a set of guidelines to enlighten its

actions. Thus while an analysis of organisational green policy may provide an image of an organisation's environmental aspirations, an analysis of organisational green statements illustrate an organisation's environmental reality. This highlights Green Statements as the sublime choice for any research into the real-world activities and environmental impacts of organisations (Borel-Saladin and Turok, 2013; Deschenes, 2013; CSML et al., 1989).

While statements offer profound insight into the present activities of an organisation, it is arguably possible to investigate organisational disclosures at a more intricate level of analysis than the statement level – the individual sentence level. However, it is likely that an analysis of an organisation's statements word by word and sentence by sentence could raise several subjectivity issues, as such an in-depth lingual analysis of organisational text could be misleading. Furthermore, such an analysis will greatly reduce the potential sample size of the study, as more time will need to be devoted to a smaller quantity of statements. Hence, it is most prudent to investigate organisations at the statement level in order to maximise the quality and insight generated by this research (Wilson et al., 2005; Wang et al., 2008).

1.3 Research Motivations

The research motivations of any study are quintessential to the success of the research. This research investigation is guided by three main motivations. These motivations are elaborated upon and explained below.

Firstly, observers of present-day organisational reporting phenomena will be quick to observe that organisations are increasingly reporting increasingly widespread adoptions of green technology. However, while the bounty of disclosure data continuously increases, the content of these reports is vastly under analysed. Additionally while the content of these reports may be increasing, an organisation's actions may not necessarily follow suit. As a result, this research seeks to investigate the content of organisational Green Statements in order to discern the state of an organisation's environmental affairs.

Secondly, previous studies have tended to focus on the waste management associations of organisational sustainability, rather than their adaptation methods (Linton et al., 2007).

Furthermore, the majority of prior research has focused on the implementation of sustainable business processes (Linnenluecke and Griffiths, 2010). This research will seek to focus on the use of information technologies in enhancing and organisation's environmental sustainability. By understanding how organisations are adapting to climate change it will be possible to design efficient and effective systems to combat the threat of climate change and improve our methods of enhancing environmental sustainability. Therefore, this research seeks to investigate organisational Green Statements in order to discover how environmental adaptation is occurring within modern organisations.

Thirdly, previous research has tended to focus on corporate environmental stewardship; however there have been relatively few studies investigating the use of information systems in achieving green goals (Elliot, 2011; Linnenluecke and Griffiths, 2010). As society is becoming increasingly integrated with information systems, it is imperative that we investigate how organisations are utilizing information systems to adapt to climate change (Loos et al., 2011). While technology may be a major contributor to the environmental situation, it may also be the source of the sustainability solution. Hence, this study will seek to investigate how organisations are utilising information systems to achieve organisational environmental sustainability goals.

Finally, research in Green Technology has been intensifying across the Australian research sphere. Recent strands of research have investigated the effects of federally-mandated environmental concessions on the overall Australian economy (Wong, 2012). Additionally, there has been a wave of research looking into the spread and utilisation of Green Infrastructure within the corporate sector (Castleton et al., 2010; Deuble and Dear, 2012). Despite this, there have been relatively few studies within Australia which have focused on organisational green statements.

In summary this research project has three primary motivations. These are:

1. The need to investigate how organisations are responding to the climate change conundrum (IPCC, 2014). In other words, *what is being reported in organisational Green Statements?*

2. The need to understand the current green disclosure practices of organisations (Boiral, 2013). In other words, *how do the Green Statements compare with each other?*
3. The need to understand how organisations are utilizing information systems to adapt to enhance environmental sustainability (Eccles and Serafeim, 2013). In other words, *how are organisations using information systems to benefit the environment?*

1.4 Research Aim, Objectives and Questions

Following on from the motivations laid forth in the section 1.3 *Research Motivations*, the research aim, objectives and questions are presented in this section.

1.4.1 Research Aim

Following the research motivations, the overall aim of the research is stated to be as follows:

- To investigate the environmental actions currently undertaken by large Australian organisations

1.4.3 Research Objectives

Following from the research aim, the objectives of this study are as follows:

1. To analyse the environmental themes derived from organisational Green Statements
2. To compare the thematic differences between different organisational Green Statements
3. To analyse the effect of Information Systems on organisational Green Statements

1.4.2 Research Questions

Following further from the research aim and objectives, two research questions were derived. The main question of this study is:

> *Research Question 1: What are the dominant themes present within organisational Green Statements in Australia?*

Additionally, this research will also seek to answer the following question:

Research Question 2: How has IS affected the creation and distribution of organisational Green Statements?

These two research questions represent the key queries of the research investigation and form the crux of this research thesis.

1.5 Structure of the thesis

This thesis is organized into 6 chapters:

Chapter 1 introduces the research. This chapter contains an outline of the topic and introduces the research questions.

Chapter 2 provides an overview of the current literature pertaining to organisational adaptation and green technology. This chapter will discuss the predominant schools of thought prevalent in these fields and identify gaps in the research.

Chapter 3 explain the research methodology of the study. In this section the research approach and sampling specifications will be expanded upon and justified.

Chapter 4 details the data analysis phase of the investigation. In this section, the data collected from the field research will be examined. This section will display the research results and highlight the major findings.

Chapter 5 discusses the implications of the data analysed in chapter 4. This section will answer the initial research questions as well as highlight the limitations of the research.

Chapter 6 presents a summary of the research and proposes avenues of future research. The chapter will conclude the paper and demonstrate the value of the research findings for academia and practice.

1.6 Conclusion

This chapter discussed the Research Background, the Research Motivation, the Purpose and the Thesis Structure of the following thesis. The research background section provided an overview of the current context and delivered a definition of what constituted a Green

Statement. Then, the research motivation section highlighted previous activity in this research area and illuminated gaps in the extant literature. The research purpose section provided the reader with the research questions: *"What are the dominant themes present within organisational Green Statements in Australia?"* and *"How has IS affected the creation and distribution of organisational Green Statements?"*. Finally, the thesis structure section enlightened readers to the structure and organisation of the rest of the thesis.

Chapter 2 - Literature Review

2.1. Introduction

This section will review the relevant literature pertaining to Green Statements. This literature review will be structured as follows. First, this proposal will discuss the current literature on environmental sustainability, and inform readers of the severity of the climate crisis. Then, the literature review will discuss organisations in terms of their reporting habits and influences. Following that, the proposal shall review the existent literature on green technology as well as its adoption. Finally, this literature review shall discuss Activity Theory and the themes pertaining to organisational Green Statements.

2.2 Environmental Sustainability

Sustainability is a buzzword in both academia and business; however it remains a superficial concept. The United Nations has defined sustainability as development which "meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987). Based on this definition, development is measured along three metrics: economic, social and environmental costs. Other researchers (Watson et al., 2010, Melville, 2010, Elliott, 2011, Jenkin et al., 2011) have defined sustainability as an organisation's ability to maintain a constant size and consumption rate (Holling, 1992). This research defines the concept of sustainability as an entity's ability to endure and persist within the perils of its context. Within this study, the focus will be from an environmental sustainability perspective.

Environmental sustainability has received a rapid growth in awareness over the last decade. Public reviews such as the STERN report have highlighted that climate change could overturn our environmental paradigm, diminishing the global quality of water, air and the earth itself (STERN, 2006). These concerns have been reflected in academia, which is seen as a steady increase in interdisciplinary sustainability research over the last decade (Elliot, 2011). Despite this, there is relatively little research investigating the use of information

systems to combat the climate change conundrum. This study will seek to investigate how technologies are currently being utilised to adapt to climate change and enhance organisational environmental sustainability.

Sustainability is becoming an increasingly important topic in our society. In this age, climate and resource scarcity issues continue to persist; impeding society's day to day progress (WCED, 1987; IPCC, 2014). As a result, both society and researchers have become increasingly aware of the necessity to reduce and remove both climate risks and vulnerabilities. Sustainability strategies offer a method with which entities are able to both climate risks and vulnerabilities. Presently, two widely recognised types of sustainability strategy are Mitigation and Adaptation (IPCC, 2014).

Mitigation is defined as technological shifts, policy changes and substitution effects that reduce resource inputs and emissions (IPCC, 2007). As the world proceeds increasingly down the path of irreversible climate change, some commentators believe it is necessary to reduce harmful environmental outputs in order to stall the progress of climate change. However, this approach requires widespread collaboration between all parties which affect the global environment, and is hence subject to the free-rider effect. Furthermore, a recent IPCC report may indicate that the world has already underwent irreversible climate change. Hence, organisations have been increasingly turning to adaptation strategies in order to defend themselves against the impending environmental threat.

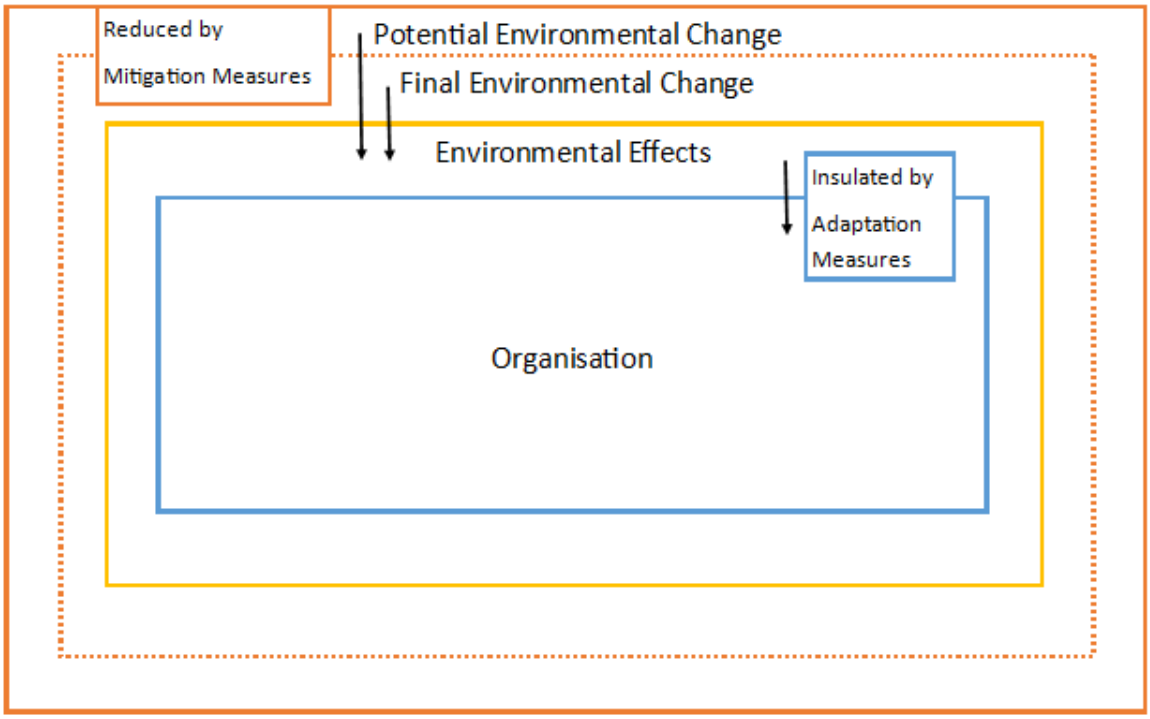

Figure 2.1: Mitigation and Adaptation

Adaptation refers to the process of adjustment to actual or expected environmental changes (IPCC, 2014). Figure 2.1 illustrates the respective roles of mitigation and adaptation-based sustainability strategies in protecting an organisation against the ill-effects of climate change. As climate change intensifies towards the point of no return, it will be necessary for humans to learn to adapt to a climate-changed world in order to ensure the long term survival of the human race. In contrast to mitigation, adaptation seeks to insulate entities against the negative effect of environmental changes, and potentially reap its benefits. A recent IPCC report has highlighted that climate warming can reduce peak electricity demands by 2-3% in New South Wales, but may also increase peak energy demands in order locations. In this context, it is essential that we harness the full benefits of climate change while offsetting its negative costs.

Key Term	Definition
Mitigation	Technological shifts, policy changes and substitution effects that reduce resource inputs and emissions.
Adaptation	The process of adjustment to actual or expected environmental changes.
General Sustainability	The ability to meet the needs of the present without compromising the ability to meet the needs of the future.

Table 2.1 Environmental Sustainability Definitions

Table 2.1 summarises adaptation, mitigation and sustainability. Although both mitigation and adaptation methods are classified as types of environmental action, they vastly differ in terms of effect. While mitigation methods currently the primary type of environmental sustainability activity undertaken by organisations, the exclusive pursuit of mitigation will not insulate organisations and entities from the damning effects of environmental change. Similarly, the sole pursuit of adaptation will not serve to reduce levels of carbon emissions. On the contrary, it may be possible that adaptation methods could at times contribute to the environmental issue (Dawson, 2007; Furlow et al., 2011; Koetse & Rietveld, 2012).

Organisations have adopted a diverse and multifaceted approach to environmental stewardship. Recent studies have shown that organisations have been increasingly adopting Green Infrastructure as a key method to promote environmental sustainability (Benedict and McMahon, 2002; Ngoh et al., 2014). Although Green Infrastructure technologies can provide a solution to the environmental problem, these technologies tend to be expensive to implement and their benefits difficult to fully understand. As these choices are weighted and undertaken in the context of other organisational value-adding options, it is necessary to analyse the motivations behind the selection of this particular technology and the perceived benefits of its use.

Currently, the IPCC predicts that if global action is taken by organisations to mitigate climate change, the global temperature will rise by an average of 2°C (IPCC, 2014). This calculation is based on current and projected levels of CO^2 emissions at current and projected emission

growth rates. At this level of climate change, while some businesses will be negatively impacted by the increase in temperature, humanity can comfortably adapt to living under these newfound condition using urgently available technology. Technologies such as Green roofing already reduce internal temperatures and could be viably employed under these conditions (Getter and Rowe, 2006; Peng and Jim, 2013).

On the other hand, if left unchecked, the global temperature could rise by 4°C by 2050 (IPCC, 2014). This would be a catastrophic change in temperature, as living conditions would change significantly across the geographic sphere. While wealthy nations may still be able to adapt to life under these conditions at a cost, poorer and developing nations may be disastrously affected by the change. This scale of change could not only disrupt business, it may also cause a vast rise in sea levels and eliminate the ability of crops to grow in some areas. As these changes could cause global instability, both governments and organisations are devoting resources to keeping climate change at a manageable level.

The activities undertaken by organisations in order to adapt to emergent concerns of environmental sustainability will be discussed in the next section.

2.3 Organisational Adaptation for Environmental Sustainability

Organisational adaptation refers to initiatives and measures taken by an organisation to reduce its vulnerability against actual or expected threats (IPPC, 2007). In the context of climate change, adaptation refers to the ability of an organisation to reduce the negative effects of climate change, rather than avert climate change itself. In doing so, an organisation can secure its ability to operate regardless of the severity of climate change. While climate change mitigation has traditionally been viewed as the key focus of sustainability research, the core issue with the traditional paradigm is that mitigation strategies must be implemented on a global scale to mitigate a global issue (Watson et al., 2010). On the other hand, adaptation strategies can be implemented independently without falling prey to the shortcomings of the “weakest link”.

Environmental Sustainability has become a key strategic goal of organisations in the past decade (Linton et al., 2007). However, even if carbon emissions are significantly reduced it may be impossible to completely reverse the damage caused by climate change (Bedsworth and Hanak, 2010). As this realisation increasingly dawns upon researchers and policy-makers, adaptation strategies have increasingly become a primary consideration in the effort to enhance environmental sustainability (Kiparsky et al., 2012; Pielke et al., 2007). Despite this, the body of literature concerning organisational adaptation remains relatively sparse (Pielke et al., 2007). As environmental sustainability has been labelled the most important issue in the 21st century, it is necessary that if society falls short of complete climate change mitigation; society must investigate ways to adapt to life within an altered biosphere.

Organisations may adopt Green Strategies in order to enhance environmental sustainability (Baumgartner and Ebner, 2010; Knoepfel, 2001; Indexes, 2009; López et al., 2007). Several of the most prominent ones are listed below. These are:

- Innovative – Actively develops and adopts efficient technologies to reduce environmental impacts (Baumgartner and Ebner, 2010).
- Collaborative – Works together with community and business leaders to promote sustainable initiatives (Baumgartner and Ebner, 2010).
- Knowledge-Based – Educates staff at all levels of the organisation to ensure the development of sustainable practices and behaviours (Baumgartner and Ebner, 2010).
- Process-Based – Focuses on relationships with environmentally sustainable partners along the supply chain (Paulraj, A., 2011).
- Reporting – Focuses on reporting environmental information across the breadth of the organisation (Baumgartner and Ebner, 2010).

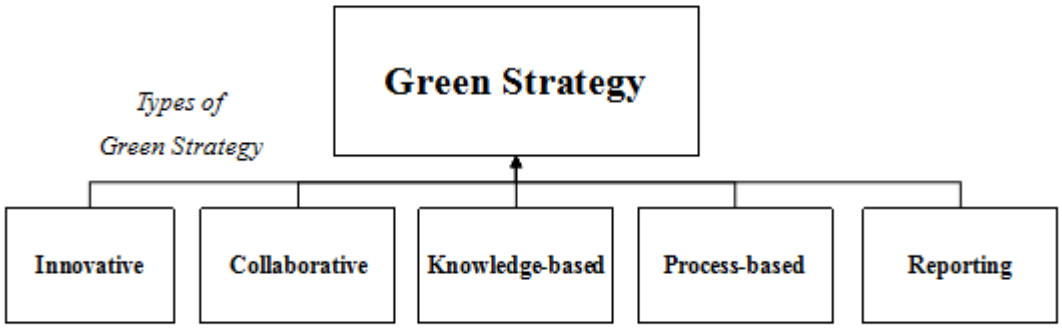

Figure 2.2: Types of Green Strategy

Figure 2.2 illustrates the aforementioned prominent types of Green Strategy. Although many of these strategies are usable by many organisations, organisations frequently weigh the costs and benefits of a given strategy before implementing it across their organisation. The factors which influence Green Strategy Adoption will be discussed in the next section.

2.3.1 Green Strategy Adoption

The adoption of sustainability strategies is rarely driven by a completely homogenous set of factors (IPCC, 2014). Rather, the adoption of green strategies tends to be heavily affected by the net benefits and costs of a basket of processes. In the decision making process, each decision bears its own trade-offs, synergies and limitations; and these may differ depending on the context of the organisation (Freeman, 1984). The drivers behind Green decision making must be carefully considered to how each organisation arrives at its final decision.

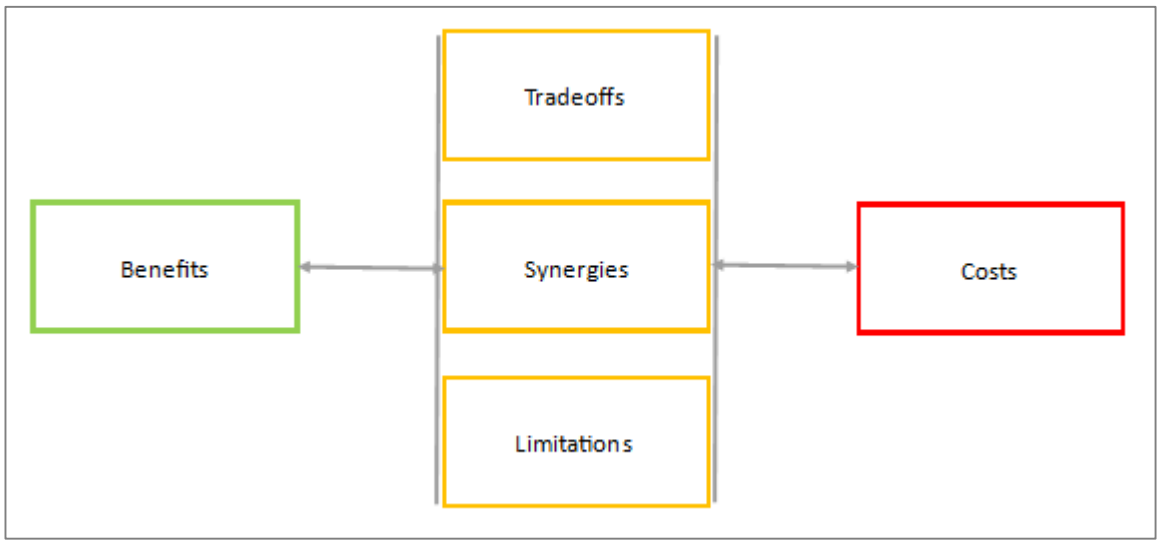

Figure 2.3: Environmental Strategy Decision-Making Model (IPCC, 2014)

As illustrated in Figure 2.3, benefits include any derivable value which an organisation may claim from the use of a technology. Benefits are essential to consider as benefits are the main drawing power of an environmental strategy to an organisation (IPCC, 2014). Common benefits of green strategies may include energy usage reductions, efficiency increases, stakeholder satisfaction and legal compliance.

Costs encompass the scope of the expected negative impacts of an organisation (IPCC, 2014). This primarily emerges as monetary cost, but may include time costs, procedural delays and incompatibility issues. Costs form the flipside of the valuation paradigm as cost must be cross-analysed with benefits in order to determine the net value of a project or pathway. While costs are often perceived as negative, at least in the short term, they may often be a pathway to long lasting and beneficial external perceptions and relationships.

The equation formed by the comparison of both costs and benefits displays and illustrates the trade-offs formed by a strategic decision. A perceived net positive trade-off may be considered for adoption by an organisation seeking an environmental solution (Bedsworth and Hanak, 2010). On the other hand, a perceived negative trade off will almost certainly result in the rejection of the adoption option. Knowledge of the perceived values of these trade-offs is essential in understanding the rationale behind technological adoption.

Synergies form the next part of this equation. While individual decisions can be decided purely on the projected costs and benefits of that specific choice at that point in time, oftentimes organisations themselves consist of a network of programmes and technologies (Solecki et al., 2011; Viguié and Hallegatte, 2012). Decision making must thus be synergistic in order to maximise the integral value of the decision. Positive Synergies are formed from the positive overlapping or combination of technologies and programmes. An example of a positive synergy would be a combination of solar panel technology and intelligent ventilation systems. The energy from a heat intensive day could be captured and used to power a heat negating system, maximizing benefits and reducing negative effects.

On the other hand, negative synergies are formed when strategic choices conflict or fail to add incremental value (Solecki et al., 2011; Viguié and Hallegatte, 2012). Negative synergies could form from the overlap of two similar technologies. For example, an organisation with an insulating green roofing plan will benefit to a lesser extent from the implementation of a heat-capture system. These considerations are often essential in the consideration of new technologies and choices.

Ultimately, these pathways are wrought with inherent limitations (Dawson, 2007; Furlow et al., 2011; Koetse and Rietveld, 2012). While some strategies can go far to mitigate the effects of environmental changes and effects, these cannot currently be viably used to reverse environmental change. Similarly, while some strategies can be used to insulate organisations from the negative effects of climate change, a sole environmental strategy cannot fully protect organisations from all aspects of environmental change. The limitations of differing environmental strategic approaches must be fully explored and accounted for in order for organisations to efficiently select and implement a strategy in order to both mitigate and adapt to the nature of a volatile environment.

Although organisations pursue a multitude of approaches to environmental sustainability, reporting has become increasingly prominent as a way for organisations to enhance their environmental contributions and publically display environmental accountability.

2.4 Organisational Environmental Sustainability Reporting

In order to enhance their environmental contributions and display a level of environmental accountability, organisations have typically published green statements. Most research to date has focused on claims made by Green Statements and the environmental reality behind them (Gray and Milne, 2002; Hahn and Kühnen, 2013; Owen et al., 1997; Da Rosa et al., 2012). While most organisations claim that their disclosures are made to enhance the transparency of their internal processes, some commentators retort that these disclosures are merely greenwashed marketing tools (Dahl, 2010; Lyon and Maxwell, 2011). Nevertheless, due to the relative lack of information pertaining to the activities of organisations behind the curtains of office boardrooms, Green Statements remain an invaluable tool to uncover where an organisation's environmental areas of interests lie.

2.4.1 International Perspectives on Organisational Environmental Sustainability Reporting

Sustainability reporting itself is a term which has been attributed with multiple meanings within the public arena. Of these, two prominent definitions stem from the GRI and SASB (G.R.I. Initiative, 2009; Eccles and Serafeim, 2013). These institutionalized definitions operationalize environmental issues as part of a greater sustainability concept. However, in this paper, we shall choose to focus on environmental sustainability, to hone and focus our research.

As previously mentioned, the other leading authority on Green Statements and environmental disclosure is sourced from the UN Global Compact (UN Global Compact, 2011). The goal of the UN Global Compact is to foster and support the adoption of sustainable business practices, through the provision of guidance relating to sustainable disclosure and a framework of principles relating to sustainable practices. Of the ten principles provided by the UN Compact, three are relevant to the environment. These are:

- Principle 7: Businesses should support a precautionary approach to environmental challenges;

- Principle 8: Undertake initiatives to promote greater environmental responsibility; and
- Principle 9: Encourage the development and diffusion of environmentally friendly technologies.

These principles have been a prominent signpost for businesses and organisations wishing to publish Green Statements since its inception in 1999.

There has been a dramatic increase in the research interest surrounding the field of green disclosures within the last few years. However, most research has historically focused on the materiality and relevance aspects of Green Statements (Deegan and Soltys, 2007; Lee and Hutchison, 2005; Spence et al., 2010). These strands of research tended to focus on the accounting dimensions of these reports, rather than the themes which pervaded them. This research will seek to focus on the primary themes found within Green Statements, to enable an insight into the specific concerns of organisations in recent history. In doing so, we hope to identify the broader underlying concerns of these organisations in order to perceive which issues are relevant in the current era and which methods organisations are pursing to combat growing environmental threats.

The content of reports is also a contentious issue within the reporting sphere. In recent times there has been a trend towards simplified scorecarding systems in order to simplify disclosure, increase information relevance and enhance comparability across organisations (Hoque and Adams, 2011). However, the environmental disclosures rarely finish at a performance scorecard. While pre-set metrics may present an easy method for external readers to discern environmental impacts, these methods rarely paint a clear picture of the true environmental reality of an organisation.

Additionally, other strands of Green Statement literature hone in on the effects of regulation on environmental disclosures. Some researchers discuss the idea of applying a homogenous standard to a diverse and complex set of climate change problems (Boiral, 2013). Other research has investigated the issues associated with adopting a mandatory Green disclosure regulatory system (Ioannou and Serafeim, 2011). The literature tends to indicate that while disclosure systems exist, they are widely underutilised as organisations create and distribute

their reports largely independent of the regulatory guidelines (Andrew and Cortese, 2011). This also extends to governments, being both regulators and report creators themselves. While there have been multiple attempts to promote greater governmental environmental responsibility, a large portion of public sector disclosure is still widely unregulated and inconsistent in content (Lynch, 2010; Williams, 2011).

2.4.2 Role of Government in Environmental Sustainability Disclosures

The government is a quintessential part of civil society. Often portrayed as the regulator in green disclosure literature, the role of the government as a reporting entity is often ignored. Literature tends to focus on the appeasing behaviours undertaken by private sector institutions in order to secure tax advantages and government contracts (Steurer, 2010). This view operationalizes corporations at the centre of the green disclosure universe, while external regulators and stakeholders merely guide the direction of Green Statements through their collective influence. However this view ignores the contributions of governments in providing green disclosures.

In recent times, environmental stewardship has risen to become a buzzword in both public and private sector circles. Developments such as Executive Order 13514 (Federal leadership in environmental, energy, and economic performance) in the US have demonstrated a commitment by national institutions towards a strategy of "Leading by Example" (Obama, 2009). These actions indicate that the government is now a player in the Green Reporting game in addition to being a regulator, and that it has taken a clear step towards transparent and steady environmental commitment. However the motivations of governments in undertaking green statement commitments are unclear when compared to their private sector counterparts. While private sector entities report for financial, political and legitimacy reasons the interests of the public sector lies within its international commitments and its propensity to be re-elected (Eckersley, 1989; Kitzmueller and Shimshack, 2012).

However the government itself is not a fully united entity. Research has shown that there may be inconsistencies between governmental reports. This is due to the differences in scope, portfolio and priorities prevalent within different government sectors (Lynch, 2010). The

lack of isomorphism within the public sector suggests that while there have been commitments made by the public sector to produce descriptive reports detailing their environmental situation, their frameworks are lacking. By analysing governmental statements it is possible that this research could identify the major thematic concerns of individual government departments across counties and illustrate how these concerns have shifted over time.

2.4.3 Organisational Green Statements

Organisations undertake a variety of approaches to the publication of their green statements, discussed above. However, many Green Statements are written for a common purpose: to communicate environmental information. Derived from the environmental principles *(refer to section 1.2.1 Research Background),* the UN Global Compact lists several themes for the classification and categorisation of information found within Green Statements (UN Global Compact, 2011). These are:

- Resource-driven environmental measures
- Technology-driven environmental measures
- Initiative-driven environmental measures

Resource-driven environmental measures encompass resource-monitoring and active carbon reduction initiatives. Technology-driven environmental measures represent passive, long-term capital-based measures to enhance environmental sustainability. Finally, Initiative-driven environmental measures we took ‘environmentally responsible initiatives’ to mean green actions undertaken by an organisation outside the immediate scope of its activities.

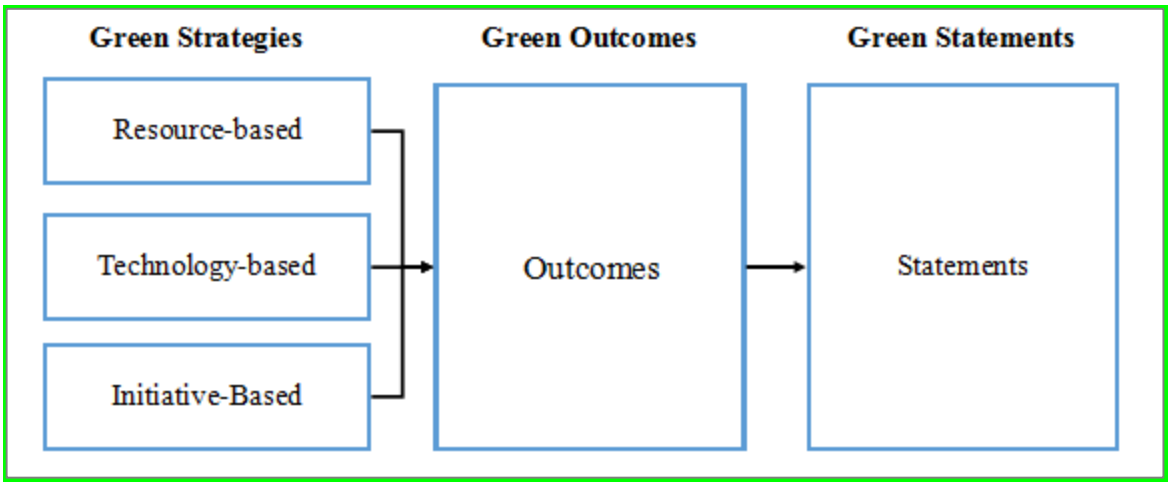

Figure 2.4: The Thematic Categorical model

Figure 2.4 indicates that there are three dominant categories of themes present within organisational green statements, in accordance with the literature and the principles set out within the UN Global Compact. These are operationalized in the model as the Resources, Technology and Initiatives components displayed above. These categories encompass the main measures which organisations use in order to measure their environmental outcomes. These outcomes are reported to the general public, whether positive or detrimental to the environment. These organisational outcome reports form the basis from which organisational Green Statements are created.

As one of the three major types of environmental measures, technology plays a vital part in the development and support of modern environmental sustainability strategies. The next section of this literature review will define Green Technology, Green Information Systems and explain the role of these in promoting environmental sustainability.

2.5 Green Information Systems and Green Information Technology

2.5.1 Definition of Green IT/IS

Green computing is an umbrella term which is often used to describe the study and development of environmentally-friendly technologies. The field of Green computing is primarily divided along two lines: Green IT and Green IS. Green IT tends to focus on

technology itself, and the utilisation of technological advances in order to reduce the impact of IT products on the natural environment. On the other hand, Green IS focuses on the positive aspects of technology, and the ability of organisations and systems to work together in order to created environmentally advantageous outcomes (Hasan and Meloche, 2013).

The term 'Green IS' refers to the uses and applications of technology to support organisational sustainability. Although Green IS remains a relatively emergent field in the greater information systems literature, Green IS has immense transformative power to sustain positive change (Boudreau et al., 2008). This power stems from the ability of information systems to develop and maintain sustainable business processes and harness efficient breakpoints where both environmental and economic values are maximised (Watson et al., 2010). This provides Green IS a great degree of versatility in facilitating and perpetuating sustainable change.

While Green IS and Green IT are closely related, there are substantial differences between the definitions of Green IS, Green IT and other forms of Green Technology and their active usage within academia. Green IS tends to focus on the use of Information Systems to promote efficient practices and support the Green objectives of organisations. On the other hand, Green IT tends to focus solely on the inception, implementation and improvement of innately efficient information technology. Green technologies are products of these fields representing tangible machines and methods which when used, promote the values of both Green IS and Green IT within organisations (Hasan and Meloche, 2013).

2.5.2 Literature review on Green IS in organisational sustainability

Most Green IS research to date has focused on mitigating the impact of Climate change. However there is a sparse body of research regarding the use of Green IS in organisational adaptation strategies. Furthermore, there have been even fewer instances of cross-disciplinary Green IS research. Recent publications have demonstrated that cross-disciplinary research within the Green IS field can help provide practical insights into problems inherent within Green theories (Bansal and Hoffman, 2012).

While Green Infrastructure technologies can be expensive to implement and difficult to understand, their advantages often extend outside environmental sustainability (Boudreau et al., 2008). Most of these technologies frequently offer a myriad of co-benefits which can both enhance an organisation's environmental position and improve an organisation's bottom line. Common non-environmental advantages of Green Infrastructure technologies include energy-efficiency, resilience to hazards and the promotion of an ergonomic work environment. These co-advantages serve to further promote the case for Green Technology, as the expected benefits saturate all levels of the triple bottom line. As benefits and costs form the foundation for all decision-making behaviour, it is necessary to understand the trade-offs and limitations of Green Technologies in order to perceive and isolate their positive synergies.

In Australia, corporations are increasingly incentivised to adopt green technologies. This was due to the government's stance on green energy technologies and a continuous political debate of carbon pricing mechanisms. As such, the adoption of green technology has been widespread (Williams et al., 2010; Xia et al., 2013; Ngoh et al., 2014). Technologies commonly utilised in Australia to aid the environment include energy smart timers, solar panel technology, water conservation systems and Green roofing.

While there is a backlog of evidence showing that organisations are adopting green technology, there is less evidence regarding why. Some schools of thought have posited explanations in the hope of providing an answer to this question, however their primary drivers remain conflicted. Of the theories regarding the adoption of green technology, three are prominent in Green Technology research (Elliot, 2011). These are Institutional theory, Stakeholder theory and the Technology Acceptance model.

Institutional theorists posit that organisations are adopting green technologies in order to increase and improve their perceived external legitimacy. Institutional theorists believe that it is this drive which creates the phenomenon of institutional isomorphism (DiMaggio and Powell, 1983; Scott, 2001). Institutional theory has been commonly used in past research to study the behaviours institutions in relation to their close competitors. Institutional theory

perspectives are common within intra-industry behavioural research to discern the prevailing thought processes which drive and produce Green disclosures (Aerts et al., 2006; Baker et al., 2012; Rahaman et al., 2004; Zeng et al., 2012). Institutional theory provides a contextual paradigmatic lens which allows for a psychoanalytic examination of an industry's cognitive culture by operationalizing patterns as part of a greater industrial whole.

Stakeholder theorists posit that organisations adopt technologies in order to appease external and internal stakeholders. In other words, organisations and influenced heavily by their environments and act in accordance to these influences. This can be seen in how organisations are adopting CSR disclosure models in order to appease the general public as well as other traditional non-financial stakeholders. This stands in stark contrast to the financial stakeholders which dominate the classical marketing sphere (Freeman, 1984).

Finally, Technology Acceptance Model (TAM) posits that organisations are adopting technology on the basis of perceived value, which can be derived from the technology's adoption, and the ease of use in utilizing the technology (Davis, 1986; Davis, 1989; Venkatesh, 2003). While technology may be helpful to organisations, these technologies are still costly and must thus be evaluated for their expected levels of return. Furthermore, an organisation must consider if the technology is usable before implementing it. These considerations form the crux of the organisation's decision making base. Under the conditions of this line of thought, organisations choose technologies and pursue projects on the basis of perceived value, and will judge options according in order to maximise net derived value.

Although the field of general information systems has been receiving increased attention in the past few years, the field of green information systems has not yet been adequately addressed by the greater scientific community (Nedbal and Wetzlinger, 2012). This presents itself as a significant gap in the extant literature and provides an opportunity for further investigation.

The next section will summarise the literature gaps discussed in this literature review.

2.6 Summary of Literature Gaps

There are several gaps in the literature. As discussed prior within the literature review, these are:

- There has been inadequate research regarding the activities currently undertaken by organisations to adapt to climate change, specifically research regarding the content of environmental statements (Lynch, 2010; Williams, 2011; Pielke et al., 2007).
- There has been inadequate research regarding the role of Green IS within organisations, specifically in relation to the use and implementation of Green Information Systems in order to help create, produce and publish organisational green statements. (Bansal and Hoffman, 2012; Elliot, 2011).

A large amount of research has been conducted into the field of organisational environmental disclosures. For example, Deegan and Soltys (2007) found that a large portion of accounting research papers investigated the determinants and motivations of Green Statement producers. However, this focuses on questions of 'Why report' rather than 'What is being reported?' Similarly, Lee and Hutchison (2005) investigated stakeholder's concerns regarding the relevance of green statements. However, this study focused on the conflict between individual producer and stakeholder interests.

Additionally, Gray and Milne (2002) investigated the truthfulness behind claims made in sustainability reports. However, this study asks 'Are report producers trustworthy?' rather than 'What is being reported?' Finally, Clarkson et al. (2011) investigated whether Green statements provided a true and fair view of corporate sustainability performance. However, this study focused on the reliability of emissions data rather than the entire range of the environmental spectrum.

There have been multiple strands of research in the information systems field in relation to Green IS. However there have been relatively few interdisciplinary studies in the area. (Bansal and Hoffman, 2012). Of the few strands of organisational Green IS research, most previous research has tended to focus on corporate environmental stewardship. Nevertheless,

there have been relatively few studies investigating the use of information systems in achieving green goals (Elliot, 2011).

This thesis differs from previous research by adopting a macro-perspective on Green statements; investigating questions of "What is being reported?" rather than "Why are organisations reporting?". Additionally while previous research placed great emphasis on the stakeholder-organisational dichotomy, this research will seek to investigate Green statements through an inter-organisational paradigm.

This thesis also differs from previous research by adopting an IS lens to the investigation of Green Statements. As such, this thesis will seek to investigate the effect of Information systems on the development and distribution of Green statements. This will allow for a solid picture of the role of information systems in the assembly of Green Statements and the greater deployment of organisational environmental strategy.

These major gaps tie in with Research Questions 1 and 2:

Research Question 1: What are the dominant themes present within organisational Green Statements?

Research Question 2: How has IS affected the creation and distribution of organisational Green Statements?

In order to help answer these research questions, we will utilise Activity theory as a framework to guide and frame our analysis. The use of Activity theory will be discussed and justified within the next section.

2.7 Activity theory

2.7.1 Background to Activity Theory

Activity theory is a theory of psychology which originated from the Soviet Union. In its original form, activity theory sought to portray and identify human activities as complex processes which are affected by the objects and environments in and with which they are

undertaken. In 1987, Scandinavian professor Yrjo Engelstrom re-defined the original soviet design, combining the core concepts of the theory with western influences to create Scandinavian activity theory, the most commonly utilised form of the theory in the western world today. Activity theory is commonly utilised within the social sciences to explain the role and influence of social artefacts and organisations on ultimate social outcomes (Leontiev, 1981; Engeström , 1987; Engeström, 1999; Engeström et al., 1999; Daniels et al., 2013).

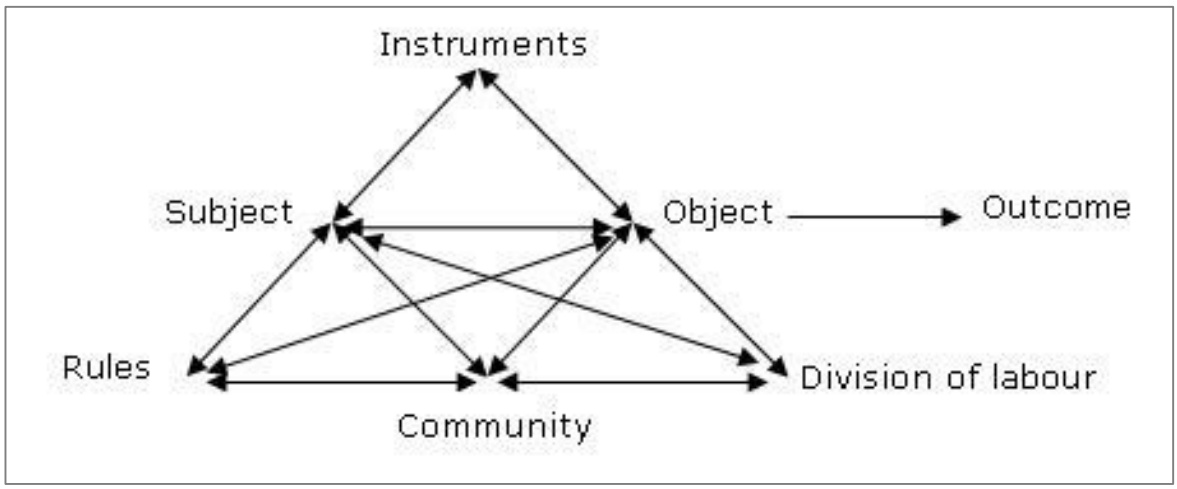

Figure 2.5 Activity Theory Diagram

As shown in the diagram above, Activity theory focuses around the relationship between the subject and object, and the effect of external influences on the outcome of the activity (Leontiev, 1981; Engeström, 1987). Activity theory consists of six main elements. These are: The Subject, Object, Division of Labor, Community, Rules and Instruments which all contribute towards the final outcome (Bertelsen and Bødker, 2003). These are elaborated below:

- Subject – The Subject refers to the persons involved in the activity system
- Object – The object refers to the goal or objective of the activity system
- Division of Labor – The division of Labor represents the distribution of roles, tasks and responsibilities within the system

- Community – The community represents the environment or context within which the system is located.
- Rules – The Rules present the social norms and traditions which the group or objects adhere.
- Instruments – The Instruments refers to the objects and stimuli which are utilised within the object environment.

Due to the utilisation of these concepts, activity theory excels in explaining how tools and contexts affect actions.

Activity theorists commonly hypothesise that the actions undertaken by individuals are mediated by both their social surroundings and their tools. As mentioned previously, Activity theory centres on the dichotomy of the subject and object (Hasan and Meloche, 2013). The nature of the activity is then influenced by both the tools used in the activity, and the community or context within which the activity takes place. Additionally, the context itself is mediated by both the rules, which affect the subject and the community, as well as the division of labour, which affects the community and the objective of the activity (Bardram, 1997; Hasan, 1998).

An example of activity theory can be demonstrated in the case of concert pianist. The subject in this scenario is the pianist and the object is the concert. The activity in this scenario is governed by the instrument (the piano) and the community (the concert hall). Additionally, the nature of the activity is further mediated by the rules (the song list) and the Division of labour (the role of the pianist in the greater orchestra). A change in any of the elements, for example the rules, will affect the community and the subject, which in turn affects the rest of the system, having an overall impact on the final outcome of the activity.

Activity theory is commonly utilised within information systems research. Specifically, activity theory is widely utilised to measure how the introduction of a technological system can affect organisational behaviour. This is reflected in studies such as Hasan and Pfaff, in which activity theory is utilised to investigate the effect of the introduction of corporate wiki systems on the distribution of knowledge within an organisation (Hasan and Pfaff,

2012).Operationalizing information systems as Instruments, activity theory can investigate how the new information systems can alter the flow of normal organisational activity (Allen et al., 2011; Allen et al., 2013; Nardi, 1996; Järvinen, 2008).

Activity theory has also enjoyed a widespread usage in the field of education studies (Anthony, 2011). In Anthony et al., Activity theory was utilised to investigate the effect of education technologies on classroom learning. Additionally, in Hamid et al., Activity theory was used to investigate the effect of social networking on higher education. However, despite the widespread use of Activity theory in the Education and Information Systems .sectors, it remains widely underutilised in the greater body of organisational literature (Blackler, 1993; Zott and Amit, 2010).

2.7.2 Appropriateness of Activity Theory as an Investigative Lens

Activity theory is well suited as a lens from which to enable qualitative analyses such as case studies and interview analyses. Activity theory enables the analysis of lingual and phenomena patterns, which serve to enlighten users of the theory towards the deeper implications of the qualitative data (Fjeld et al., 2002). Additionally, Activity theory seeks to explain the psychoanalytical processes behind the actions of individuals through the medium of its object-oriented activity system.

In recent times, organisational and management studies have been increasingly turning to activity theory to explain the effects of technology rollout on an organisation and their subsequent actions. In Golsorkhi's study (2010), the authors agreed that the use of activity theory in organisational research allows researchers to investigate how individuals co-ordinate their actions in a group setting, when in pursuit of a unifying organisational strategy. Although organisations are often thought of as unified hive-mind entities in organisational research, this line of thinking does not take into consideration the effects of communal context and the individual components of organisations. Through the use of activity theory, it is possible to explain both the overarching organisational activities as well as those at the individual level, allowing researchers to obtain an integrated image of organisational activities when in pursuit of a greater strategy (Golsorkhi et al., 2010; Jarzabkowski, 2003).

Activity theory also allows for the thorough investigation of activities and their contexts. Activity theory was utilised in Sharp and Zaidman in order to investigate the rollout of organisational corporate social responsibility programmes (Sharp and Zaidman, 2010). By using activity theory, it is possible to understand the actions undertaken by subjects in pursuit of a greater objective, and how external factors shape their approach. While corporate social responsibility bears some similarities with environmental disclosure regimes, to date, there have not been any studies completed which have utilised activity theory to investigate Green Statements.

Activity theory is particularly useful as an investigative theoretical lens in this study as Activity theory allows for the rapid classification of vast amount of qualitative data. Additionally, activity theory's unique sociological outlook enables the research to obtain a strong analysis of the relationships between man, machinations and the management of data. Furthermore while many technological theoretical models examine the relationship between man and machine (such as the Technology Acceptance Model), few theories also consider that the actions undertaken by individuals are mediated by both their social surroundings (Engeström, 1987). While other theories may prove to be viable investigative lenses in other studies, I believe that Engeström's Activity theory is most suitable for this study's investigation of organisational Green Statements.

2.8 Conclusion

This chapter reviewed the extant literature relating to Green Statements. Firstly, the literature relating to environmental sustainability was reviewed. Then, the literature relating to organisational adaptation was reviewed and discussed. Next, the chapter undertook an examination of the literature relating to organisational green strategies. In this section, the factors relating to the organisational strategic decision-making process were analysed and discussed.

Afterwards, the literature review moved onto the extant Green Information Systems literature. Specifically, the role of information systems was discussed as well as the use of technologies in promoting organisational environmental sustainability. Then, the literature was

summarised with an overview of the literature gaps covered so far. Finally, Activity theory was introduced and justified as a theoretical framework and analytical lens for the examination and dissemination of Green Statements.

Chapter 3 – Research Methodology

3.1 Introduction

In this chapter, the research methodology will be explained as well as the rationale behind the data collection process. The chapter will be organized as follows: Firstly in Section 3.2, the research method will be identified and justified. Then in Section 3.2.1, the report will explain the epistemology driving the crux of the research project. Afterwards, the thesis will explain the intricacies of the analytical method, Thematic Analysis in Section 3.3.

Section 3.4 will focus on the data collection method, providing a clear description of the study's sample and selection rationale. Then, in Section 3.4.1 following the sample description, the report will identify and support its unit of analysis. Section 3.4.2 will focus on the research project's sample size and distribution. Section 3.5 will discuss and justify the data analysis tool: Leximancer. Finally, Section 3.6 will conclude the chapter, summarising the key points of the research methodology.

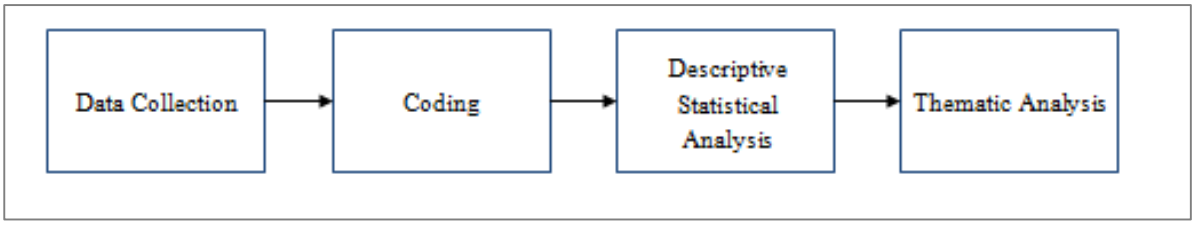

Figure 3.1: Methodological Approach

Figure 3.1 presents a general outline of the methodological approach utilised within this thesis.

3.2 Justification of research method

Philosophy is the study of the fundamental issues of meaning and existence. Philosophy peers into truths of the world, and allows for the attainment of an insight into questions about knowledge, reason, reality, meaning, mind, and value (Grayling, 1995). Philosophical investigation differs from other forms of investigation as it relies draws its beliefs from

evidence and relies on rational argument. Philosophy contains multiple sub-fields, including epistemology, the study of notions regarding knowledge (Craig, 1998).

As an integral tool in the study of knowledge, philosophy offers an invaluable insight into the mechanics of Green Statements. Green Statements, as a physical artefact are a source of information which can inform society about the nature of the constructed world. Specifically, Green Statements are an organisational product, in which their creation is influenced by organisational logics. Thus, these statements can be examined and traced back to their roots to determine the core underlying organisational tendencies which drive and shape green disclosure. This logic is one of the core notions underlying the research epistemology.

The software Leximancer is the primary tool to be utilised for Green Statement analysis within this research project. While some alternatives such as SPSS, SAS and Oracle provide perfectly valid pathways from which to analyse green statements, they tend to rely on human coding to generate research leads. In comparison to traditional statement analytical approaches, the Leximancer-based approach allows for a vast degree of reliability by eliminating the human coder from the research, greatly reducing coding biases. Additionally, the Leximancer approach is inherently both highly reproducible and reliable, due to the computational nature of the analytics system (Smith and Humphreys, 2006). These outcomes highly correlate with this study's positivist epistemology and its qualitative investigative approach.

3.2.1 Epistemology

As discussed earlier, epistemology is the study of notions surrounding knowledge, beliefs and truth. A solid epistemology is essential to a research investigation as it frames the research investigation as well as contextualises its subsequent findings. This is essential as knowledge itself, even when rooted in empirical evidence, can be affected by preconceived human biases (Robson, 2002; Orlikowski and Baroudi, 1991). The Epistemic position of this particular study is rooted within positivist thought.

Positivism is an epistemic school of thought which emphasises empirical evidence and rational thought (Larrain, 1979). Positivists believe that the universe operates in accordance

to absolute laws, such as gravity and time. As such, positivists similarly believe that society also adheres to a set of absolute laws (Macionis, 2012). In the sciences, positivists often aim to seek and establish *a posteriori* beliefs through the collection and analysis of empirical evidence. This then allows for the pursuit and attainment of new knowledge, which can be added to the existing universal knowledge database and can aid in the advancement of societal progress.

This study adopts a qualitative positivist methodology in order to investigate the research problem. Previous researchers have noted that the main problems within the realm of qualitative research revolve around applying a rational, objective and value-free analysis (Lincoln and Guba, 1985; Orlikowski and Baroudi, 1991; Gregor, 2006). As this study utilizes the Leximancer concept mapping tool, these issues are greatly minimised due to the computational nature of the approach. Furthermore, the qualitative approach will allow for the abstraction of Green Statement themes, rather than merely word counts and linguistic patterning. By adopting a qualitative approach and a positivist epistemology, this research seeks to maximise its interpretive power and reproducibility while minimizing its vulnerability to bias.

This research uses a qualitative positivist methodology to investigate organisational green statements. Although positivism is generally associated with quantitative methodologies, it has been argued that it is difficult to quantify language and derive valid numerical results (Orlikowski and Baroudi, 1991). The qualitative approach of this investigation will enable to research to engage with the text, see into the underlying themes within the text and extract the deeper meanings from the text (Smith and Humphreys, 2006). This analysis of themes is also a commonly used research technique: Thematic Analysis.

3.3 Thematic analysis

The contents of Green Statements are dependent on the parties involved in their creation. In other words, these statements are products of their individual contexts, as they highlight the environmental issues of the day, detailing the struggles and woes of their organisation at the point of their creation. In order to research the greater underlying trends which drive Green

Statements, the research community has been increasingly turning towards Green Statements in order to investigate and uncover the truth behind institutional concerns. Thematic analysis refers to a method of analysis which emphasizes highlighting, investigating and recording themes within a dataset (Guest, 2012). In particular, thematic analysis stresses the recognition and interpretation of themes, in order to identify the primary issues portrayed within a text.

Qualitative thematic analysis refers to a technique used in qualitative research which hones its focus on the pursuit of themes within a set of data (Silverman, 2011; Guest, 2012; Boyatzis, 1998). Qualitative thematic analysis utilises coding to decipher meaning within the text itself and draw out relationships from this context. Thematic analysis shares its concept of data-supported discoveries with grounded theory, making this technique excellent for identifying themes, building models and contrasting dichotomies. As a result, it is believed that this approach maximises the depth and novelty of this research while minimising the risk of error.

Recently, thematic analysis has grown in popularity within the social responsibility sphere. Specifically, studies by Tate, Ellram and Kirchoff utilised thematic analysis in order to investigate green issues prevailing within a supply chain (Tate et al., 2010). Although qualitative research remains vastly popular within Green Statement research, we believe that thematic analysis can provide us with a greater relative depth of information (Taneja et al., 2011). This will allow us to better understand the nature and motivations behind Green Statements, and how their contents change over time. Additionally, thematic analysis will allow us to identify the differences between individual Green Statements.

The key strengths of thematic analysis lies in its ability to highlight, investigate and record themes within a dataset (Guest, 2012). The term, "Theme" refers to the ideas, meanings and conceptual constructs prevalent within the textual data (Boyatzis, 1998). Hence, thematic analysis involves the encoding of qualitative information in order to explore the deeper ideas within the textual data (Boyatzis, 1998). Thematic analysis is suitable for analysing large data sets as it allows for categories to emerge naturally from data following a rigorous data analysis (Guest, 2012; Saldana, 2009).

Thematic analysis is ideal in the analysis of organisational Green Statements as it emphasizes the themes within the text. Organisational Green statements are similar in their construction, due to the *a priori* assumptions that each statement is created by an organisation which discloses information regarding the environment. Thus, the analysis of statement content will lean towards the analysis of similarities and differences between Green Statements. This methodological protocol would allow the research with a goal to find distinct, observable differences between differing Green Statements, aligning with the epistemic goals of the research.

Thematic analysis as undertaken within this study will be performed in accordance of this study's positivist epistemology, which emphasises the explanatory strength of empirical data and the objectivity of the research findings. Hence the study's thematic analysis, while maintaining its qualitative explanatory power, will operate using positivistic assumptions. In doing so the research will see to find an *a posteriori* explanation for its results for the analysis performed in accordance with this study's methodology (Orlikowski and Baroudi, 1991).

3.4 Data collection

Data will be collected both physically and aurally from an array of global organisations over the period of 5 years spanning 2009 to 2013. This time period was selected to both maximise the availability of Green reports and illustrate a gradual evolution of institutional reporting behaviour in line with the expectations of Institutional theory. This investigation shall also collect data from mainly large corporations and multi-national organisations to increase the comparability of Green Disclosures and availability of data.

Data will be sourced from the public webpages of organisations listed on the ASX200 with a strong history of producing organisational green statements. These organisations must also additionally have been consistently producing green statements in the period of 2009-2013. This requirement is necessary to ensure accuracy and reliability of the final results. In total, 200 individual statements will be targeted for analysis from 40 unique organisations. The final sample of statements will be tabulated and displayed within the final research project.

While observing Green Statements over a longer time period (for example, 20 years) may be more insightful, it is difficult to find useful and substantial Green statements from Australian organisations over a long time period. Thus it is difficult to mitigate for the longitudinal element of the study in this manner as systemic change in reporting patterns may occur over a longer time period. However Green statements as a reporting phenomenon has gained the most momentum in the past decade, with initiatives such as the G.R.I Initiative being recent occurrences (G.R.I Initiative, 2009). As such, I believe that an investigation into Green statements in recent history will generate the greatest value in terms of research insights and findings.

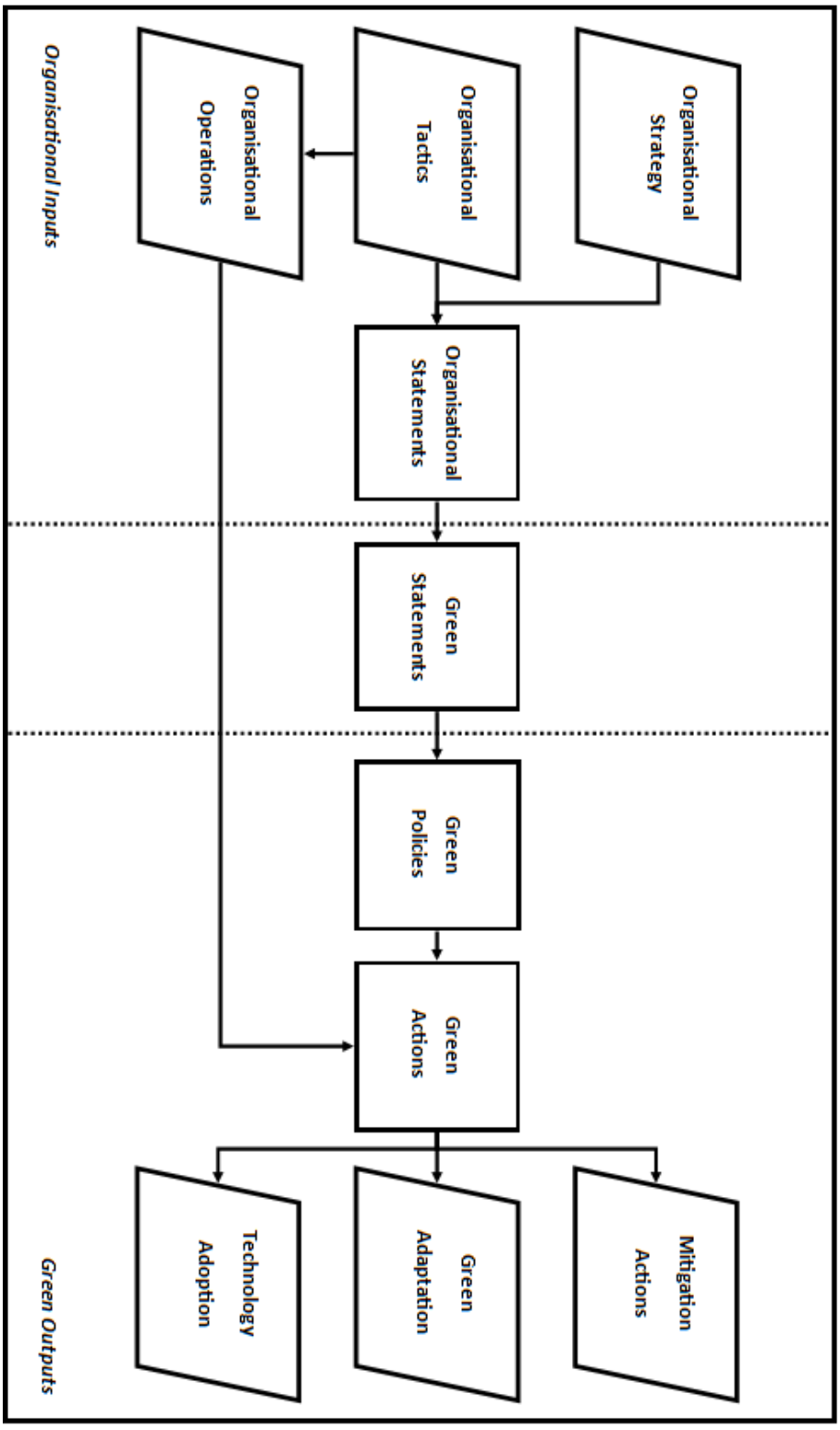

Figure 3.2: Green Statements in an Organisational Context

At the end of the data collection phase, the organisational statements will be grouped and categorised by Industry and year, in accordance to the Australian and New Zealand Standard Industrial Classification (Castles and Cook, 1993). This data will be aligned within excel spreadsheets and used to focus the research investigation. The industries which will be targeted within this study include Finance and Insurance, Retail Trade, Communication Services, Mining, Manufacturing, Wholesale Trade, Health and Community Services, Property and Business Services and Electricity and Gas supply. These industries were chosen due to their prevalence, position and representation within the ASX200, as well as their great overall impact upon the Australian economy. These industries and their respective organisational data input counts will be displayed within the appendix of this study.

Upon the completion of the sorting process, the data will be converted from .pdf and .ashx formats to the .txt format, in preparation for lexical processing. This will allow for the data to be processed swiftly and correctly by the software. After this conversion of the initial data, a quantitative data analysis will be conducted in Leximancer, extrapolating the data in order to discern similarities and patterns between the variables. Additionally, descriptive analytics will be conducted in order to ascertain patterns within the data. The purpose of this initial examination was to answer the pre-determined research questions. The results of the investigations will be recorded and explained in the bulk of the research findings.

Following this analysis we will conduct a thematic analysis of the data, utilising the patterns found in our quantitative investigation to guide our analysis. Themes to be discovered during this analytical process will be recorded in both excel and notepad. It is these themes which will form the basis of the research discussion as an insight is sought into the inner workings of organisational Green Statements.

The size and selection of the data sample is a reflection of the research epistemology. The adoption of a broader viewpoint in order to conduct its research investigation is in line with the positivistic ideals of the study, which correlates with the notion that social constructs follow and are bounded by universal rules and laws.

3.4.1 Unit of analysis

The unit of analysis is an essential aspect of any research. The unit of analysis represents the target of the research's measurement, the key to the research which defines and determines the research result. As this research is ultimately a positivistic study, it is necessary to have a unit of measurement in order to decipher the meaning of the research's analysis. This unit of analysis will later form the crux of the research argument and determine the conclusion of the research investigation.

Industry[1]	**No. of Organisations**	**No. of Statements**
Banking and Financial Services	11	53
Retail Trade	8	39
Communication Services	5	24
Mining	7	25
Manufacturing	4	20
Wholesale Trade[2]	1	1
Health and Community Services	2	7
Property and Business Services	1	4
Electricity and Gas Supply	1	5
Total	40	178

Table 3.1: Research Sample - Descriptive Frequencies by Industry

[1] Industry classifications were selected in adherence to the guidelines set out in 1292.0 - Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993.

[2] Wholesale Trade originally contained 5 entries, however 4 of these entries contained insufficient data for analysis and were omitted from the final sample.

Industry[1]	**Mean**	**Median**	**Mode**
Banking and Financial Services	4.82	5	5
Retail Trade	4.88	5	5
Communication Services	4.8	5	5
Mining	3.57	4	5
Manufacturing	5	5	5
Wholesale Trade[2]	1	1	1
Health and Community Services	3.5	3.5	3.5
Property and Business Services	4	4	4
Electricity and Gas Supply	5	5	5
Total	4.45	4.17	4.28

Table 3.2: Research Sample – Descriptive Statistics by Industry

Year	**No. of Organisations**	**No. of Statements**
2009	34	34
2010	35	35
2011	39	39
2012	35	35
2013	35	35
Total	178	178

Table 3.3: Research Sample – Descriptive Frequencies by Year

Within this study, the unit of analysis observed is the Theme. These themes are created through the emergence of multiple similar concepts, as identified and operationalized by the analytical software. Concepts are defined as a group or cluster of related words, which

represent a broader issues being discussed by the analysed text. While individual sentences themselves may possess meaning, sentences are liable to be misinterpreted when taken away from its original underlying context.

3.4.2 Sample size

The sample size of this study lies at 178, which represents 40 organisations over 5 years within the ASX 200. This sample was taken from a broader population of approximately 800 Green Statements, which represents approximately 80% of the ASX 200.This sample size was used in order to maximise the external validity of the data while negating the need to investigate the entirety of the population of Green Statement producers (Krejcie and Morgan, 1970). The use of this sample allows for cognitive assurance when concerning the attainment of accurate and valid data.

The sample size and selection itself is not without limitations. The decisions an organisation makes in regards to its environmental stewardship could be affected by its geopolitical positioning and economic position. As it is unreasonable to cover all geopolitical regions and business sizes, this study will be limited to large Australian businesses with a physical presence within the Sydney region. Additionally, it is possible that variables such as industry, suppliers and competitors could affect the data. Nevertheless, the sample itself is optimised in accordance to our epistemological position.

The sample size of this research investigation reflects the investigation's epistemological position which emphasizes the need to discover objective truths, using empirical data. As such, a wide segment of the target population is analysed, which aims to reduce the prevalence of random error and increase the overall reliability of the research project. These measures will increase the quality of the research as a whole, and increase its reproducibility as well as its accuracy in terms of representing the true nature of the Green Statement phenomenon. Hence, the selection of the sample, both in terms of its criteria and size were carefully done in regards to the overarching research epistemology.

Figure 3.3: Organisational Statement Types

Figure 3.3 highlights the diversity of statements created by organisations. As shown, Green Statements comprise merely a portion of all statements published. In consideration of this, the sample was carefully selected in order to only analyse Green Statements out of the total mass of organisational statements. The importance of an intricate and accurate sampling procedure is necessary, and aligns heavily with the research's positivist epistemology.

3.5 Data analysis with Leximancer

Leximancer is an emergent tool used in the analysis of textual data in order to map out the underlying themes within the text (Crofts and Bisman, 2010; Sotiriadou et al. 2014). Leximancer is a concept mapping tool which paints a picture of the meaning within a text or

group of texts. This distribution can then be used to identify the key themes across a group of texts. The use of Leximancer can enable the derivation of deep meaning hidden within the text, as well as aid in the alignment of a group of documents to a theoretical framework.

Leximancer allows for a high-end analysis of multiple documents or groups of documents (Angus et al., 2013). This occurs by the identification of concepts and themes within the text, instead of the mere identification of keywords. Leximancer then presents this data in a map, or interactive display in order to visualise the concepts as well as the connectivity between these correlating ideas. This is then showed in relation to the original text, which paints an image of the concepts instilled within the documents.

Leximancer greatly differs from other qualitative research analysis packages. When Leximancer analyses a document, the documents phrases and keywords are parsed, tallied and compared with the software's internal dictionary. Then, Leximancer selects and outputs the most common words and phrases, the 'themes' of the document. Following this, Leximancer one again sorts these themes into categories determined by their lexical meanings and their use within the document. Themes which bear similar meaning or are used together multiple times within a document become 'concepts', which form the basis of the Leximancer concept map (Crofts and Bisman, 2010).

Within a Leximancer concept map, several indicators are present which aid in the interpretation of the data (Crofts and Bisman, 2010). In Leximancer, the brightness of a concept is related to the frequency of the data, in other words, the brighter the concept, the more often it appears in the text. Additionally, the brightness of links relates to how often the two connected concepts occur in close proximity within the text. Only the most dominant lines are displayed in order to avoid unnecessary cluttering. Finally, the nearness of concepts in the map indicates that two concepts appear in similar conceptual contexts.

In this study, Leximancer will be used in order to align the key themes and concepts found within the sample set of Green Statements and align these with the ideas found in the Institutional theory framework. This will be done by gathering the Leximancer output map and mapping the key elements. This will allow for a comparison of the statements and their

alignment to pre-existing theories. Additionally, as the term ‘concept’ in Leximancer refers to a collection of linguistically similar themes, this study will utilise the two terms interchangeably in order to streamline the interpretation of the analyses.

Following the alignment of the Leximancer concepts and themes, the data will be tabulated and significant findings summarised. This data will follow a Leximancer concept map. These concept maps will illustrate the position of concepts and themes at an overall level, at an industry level and at a year by year level. An example of such a concept map can be found on the following page.

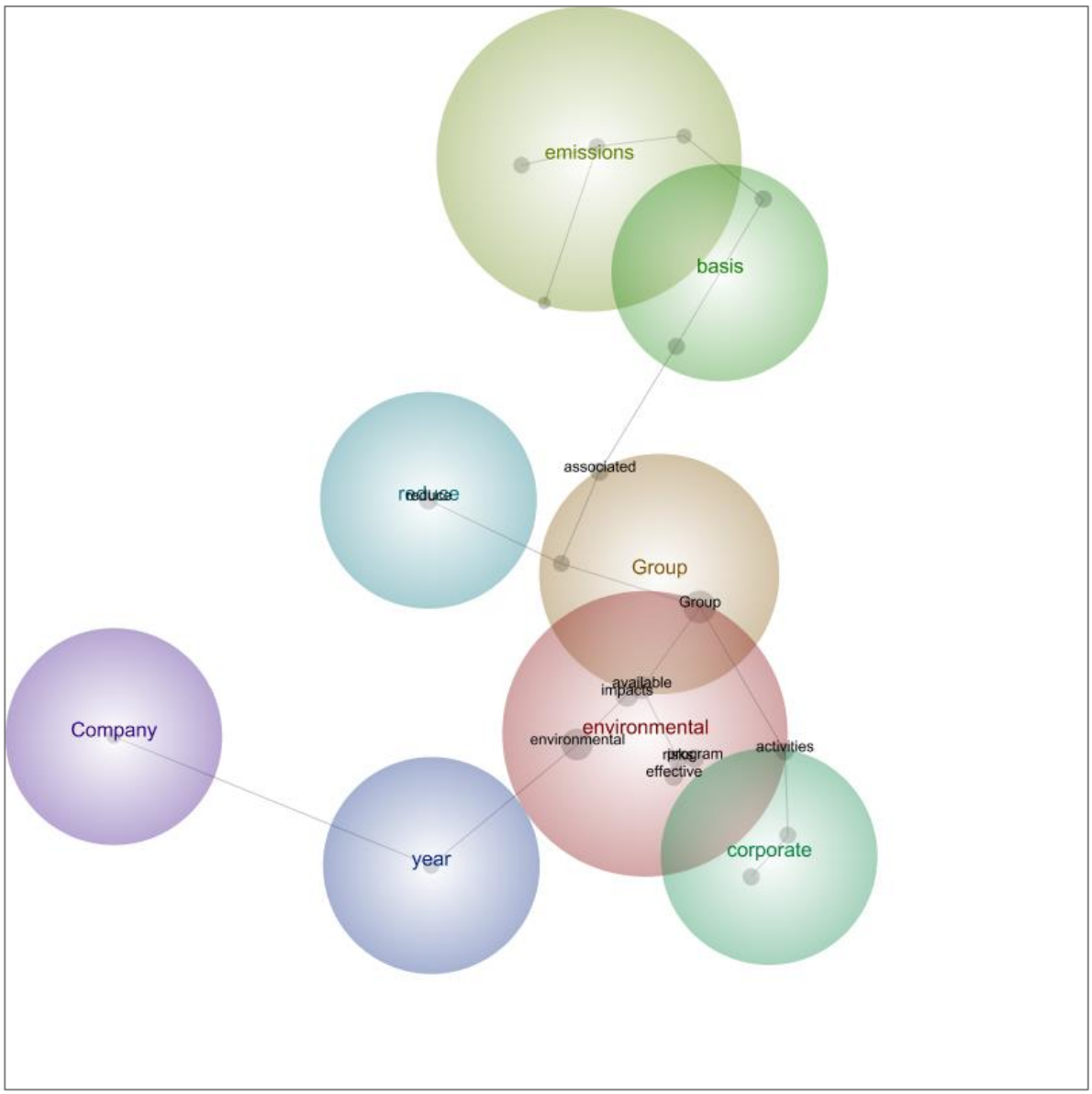

Figure 3.4: Leximancer Concept Map

Figure 3.4 provides an example of a typical Leximancer concept map employed within this study. While the use of Leximancer mitigates traditional issues such as methodological reliability and researcher bias, the software package brings a host of new problems to the table, such as correlative validity. Correlative validity refers to the correlation of the data when compared to a different thematic analysis method. Another concern is functional validity, the validity of the software itself as a valid research tool. While both are these issues

are of import when considering the nature of the research project, they are ultimately of minimal risk, with their validity being demonstrated in several independent tests (Smith and Humphreys, 2006).

The use of the software Leximancer correlates with the research's overarching epistemology. As a software program and analytical tool, Leximancer possessed an advantage in thematic analysis by being able to analyse deeper meanings that humans cannot perceive. Additionally, as the software is packaged with in-built thesaurus functionality, it is able to uncover linkages between concepts and constructs, allowing for a more accurate read of the sample data. These measures allow for the thorough inspection of the sample data, maximising the value generated from a single analytical processing.

Figure 8 displays an example of a typical Leximancer concept map. In Figure 6, eight concepts have been identified and displayed. These are: emissions, basis, reduce, company, group, environmental, corporate and year. Of these themes, there are two smaller conceptual clusters: emissions and basis as well as group, environmental, corporate and year. These clusters represent conceptual connectivity, indicating a strong link between these highly prevalent concepts. The existence of these clusters point to two data types within the concept map: raw emissions data and corporate-environmental information.

3.6 Operationalisation of Activity Theory in data analysis

Following the Leximancer analysis, activity theory will be utilised in order to categorise the discovered Leximancer concepts into the theory's activity system elements. These elements are: The Object, Division of Labor, Community, Rules, Subject and Instruments, which all contribute towards the final outcome. Activity theory is further elaborated upon in section 2.7 *Activity Theory*.

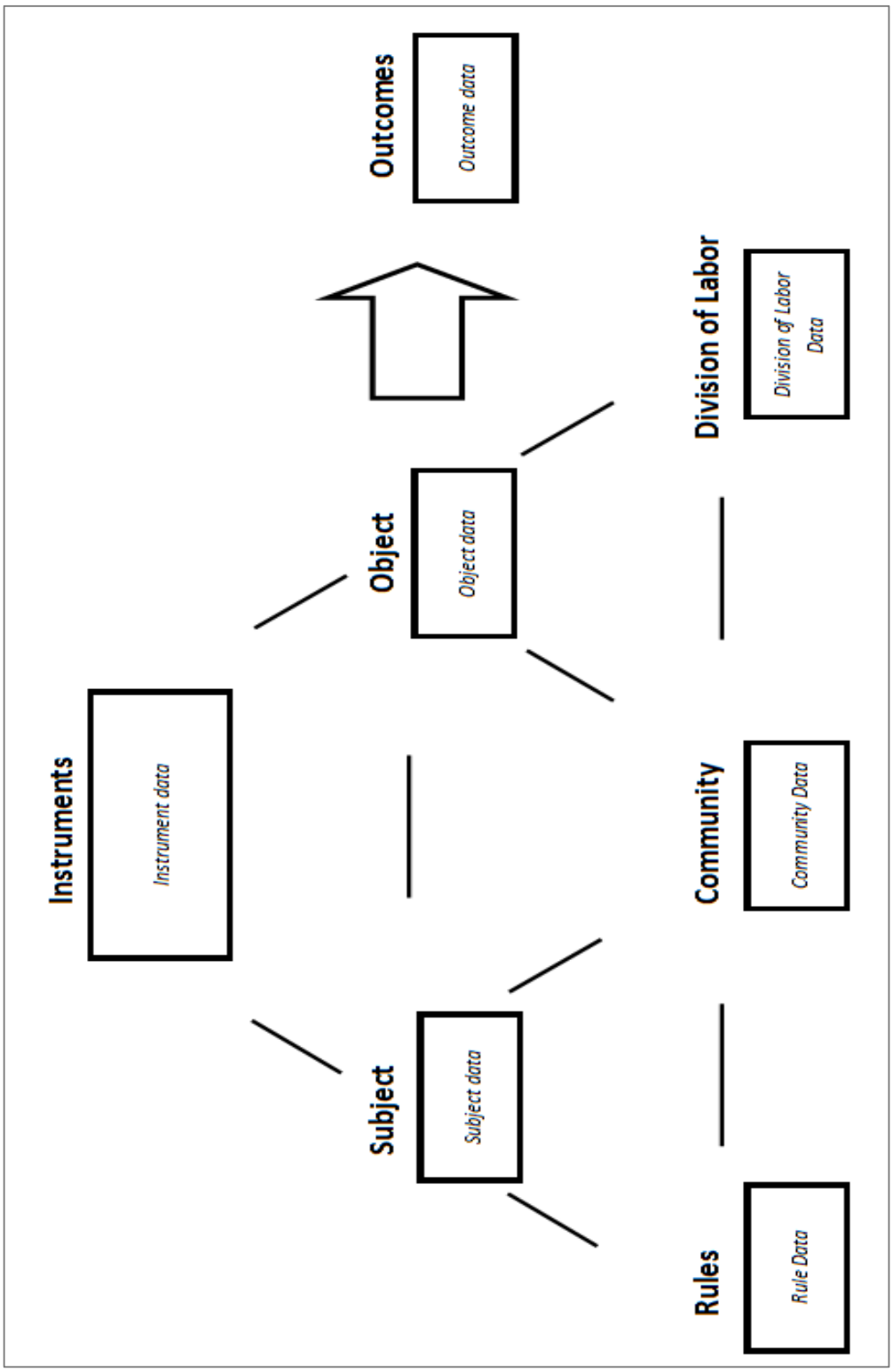

Figure 3.5: Activity Theory Box Diagram

The above figure displays an activity theory system diagram. In order to compare the analytical results to the theory's framework, the concepts will be categorised in accordance to the activity theory elements. These will then be inputted into the diagram and displayed in the discussion section of the thesis. This will allow for the interpretation of the analyses under an Information Systems lens, and shed additional light on the meaning of the results.

The utilisation of activity theory as a framework has been commonly portrayed in prior literature (Anthony, 2011). In Anthony's study, (2011) activity theory is utilised as a means to interpret the effects of classroom interaction on technology integration. Other studies such as Hasan and Meloche have utilised activity theory to interpret qualitative data in a study of environmental declarations (Hasan and Meloche, 2013). As demonstrated in Hasan and Meloche's study, an Activity-theory-guided analysis allows for a holistic and realistic understanding of the underlying phenomena, and enables the researcher to perceive the relationship between the findings of the study.

In this study, activity theory will be utilised as a lens from which to view, examine and interpret the Leximancer outputs. By using Activity theory, it will be possible to discern the contexts which drive organisations to produce green statements in their current form. The use of activity theory as an investigative lens to explain the research analyses will also allow for a clear, theory-backed interpretation of the research findings. The results of the activity theory interpretation of the analysis results will be elaborated in the discussion section of the thesis.

3.7 Conclusion

In this chapter, the research methodology was explained as well as the rationale behind the data collection process. Additionally the research method will be identified and justified. Also, the report will explain the epistemology driving the crux of the research project. Then, the chapter explained the intricacies behind the research method – Thematic Analysis and explained how this research method derives meaning from a dataset.

Afterwards, the chapter focused on the data collection method, providing a clear description of the study's sample and selection rationale. Following this, chapter identified its sample size and unit of analysis. In closing, the chapter discussed the data analysis tool: Leximancer; the strengths and weaknesses of the tool and how it is utilised to analyse data.

Chapter 4 – Analysis

4.1 Introduction

In this chapter, the analysis phase of the thesis will be discussed. The analysis phase of this thesis consists of three major parts. Firstly, the data is processed in the analytical program, Leximancer. Then, the results of the initial analysis are pruned to remove duplicate themes from the final output. Afterwards, the final concept maps are generated and examined in order to determine the dominant themes within the dataset.

The Analyses performed within this chapter are based on the Research Questions specified in section 1. Analysis sections 4.2-4.6 will relate to Research Question 1:

- *What are the dominant themes present within organisational Green Statements in Australia?*

Analysis section 4.7 will provide analysis which relates specifically into Research Question 2:

- *How has IS affected the creation and distribution of organisational Green Statements?*

Finally, Analysis section 4.8 will conclude the chapter and summarize its findings.

4.2 Descriptive Statistics

Following the initial data analysis, descriptive statistics tables were created in order to highlight commonalities between Leximancer plots as well as discern patterns between the computer-generated Leximancer Figures. These statistics were then utilised to guide the analysis of the dataset, helping to enable the stringent collation of research data. Statistical tables were divided into two main categories: Statistical tables by Industry and Statistical tables by Year, as referenced in section 3.4.1 *Research Methodology - Unit of Analysis.* These tables are displayed below.

4.2.1 Descriptive Statistics by Industry-based Concept Maps

Table 4.1 shows descriptive statistics pertaining to the Industry-based Leximancer concept maps analysed within this study. Within this study, 8 industries are examined, with an average number of 7.125 concepts within concept map. Additionally each map hosts an average of 21.125 Themes within its analytical spectrum.

Dimension of Analysis	**Industry**
Total No. of Concept Maps	8
Mean No. of Concepts	7.125
Median No. of Concepts	7
Mean No. of Themes	21.125
Median No. of Themes	19

Table 4.1 - Descriptive Statistics by Industry-based Concept Maps

In the above table and the tables hereafter the terms Concept map, Concept, Theme, are utilised. A *Concept Map* is a diagram which displays themes, concepts and the linkages between them. A Concept is a cluster of similar common themes within a document. Finally, a Theme is a significant recurring issue within a document. Further explanation regarding the nature of concepts and themes can be found in section 3.5 *Data analysis with Leximancer*.

4.2.2 Descriptive Statistics by Year-based Concept Maps

Table 4.2 highlights descriptive statistics pertaining to Year-based Leximancer concept maps analysed within this study. In this study, 5 years are observed, spanning from 2009 to 2013. The average number of concepts in a Year-based concept map lies at 10.6 while the mean no. of themes sits at 36.6 per concept map.

Dimension of Analysis	Year
Analytical Range	2009 - 2013
Total No. of Concept Maps	5
Mean No. of Concepts	10.6
Median No. of Concepts	10
Mean No. of Themes	36.6
Median No. of Themes	36

Table 4.2 - Descriptive Statistics by Year-based Concept Maps

4.3 Leximancer Concept Map Analysis

In this phase of the analysis, the Leximancer concept maps were generated and summarised. This phase occurred in accordance to the Leximancer data analysis guidelines found in section 3.5 *Research Methodology – Data analysis with Leximancer.* The results of the analyses are elaborated upon in the following sections.

Section 4.3.1 tabulates and summarises the findings of an overall analysis of the Green Statement sample.

Section 4.4 tabulates and summarises the findings of the sample's Green Statements when divided by industry. Further details on the dissemination and distribution of industries can be found in section 3.4.1 *Research Methodology - Unit of Analysis: Figure 5: Research Sample - Descriptive Frequencies by Industry.*

Section 4.5 tabulates and explains the findings of the data sample's Green Statements when divided by year, spanning the years of 2009-2013. Further details on the dissemination and distribution by year can be found in section 3.4.1 *Research Methodology - Unit of Analysis: Figure 6: Research Sample - Descriptive Frequencies by Year.*

4.3.1 Overall Analysis

Upon the completion of the preliminary analysis, the following themes and concepts were identified:

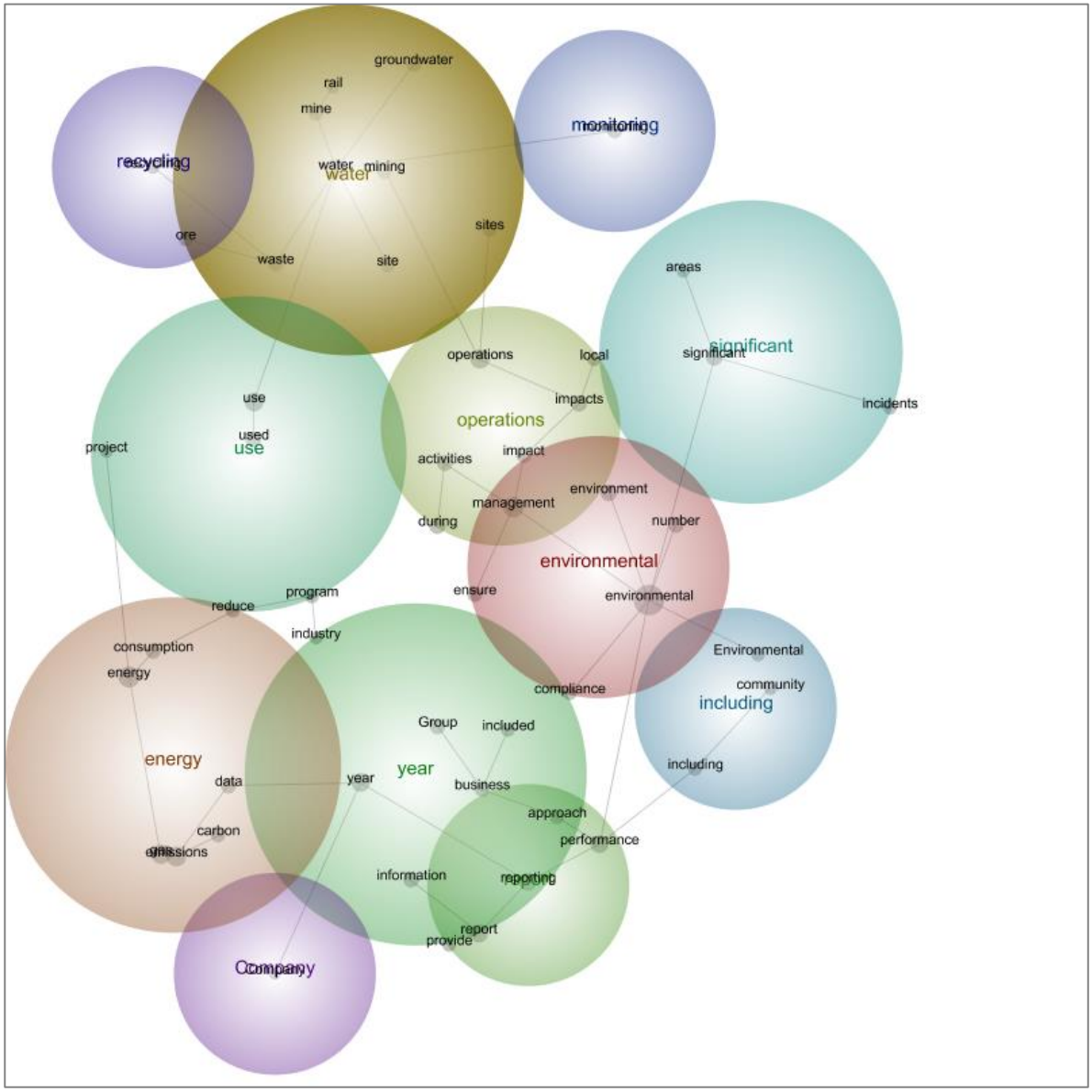

Figure 4.1: Overall Concept Map

Figure	Overall
Analytical dimension	General Overview
Number of Concepts	12
Number of Themes	51
Major Concepts	Year, Water, Energy
Major Themes	Environmental, Emissions, Energy

Table 4.3 – Summary of the Leximancer concept map: Overall

The major themes and concepts found within all Green Statements is showcased within Figure 4.1. These findings are summarised within Table 4.3. Within this figure there are 12 concepts and 51 identified themes. The major concepts of this map are Year, Water and Energy. The major themes present within this figure are Environmental, Emissions and Energy. These results pose a variety of interesting implications regarding the nature of Green Statements by providing a general overview into the area.

The Figure 4.1 displays the overarching themes and concepts present within the entire sample of Green Statements. The main concepts highlighted are as follows:

- Water
- Company
- Operations
- Recycling
- Energy
- Reporting
- Use
- Monitoring
- Environmental
- Including
- Significant
- Year

These themes highlight the main concerns within the dataset and highlight the overarching organisational concepts prevalent within all Green Statements.

The large radii and overlap of both the energy and year concepts signifies a significant relationship between these two concepts. The inter-linkages between the themes ‘carbon’, ‘emissions’, ‘reporting’ and ‘information’ suggests that there was a significant overarching theme of reporting carbon emissions data in all Green Statements. Similarly, the overlap of the water and recycling concepts suggests a significant relationship between these two ideas

within most Green Statements. This position is further reinforced by the thematic networking of the recycling, waste and water themes. These results suggest that overall, there is a significant trend towards monitoring carbon emissions and reducing the consumption of resources.

The overlap of the environmental and operations concepts also presents significant implications regarding the general nature of Green Statements. The conceptual overlap suggests that there is a strong impetus towards environmental operations management. This is reinforced by the thematic connections between ‘management’, ‘activities’, ‘impact’ and ‘environmental’. These findings bear the implications that within Green Statements, there is additionally a movement towards organisational monitoring of environmental activities.

4.4 Industry-level Analysis

Industry was operationalized as the first dimension of analysis within the context of this study. In total, eight industries were observed. These industries are:

- Banking and Financial Services
- Communication Services
- Electricity and Gas Supply
- Health and Community Services
- Mining
- Manufacturing
- Property and Business Services
- Retail

Upon the completion of the initial analysis, an analysis of the dataset by industry category was conducted. These industries were selected and operationalized in accordance to the specifications set out in 1292.0 - Australian and New Zealand Standard Industrial Classification (ANZSIC, 1993). The industry-based analysis yielded the following results:

4.4.1 Banking and Financial Services

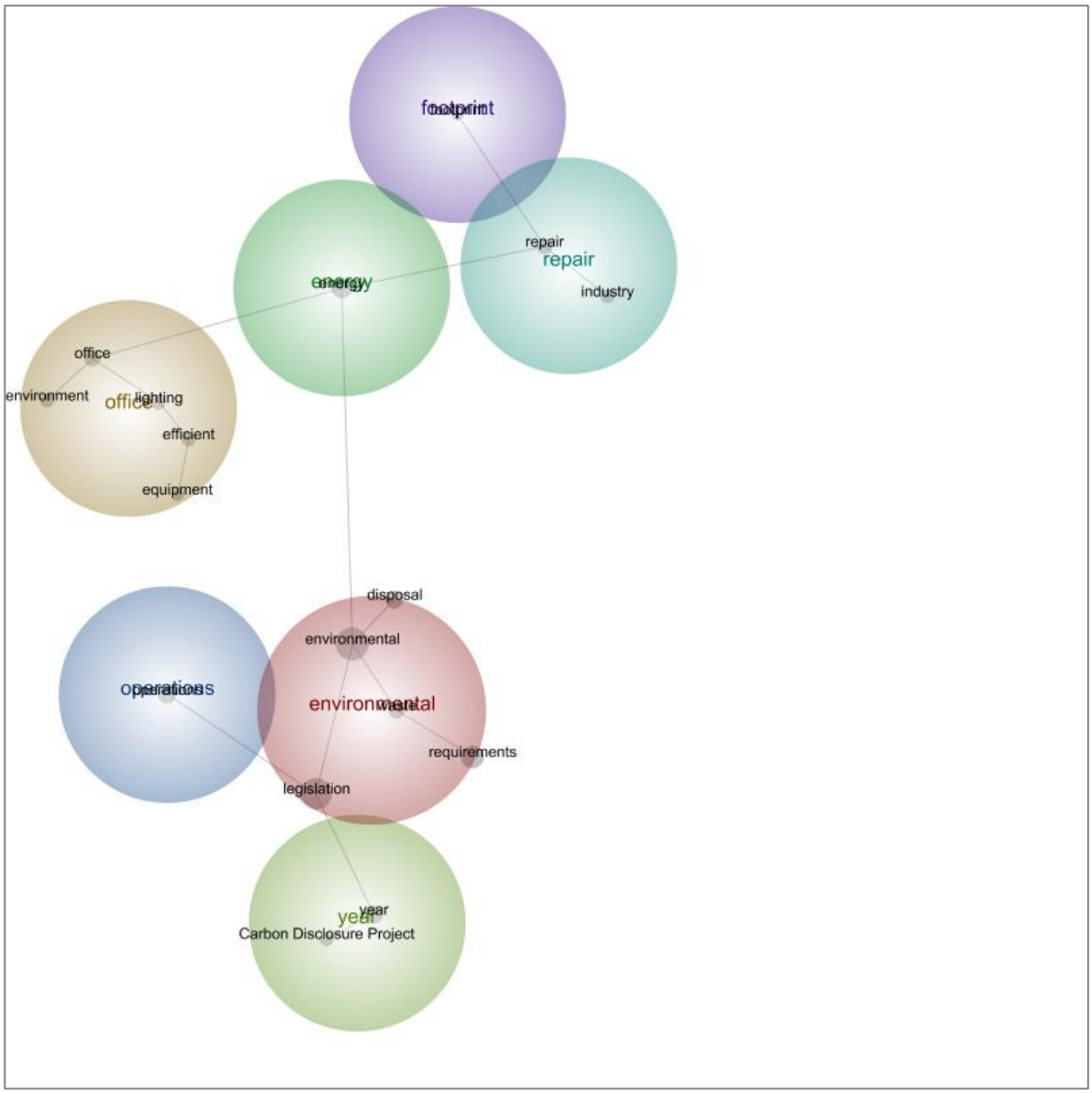

Figure 4.2: Banking and Financial Services

Figure	Banking and Financial Services
Analytical dimension	Industry
Number of Concepts	7
Number of Themes	17
Major Concepts	Office, Environmental, Year
Major Themes	Environmental, Legislation, Requirements

Table 4.4 – Summary of the Leximancer concept map: Banking and Financial Services

The major themes and concepts found within the sample of Banking and Financial Services Green Statements is showcased within Figure 4.2. These findings are summarised within Table 4.4. Within this figure there are 7 concepts and 17 identified themes. The major concepts of this map are Office, Environmental and Year. The major themes present within this figure are Environmental, Legislation and Requirements. These results pose a range of thought-provoking suggestions regarding the nature of Green Statements in the Banking and Financial sector, especially in regards to how these disclosures are related to their internal priorities.

The Banking and Financial Services sector consisted of seven main concepts. These were: Footprint, Energy, Year, Environmental, Operations, Office and Repair. One notable theme in this sector is the Carbon disclosure project. This theme is significant as it signifies a trend towards carbon disclosure programs and environmental stewardship within the Banking and Financial Services sector.

4.4.2 Communication Services

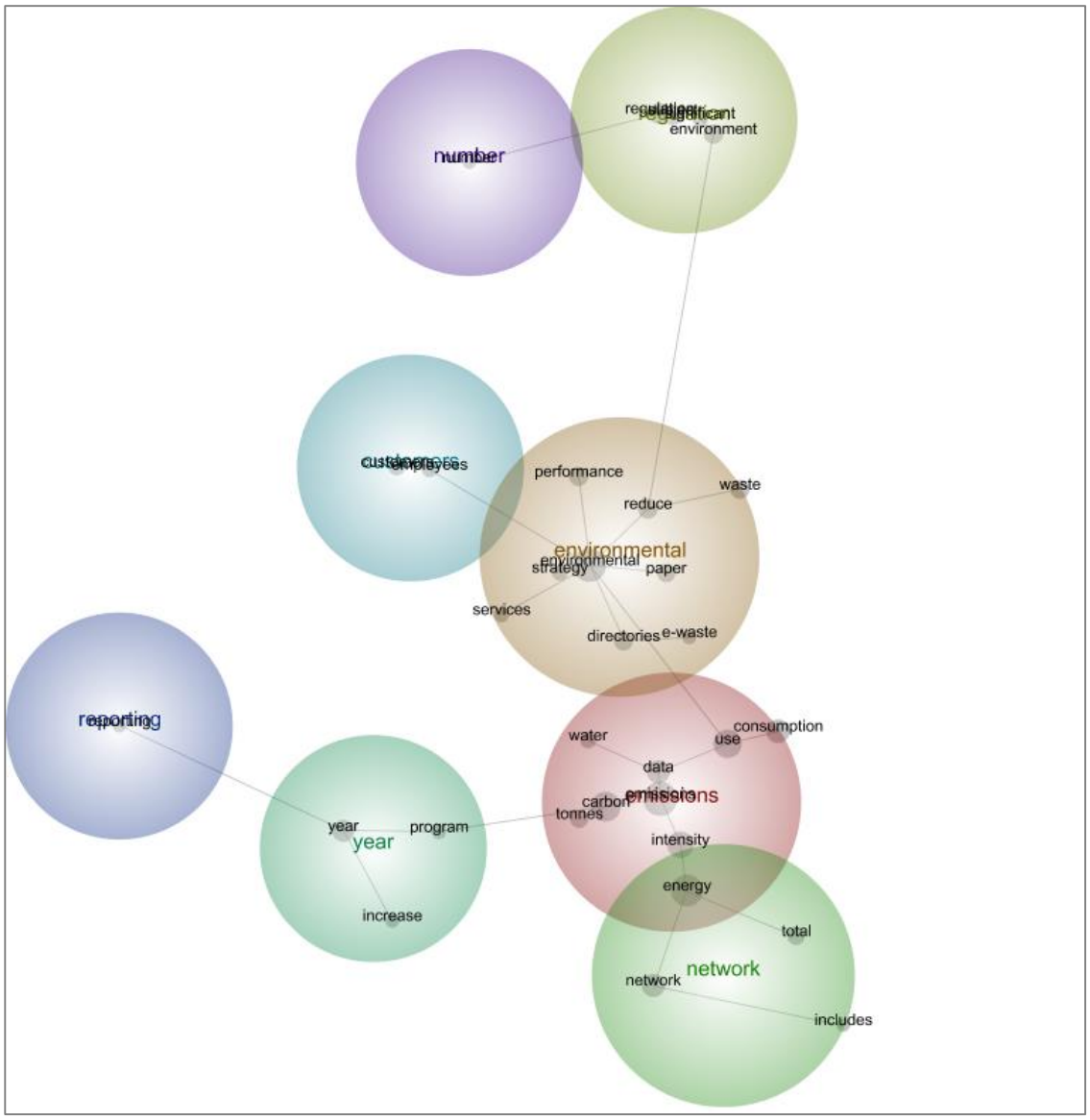

Figure 4.3: Communication Services

Figure	Communication Services
Analytical dimension	Industry
Number of Concepts	8
Number of Themes	31
Major Concepts	Environmental, Emissions, Network
Major Themes	Environmental, Carbon, Emissions

Table 4.5 – Summary of the Leximancer concept map: Communication Services

The major themes and concepts found within the sample of Communication Services Green Statements is showcased within Figure 4.3. These findings are summarised within Table 4.5. Within this figure there are 8 concepts and 31 identified themes. The major concepts of this map are Environmental, Emissions and Network. The major themes present within this figure are Environmental, Carbon and Emissions. These results pose a range of stimulating ideas regarding the nature of Green Statements, specifically the in regards to their network-based emphases.

The communications contained eight main concepts. These were: Environmental, Reporting, Year, Emissions, Customers, Number, Significant and Network. Unique to this sector was the theme of e-waste, which was an environmental concern of high regard in the Communications sector.

4.4.3 Electricity and Gas Supply

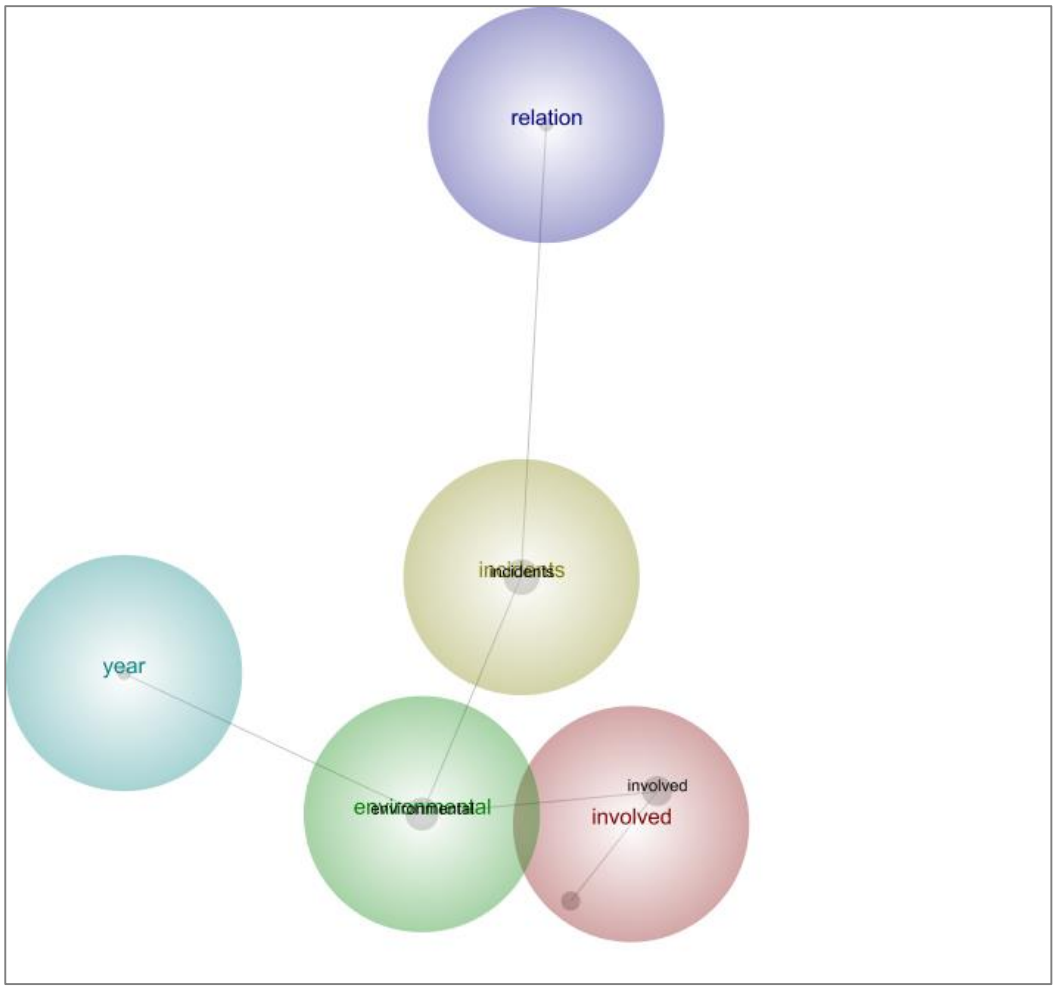

Figure 4.4: Electricity and Gas supply

Figure	Electricity and Gas Supply
Analytical dimension	Industry
Number of Concepts	5
Number of Themes	6
Major Concepts	Involved, Incidents, Environmental
Major Themes	Involved, Incidents, Environmental

Table 4.6 – Summary of the Leximancer concept map: Electricity and Gas Supply

The major themes and concepts found within the sample of Banking and Financial Services Green Statements is showcased within Figure 4.4. These findings are summarised within Table 4.6. Within this figure there are 5 concepts and 6 identified themes. The major concepts of this map are Involved, Incidents and Environmental. The major themes present within this figure are also Involved, Incidents and Environmental. These results pose a range of interesting notions regarding the nature of Green Statements such as the relationship of incident reporting to environmental statements within the Electricity and Gas supply industry.

The Electricity industry contained five main concepts. These were: relation, year, incidents, environmental and involved. In comparison to most of the other industries, electricity seemed to focus on issues of environmental incidents.

4.4.4 Health and Community Services

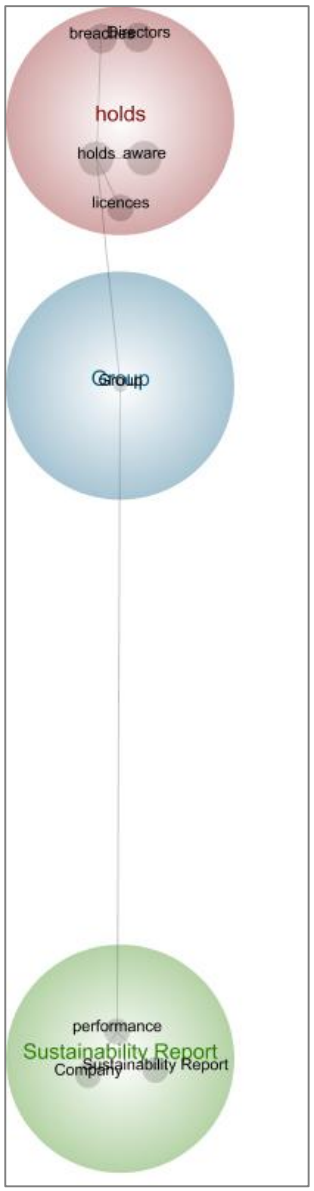

Figure 4.5: Health and Community Services

Figure	Health and Community Services
Analytical dimension	Industry
Number of Concepts	3
Number of Themes	9
Major Concepts	Sustainability Report, Group, Holds
Major Themes	Sustainability, Company, Licenses

Table 4.7 – Summary of the Leximancer concept map: Health and Community Services

The major themes and concepts found within the sample of Health and Community Services Green Statements is showcased within Figure 4.5. These findings are summarised within Table 4.7. Within this figure there are 3 concepts and 9 identified themes. The major concepts of this map are Sustainability Report, Group and Holds. The major themes present within this figure are Sustainability, Company and Licenses. The reporting activity results pose a range of fascinating views regarding the nature of Green Statements, especially when compared to the highly active industries of Manufacturing and Mining.

The Health Services industry bore the fewest conceptual nodes. Three concepts were identified. These were holds, group and Sustainability Report. In this sector, Green statements were relatively short, with the majority of statements mentioning a lack of environmental activities or regulations which the organisations were legally accountable for.

4.4.5 Mining

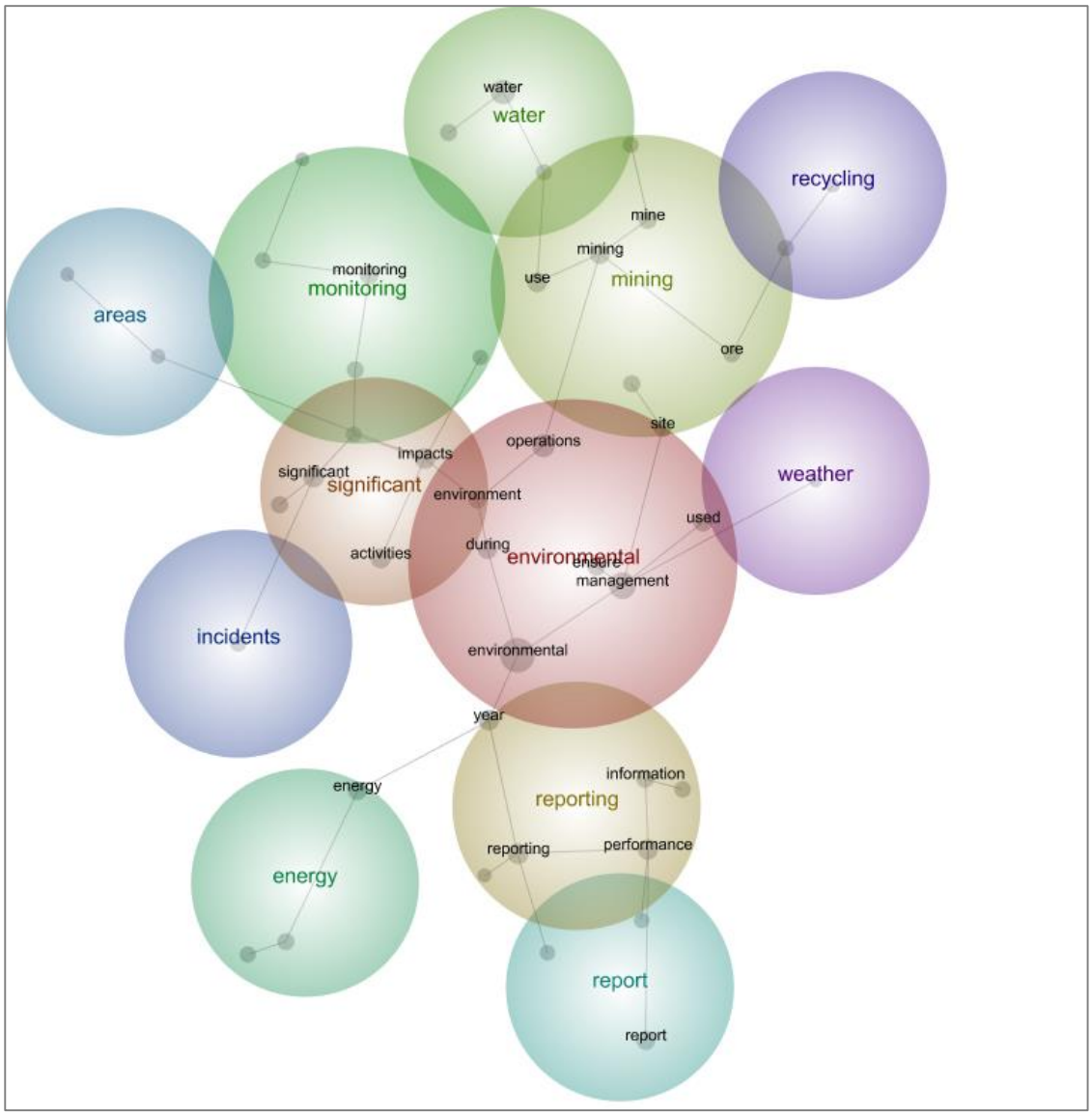

Figure 4.6: Mining

Figure	Mining
Analytical dimension	Industry
Number of Concepts	12
Number of Themes	45
Major Concepts	Environmental, Mining, Monitoring
Major Themes	Environmental, Operations, Management

Table 4.8 – Summary of the Leximancer concept map: Mining

The major themes and concepts found within the sample of Mining Green Statements is showcased within Figure 4.6. These findings are summarised within Table 4.8. Within this figure there are 12 concepts and 45 identified themes. The major concepts of this map are Environmental, Mining and Monitoring. The major themes present within this figure are Environmental, Operations and Management. The high levels of activity found within these results pose a range of absorbing interpretations regarding the nature Mining of Green Statements, especially then contrasted with their popular perception as environmental polluters. However, this may be explained by the specific industry-based concerns of the mining sector and the alignment of their lobbying interests with corporate social responsibility regimes (Baumgartner and Ebner, 2010).

The Mining Industry contained the most comprehensive Green Statements. The concepts discussed within Mining Green Statements included:

- Water
- Environmental
- Reporting
- Significant
- Weather
- Energy
- Areas
- Incidents
- Report
- Monitoring
- Mining
- Recycling

While the Mining Industry tended to report the most environmental information, including some themes which were unique to the mining industry, the mining industry has also historically been considered a high polluter and high-impact player affecting the degradation of the natural environment.

4.4.6 Manufacturing

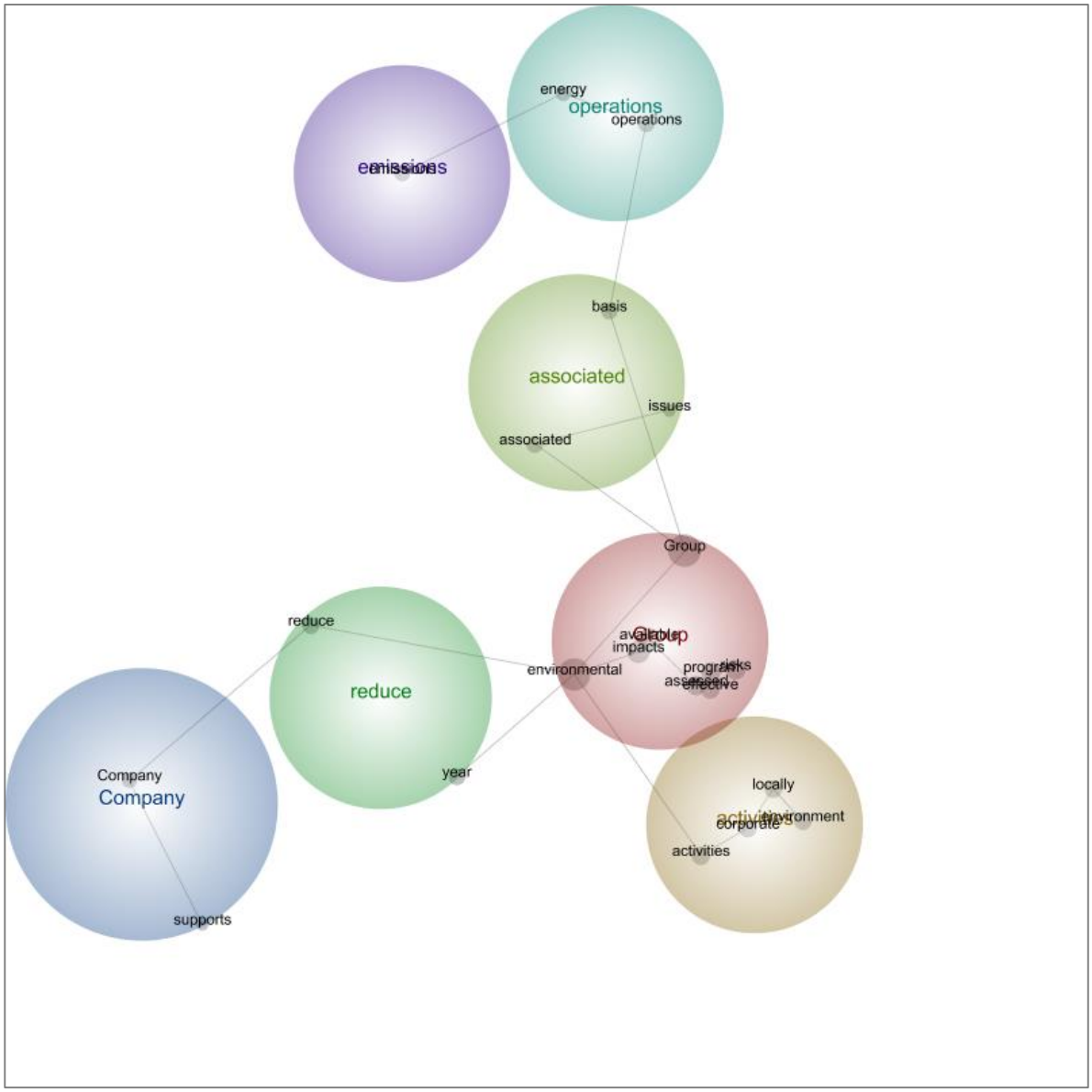

Figure 4.7: Manufacturing

Figure	Manufacturing
Analytical dimension	Industry
Number of Concepts	7
Number of Themes	21
Major Concepts	Company, Group, Activities
Major Themes	Environmental, Group, Emissions

Table 4.9 – Summary of the Leximancer concept map: Manufacturing

The major themes and concepts found within the sample of Manufacturing is showcased within Figure 4.7. These findings are summarised within Table 4.9. Within this figure there are 7 concepts and 21 identified themes. The major concepts of this map are Company, Group and Activities. The major themes present within this figure are Environmental, Group and Emissions. The group and activity-based nature of these results pose a range of interesting observations regarding the nature of Green Statements and the way Manufacturers handle environmental problems.

The Manufacturing industry analysis yielded seven main concepts. These were company, reduce, group, activities, associated, emissions and operations. Group-related themes were dominant in this analysis. Additionally, the industry seemed to put an emphasis on themes of locality, a trait unique to this sector.

4.4.7 Property and Business Services

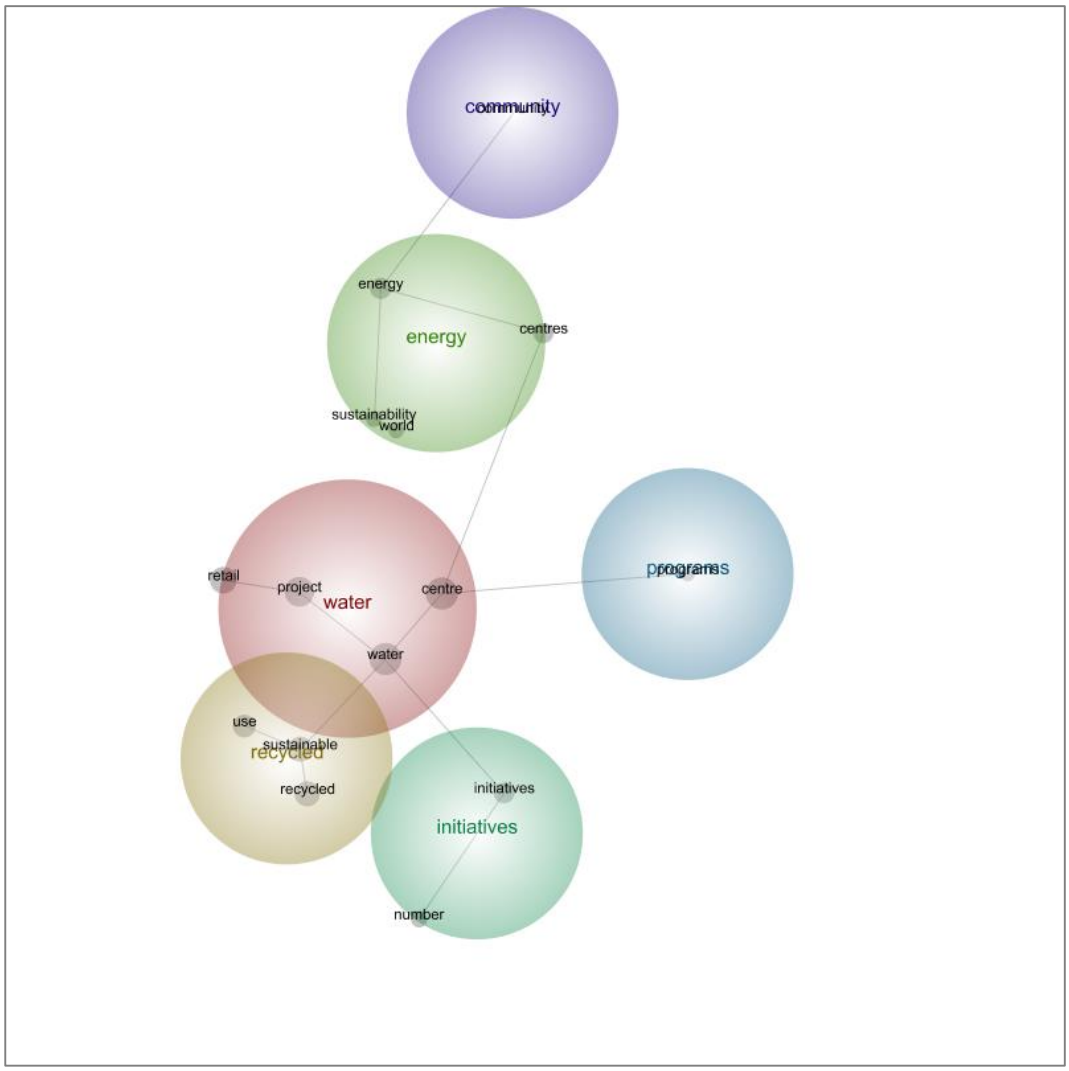

Figure 4.8: Property and Business Services

Figure	Property and Business Services
Analytical dimension	Industry
Number of Concepts	6
Number of Themes	15
Major Concepts	Water, Recycled, Initiatives
Major Themes	Project, Water, Recycled

Table 4.10 – Summary of the Leximancer concept map: Property and Business Services

The major themes and concepts found within the sample of Property and Business Services Green Statements is showcased within Figure 4.8. These findings are summarised within Table 4.10. Within this figure there are 6 concepts and 15 identified themes. The major concepts of this map are Water, Recycled and Initiatives. The major themes present within this figure are Project, Water and Recycled. These results, specifically the prevalence of the recycling and initiative concepts pose a variety of interesting annotations regarding the nature of Green Statements.

The Property and Business Services industry contained six main themes. These were energy, programs, recycled, initiatives, water and community. In this industry, the recycled concept and the water concept were closely related, signalling a trend towards recycled water systems and initiatives.

4.4.8 Retail Trade

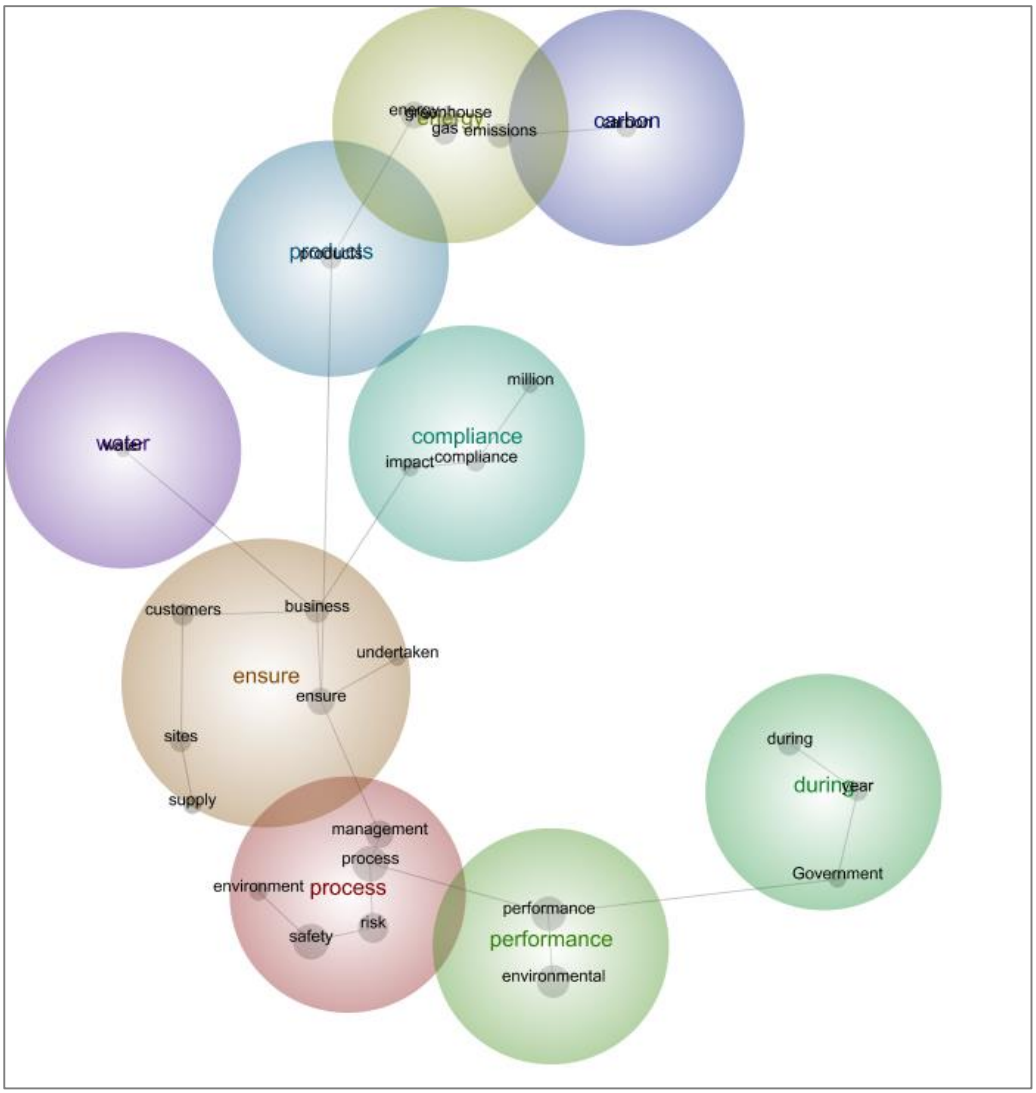

Figure 4.9: Retail

Figure	Retail Trade
Analytical dimension	Industry
Number of Concepts	9
Number of Themes	25
Major Concepts	Ensure, Emissions, Process
Major Themes	Safety, Environmental, Performance

Table 4.11 – Summary of the Leximancer concept map: Retail Trade

The major themes and concepts found within the sample of Retail Trade Green Statements is showcased within Figure 4.9. These findings are summarised within Table 4.11. Within this figure there are 9 concepts and 25 identified themes. The major concepts of this map are Ensure, Emissions and Process. The major themes present within this figure are Safety, Environmental and Performance. These results, specifically the process and safety emphases pose a variety of interesting annotations regarding the nature of Green Statements.

The retail sector contained nine main concepts. These were carbon, energy, compliance, products, water, ensure, process, performance and during. The Retail sector placed a great emphasis on themes such as customers, safety and performance, which indicated these themes as overarching pillars of importance within this industry.

4.4.9 Industry Summary

The Industry dimension of analysis outlines the first dimension of analysis undertaken by this study. Within the industry dimension of analysis, Environmental themes and concepts remained dominant amongst all Green statements.

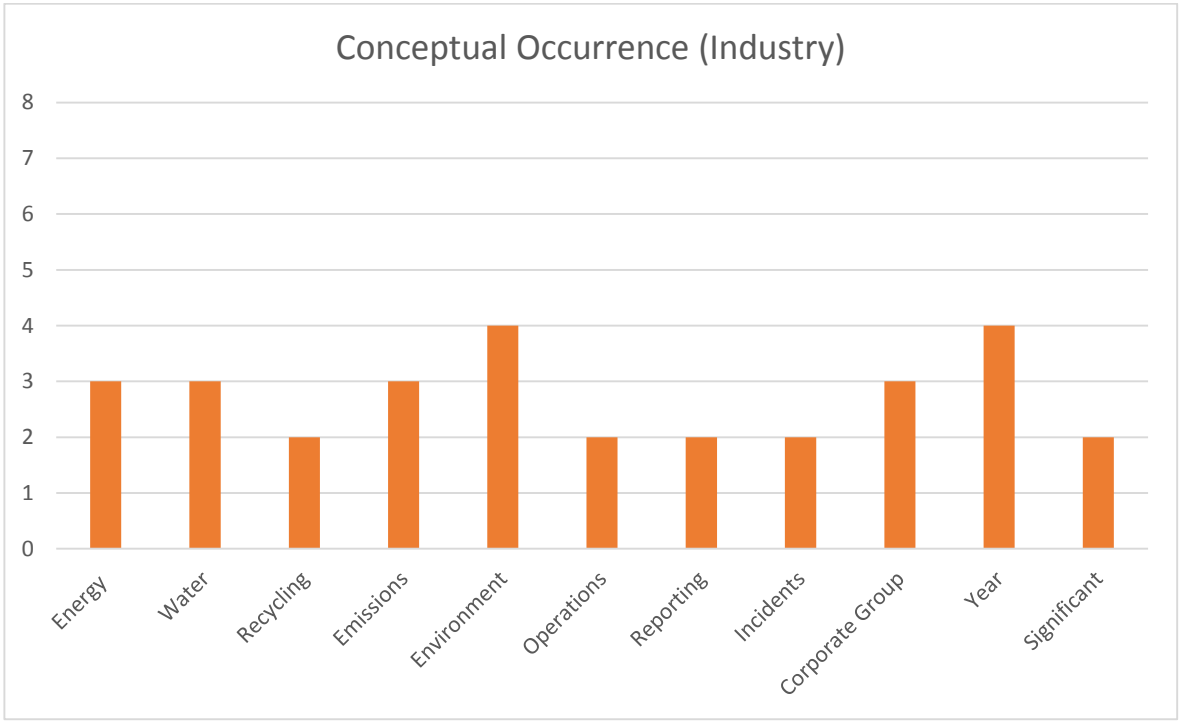

Figure 4.10: Conceptual Occurrence (Industry)

Figure 4.10 outlines the number of conceptual occurrences found when comparing the industry dimension as a whole. As can be shown from the above table, Environment and Year themes were the most prevalent, followed by Energy, Water, Emissions and Corporate Themes. This demonstrates the importance organisations place on monitoring environmental outcomes while simultaneously managing resource usage.

In this table, the y-axis denotes the number of occurrences per concept. The upper limit of the y-axis (8) denotes the highest number of potential occurrences in this dimension of analysis. The x-axis displays the concepts being observed.

4.5 Year-based Analysis

Year was operationalized as the second dimension of analysis within the context of this study. Within the breadth of the research analysis, a span of 5 years were observed. These years are:

- 2009
- 2010
- 2011
- 2012
- 2013

Upon the completion of the industry analysis, an investigation into the statements by year was conducted. The year-based analysis yielded the following results:

4.5.1 Year 2009

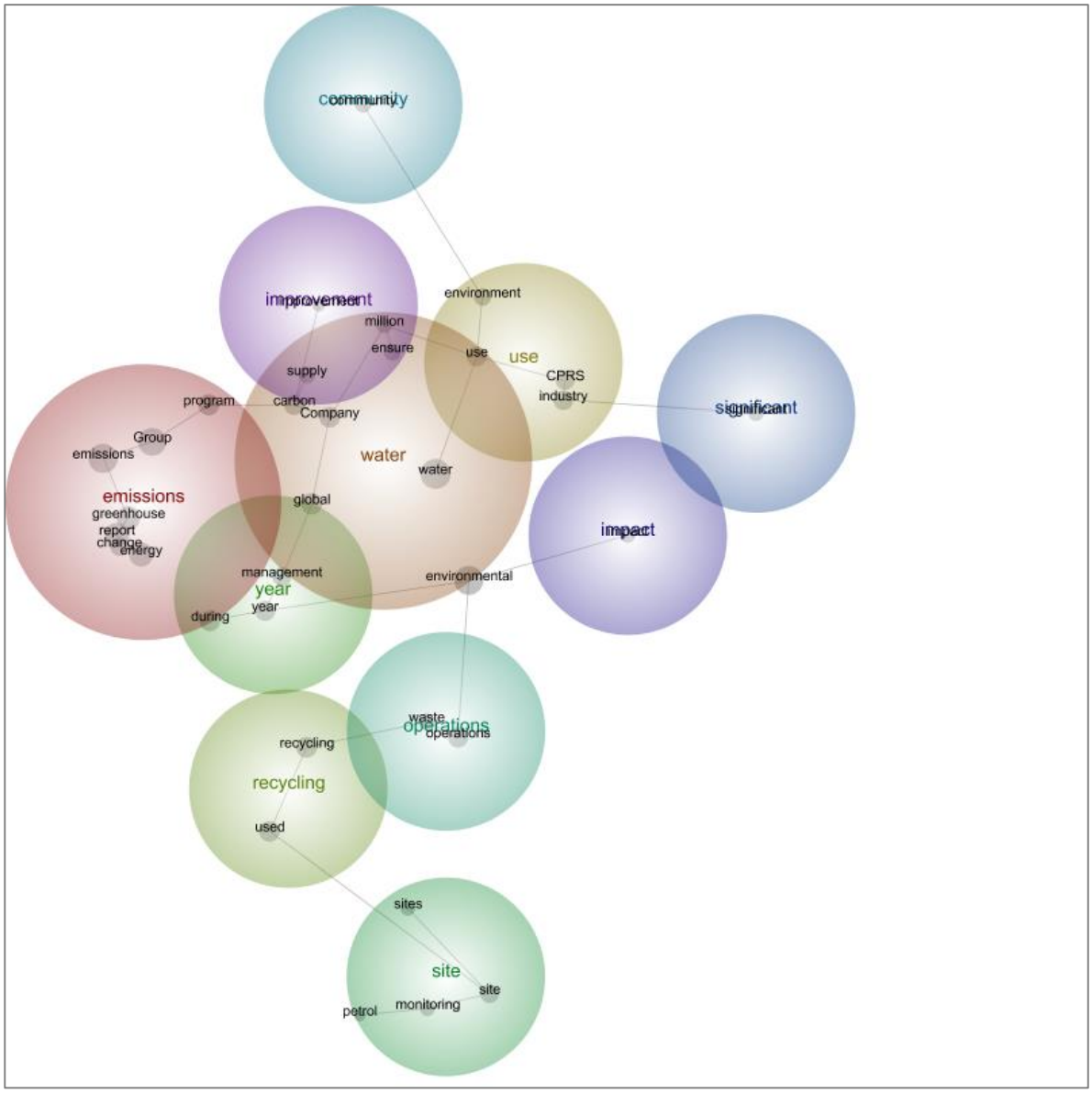

Figure 4.11: Year 2009 Concept Map

Figure	Year 2009
Analytical dimension	Year
Number of Concepts	10
Number of Themes	34
Major Concepts	Water, Emissions, Use
Major Themes	Group, Emissions, Water

Table 4.12 – Summary of the Leximancer concept map: 2009

The major themes and concepts reported within the year 2009 is showcased within Figure 4.11. These findings are summarised within Table 4.12. Within this figure there are 10 concepts and 34 identified themes. The major concepts of this map are Water, Emissions and Use. The major themes present within this figure are Group, Emissions and Water. These results point to a variety of intriguing insights into the primary themes within Green Statements in 2009.

The analysis of the year 2009 yielded the above diagram. In this diagram, eleven concepts are clearly identified. These are:

- Community
- Site
- Recycling
- Use
- Water
- Operations
- Year
- Improvement
- Impact
- Significant
- Emissions

In this year, emissions and emissions monitoring were dominant themes prevalent throughout the majority of statements produced in this timeframe.

4.5.2 Year 2010

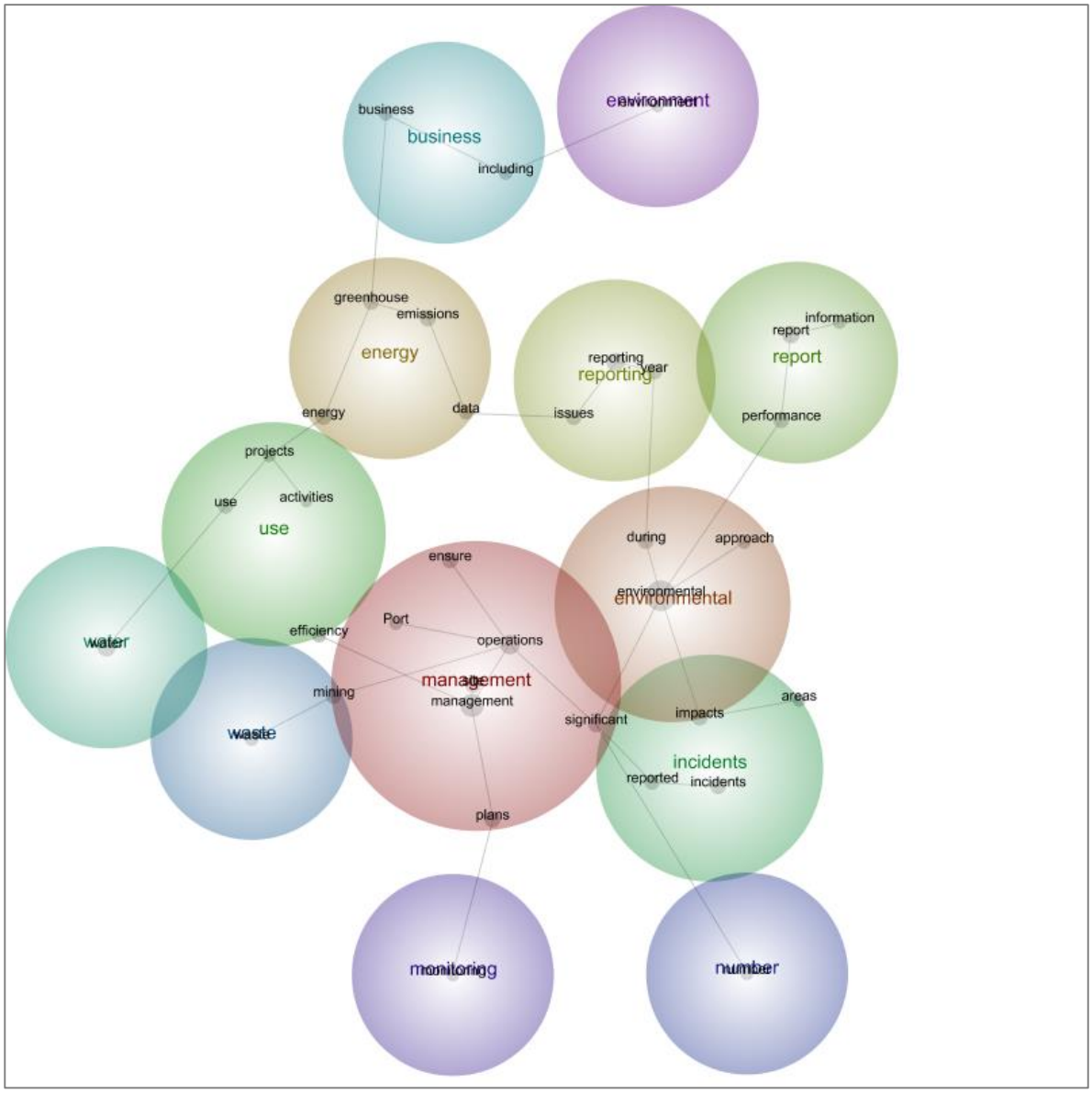

Figure 4.12: 2010 Concept Map

Figure	Year 2010
Analytical dimension	Year
Number of Concepts	13
Number of Themes	36
Major Concepts	Management, Environmental, Incidents
Major Themes	Management, Operations, Environmental

Table 4.13 – Summary of the Leximancer concept map: 2010

The major themes and concepts reported within the year 2010 is showcased within Figure 4.12. These findings are summarised within Table 4.13. Within this figure there are 13 concepts and 36 identified themes. The major concepts of this map are Management, Environmental and Incidents. The major themes present within this figure are Management, Operations and Environmental. These results point to a variety of stimulating perceptions into the primary themes within Green Statements in 2010.

The analysis of the year 2010 yielded the above diagram. In this diagram, thirteen concepts are clearly identified. These are:

- Business
- Reporting
- Number
- Report
- Management
- Water
- Environmental
- Incidents
- Improvement
- Environment
- Significant
- Energy
- Waste

In this year, there was an emergence of incident reporting, as areas of performance and environmental issues dominated the year's Green Statements.

4.5.3 Year 2011

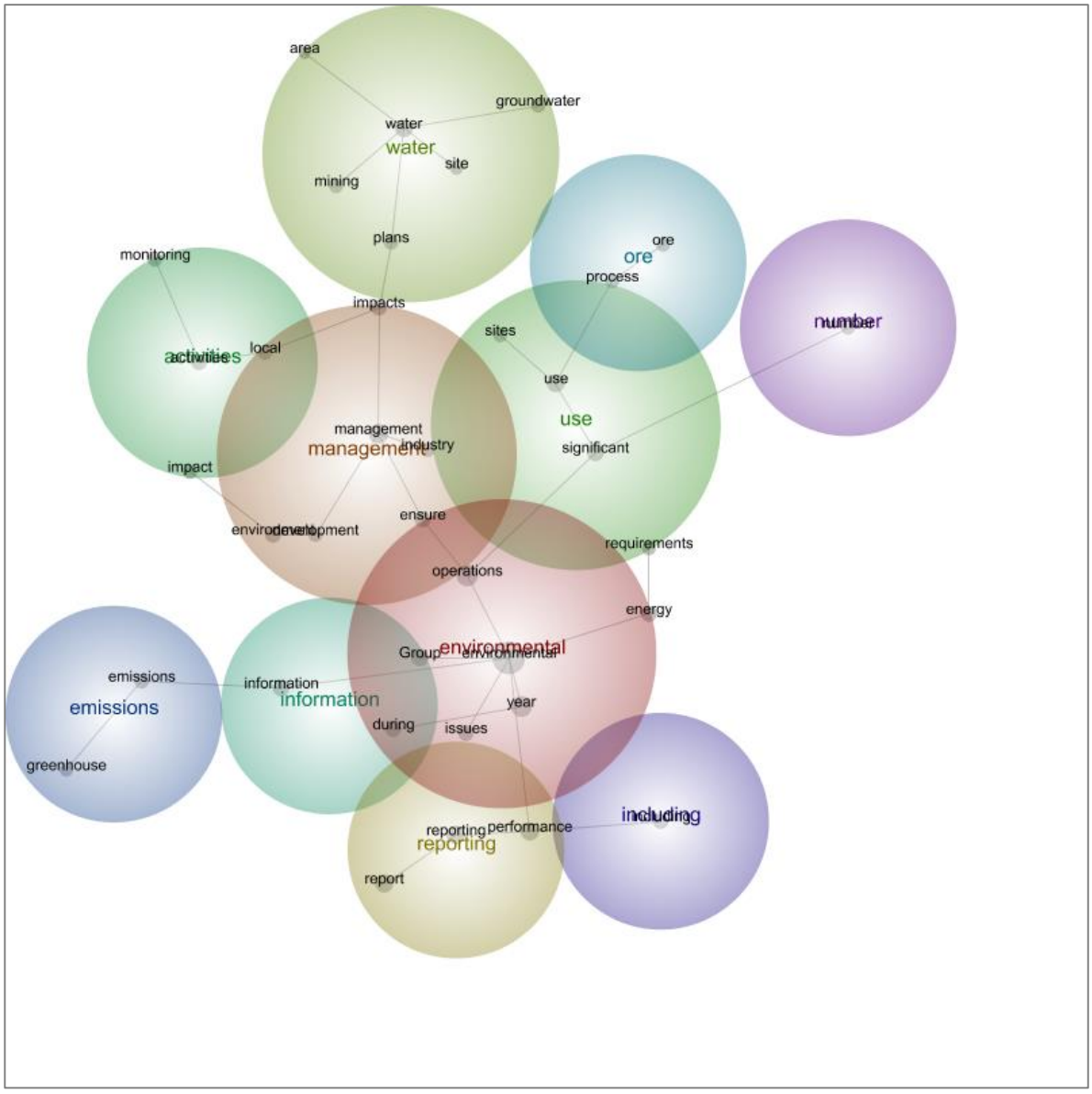

Figure 4.13: 2011 Concept Map

Figure	Year 2011
Analytical dimension	Year
Number of Concepts	11
Number of Themes	36
Major Concepts	Water, Environmental, Management
Major Themes	Environmental, Operations, Information

Table 4.14 – Summary of the Leximancer concept map: 2011

The major themes and concepts reported within the year 2011 is showcased within Figure 4.13. These findings are summarised within Table 4.14. Within this figure there are 11 concepts and 36 identified themes. The major concepts of this map are Water, Environmental and Management. The major themes present within this figure are Environmental, Operations and Information. These results point to a variety of thought-provoking discernments into the key themes within Green Statements in 2011.

The analysis of the year 2011 yielded the above diagram. In this diagram, eleven concepts are clearly identified. These are:

- Ore
- Reporting
- Number
- Activities
- Water
- Emissions
- Including
- Management
- Use
- Information
- Energy

In this year, there was an emphasis upon environmental information, especially in regards to emissions information.

4.5.4 Year 2012

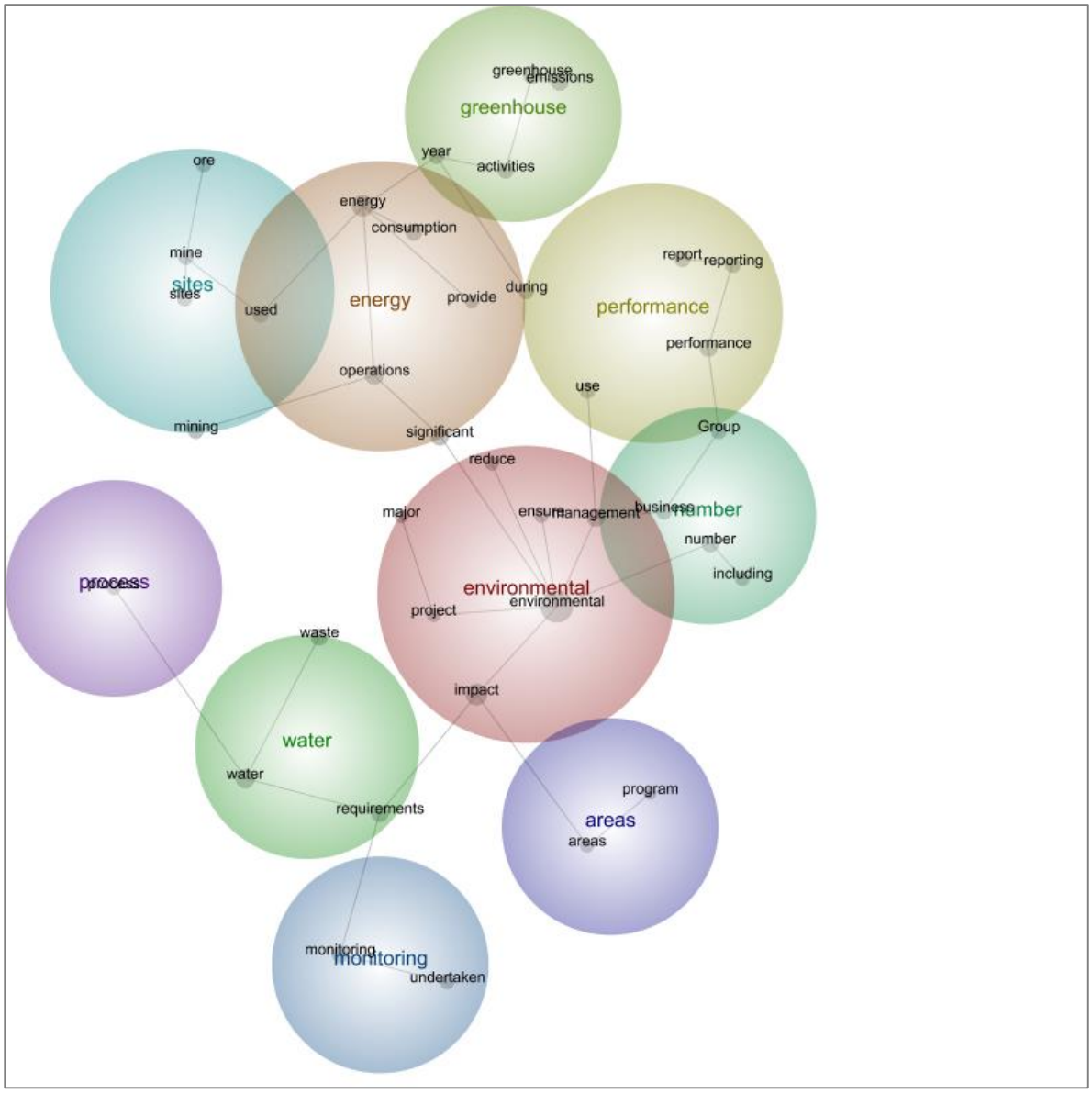

Figure 4.14: 2012 Concept Map

Figure	Year 2012
Analytical dimension	Year
Number of Concepts	10
Number of Themes	38
Major Concepts	Environmental, Energy, Performance
Major Themes	Environmental, Operations, Energy

Table 4.15 – Summary of the Leximancer concept map: 2012

The major themes and concepts reported within the year 2012 is showcased within Figure 4.14. These findings are summarised within Table 4.15. Within this figure there are 10 concepts and 38 identified themes. The major concepts of this map are Environmental, Energy and Performance. The major themes present within this figure are Environmental, Operations and Energy. These results point to a variety of interesting insights into the key themes within Green Statements in 2012.

The analysis of the year 2012 yielded the above diagram. In this diagram, ten concepts are clearly identified. These are:

- Performance
- Environmental
- Process
- Areas
- Water
- Emissions
- Monitoring
- Greenhouse
- Sites
- Energy

In this year, there were two main sub-grouping of concepts. The first grouping encompassed Greenhouse and energy, focusing on emissions and energy consumption. The second grouping encompassed environmental programs, which focused on the green initiatives and activities of the organisation.

4.5.5 Year 2013

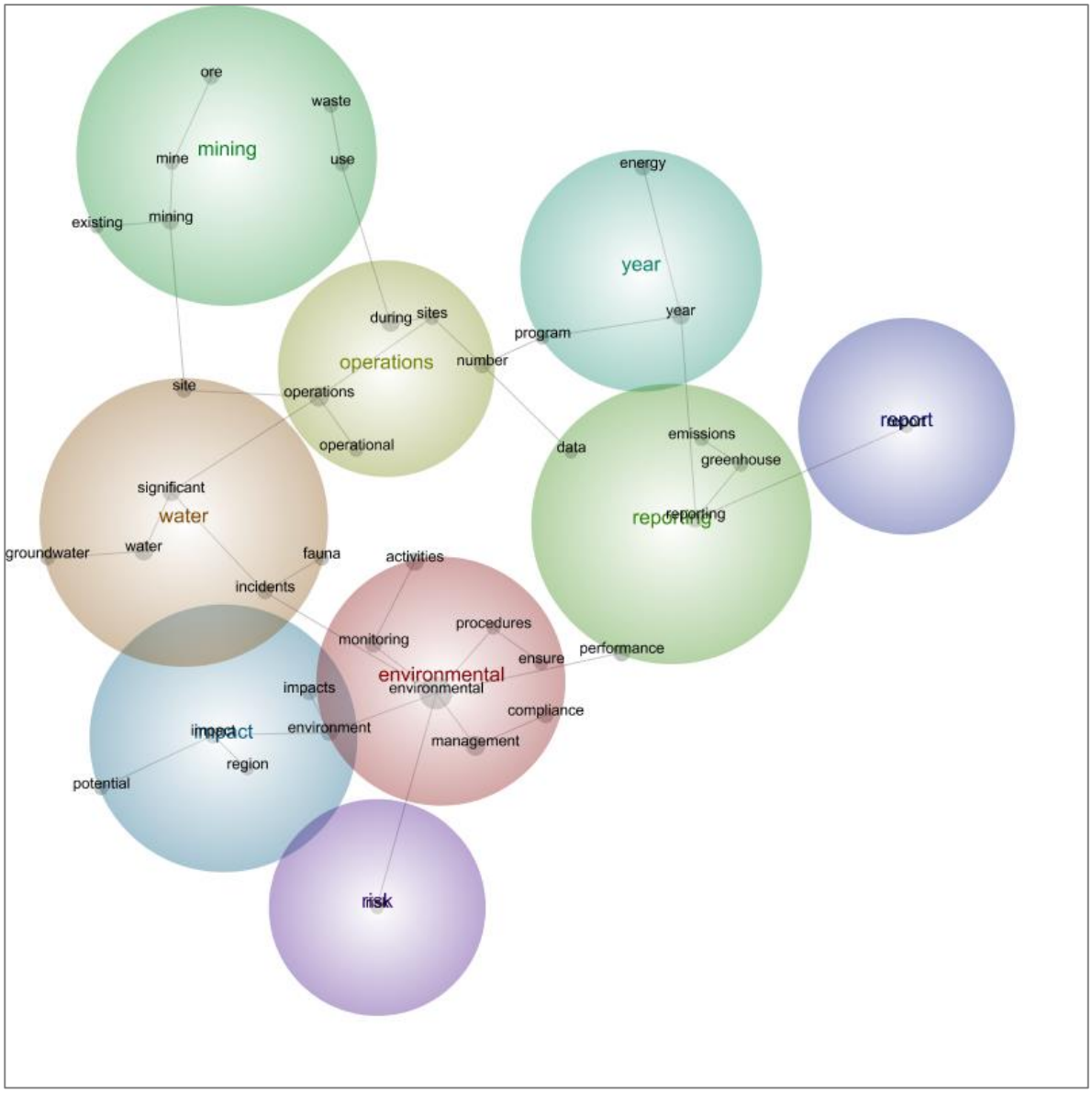

Figure 4.15: 2013 Concept Map

Figure	Year 2013
Analytical dimension	Year
Number of Concepts	9
Number of Themes	39
Major Concepts	Water, Reporting, Impact
Major Themes	Environmental, Impact, Operations

Table 4.16 – Summary of the Leximancer concept map: 2013

The major themes and concepts reported within the year 2013 is showcased within Figure 4.15. These findings are summarised within Table 4.16. Within this figure there are 9 concepts and 39 identified themes. The major concepts of this map are Water, Reporting and Impact. The major themes present within this figure are Environmental, Impact and Operations. These results point to a variety of curious insights into the key themes within Green Statements in 2013.

The analysis of the year 2013 yielded the above diagram. In this diagram, nine concepts are clearly identified. These are:

- Risk
- Reporting
- Mining
- Impact
- Report
- Operations
- Environmental
- Year
- Water

In this year, there were three emergent sub-groupings of thematic data. The first grouping focused on the reporting activities of the organisations, particularly emissions reporting. The second grouping focused on organisational operations, waste and the consumption of water. The final grouping focused on environmental compliance, environmental risks and environmental impacts.

4.5.6 Year-based Summary

The year dimension of analysis exposes and iterates the primary themes and concepts throughout the years of 2009-2013. Within this five year period, there were several common themes which were spread across multiple years. Notably, water was a key concept which was discussed within every year's green statements.

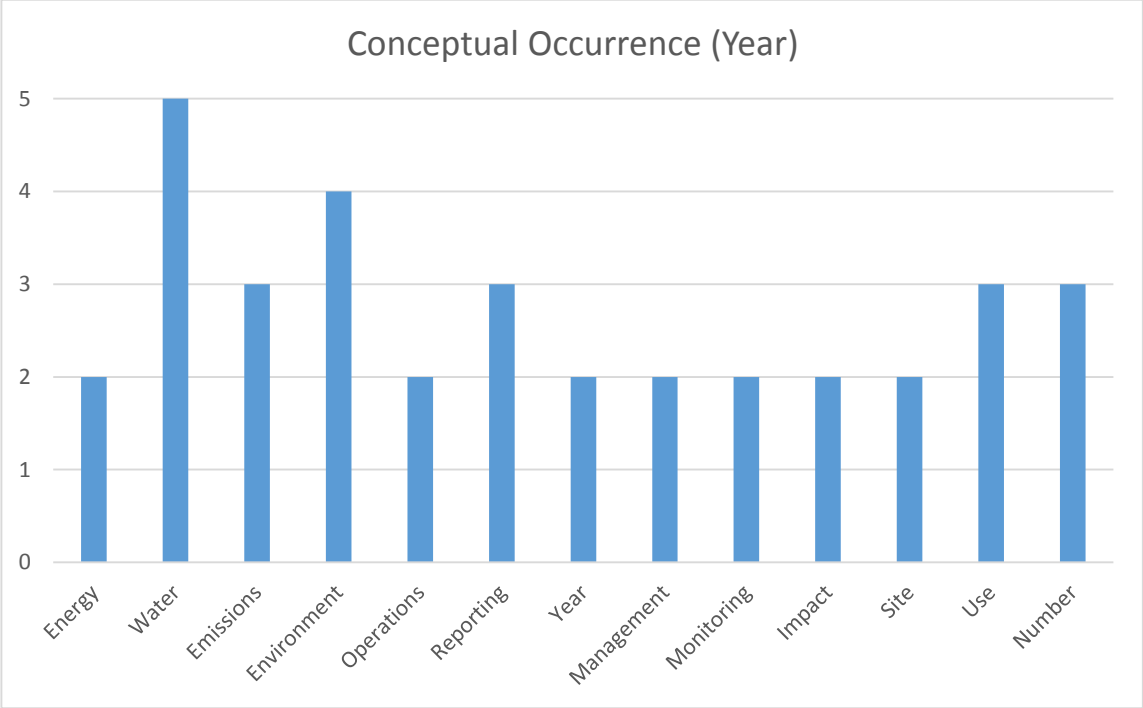

Figure 4.16: Conceptual Occurrence (Year)

Figure 4.16 outlines the number of conceptual occurrences found when comparing the Year dimension as a whole. As demonstrated by the table, Water, Environment and Reporting were the most consistent themes within the Year-based analysis, with an influential position within the Green statements annually.

In this table, the y-axis denotes the number of occurrences per concept. The upper limit of the y-axis (5) denotes the highest number of potential occurrences in this dimension of analysis. The x-axis displays the concepts being observed.

4.6 Conceptual Analysis

The third dimension of analysis conducted by this study centres on the key themes and concepts identified with the research sample of Green Statements. These themes and concepts are drawn primarily from the analyses conducted previously in this chapter. Specifically, these are:

- Section 4.3 - Overall
- Section 4.4 - Industry
- Section 4.5 – Year

The descriptive and Leximancer analyses undertaken in these sections form the basis of the thematic and conceptual analyses undertaken within this section.

4.6.1 Industry-Year Comparisons

This section will compare the results of the Industry-based analyses with the results of the Year-based analyses in order to ascertain the internal validity and consistency of the results.

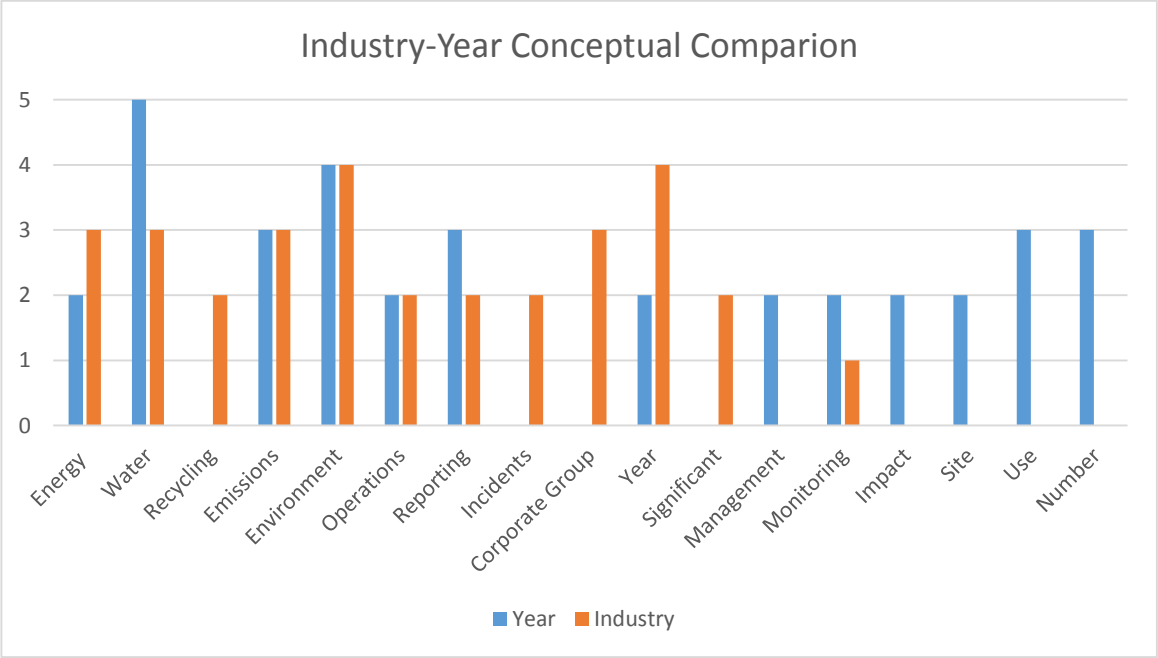

Figure 4.17: Industry-Year Conceptual Comparison

Figure 4.17 compares the concepts detected in the Industry-based analyses with those found within the year-based analyses. Both of the two lines of analysis utilised the same base sample, however analysed with according to different dimensions (Industry and Year). As the above table shows, there is a great array of overlap between the two strands of results. This is to be expected, and correlates with the similarity-seeking expectations of this study. The result of this similarity is that although the data was analysed through two different routes, the results were the same, thus reinforcing this study's internal validity.

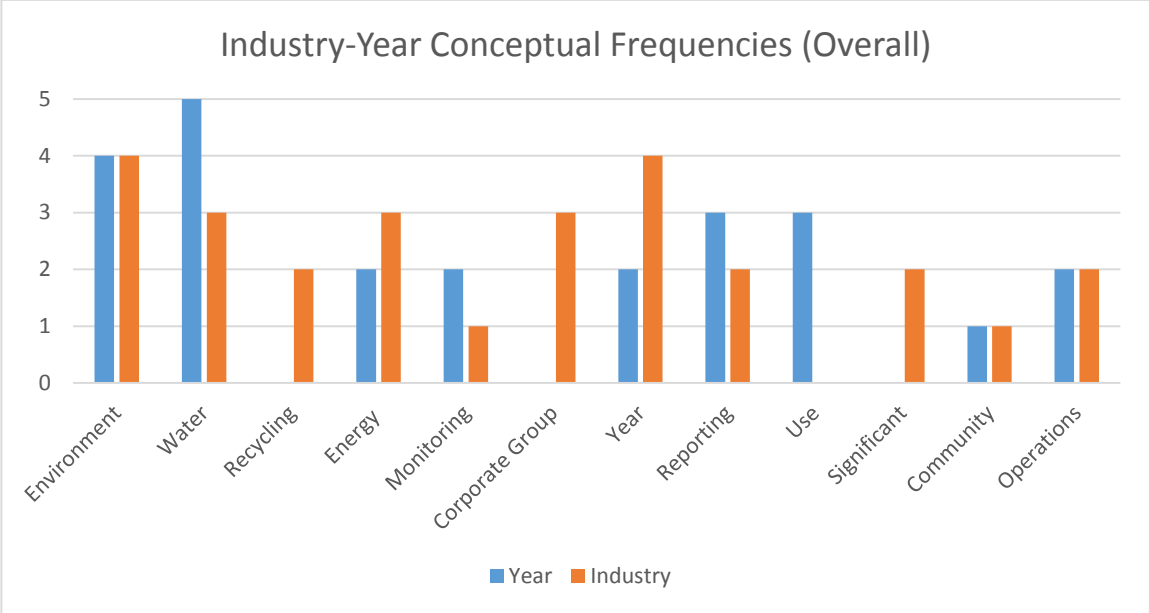

Figure 4.18: Industry-Year Conceptual Frequencies (Overall)

Figure 4.18 illustrates the presence of the concepts identified in the overall Leximancer concept map (section 4.3 – Overall) when compared with the common concepts identified in the previous graph. The results of this graph serve to further strengthen the argument for this research's internal validity as every concept analysed in the initial overhead analysis had re-appeared in the subsequent analyses, with most bearing multiple occurrences. Additionally most of these concepts also appeared in both Industry-based and year-based analytical groups, demonstrating the consistency and reliability of the analytical process.

4.6.2 Conceptual Breakdown

This section will divide the major concepts by their prevalence in both the industry and year-based analyses. The graphs in this section can be read as follows:

- Vertical reading: When read vertically, the graphs will explain the number of occurrences attributed to each concept according to industry.
- Horizontal reading: When read vertically, the graph will highlight the themes which are prevalent in each industry. This is color-coded for the reader's convenience.

The multi-dimensional nature of the graphs in this section allows for a quick summary of the results and an insightful analysis into the key concepts applicable to each industry and year.

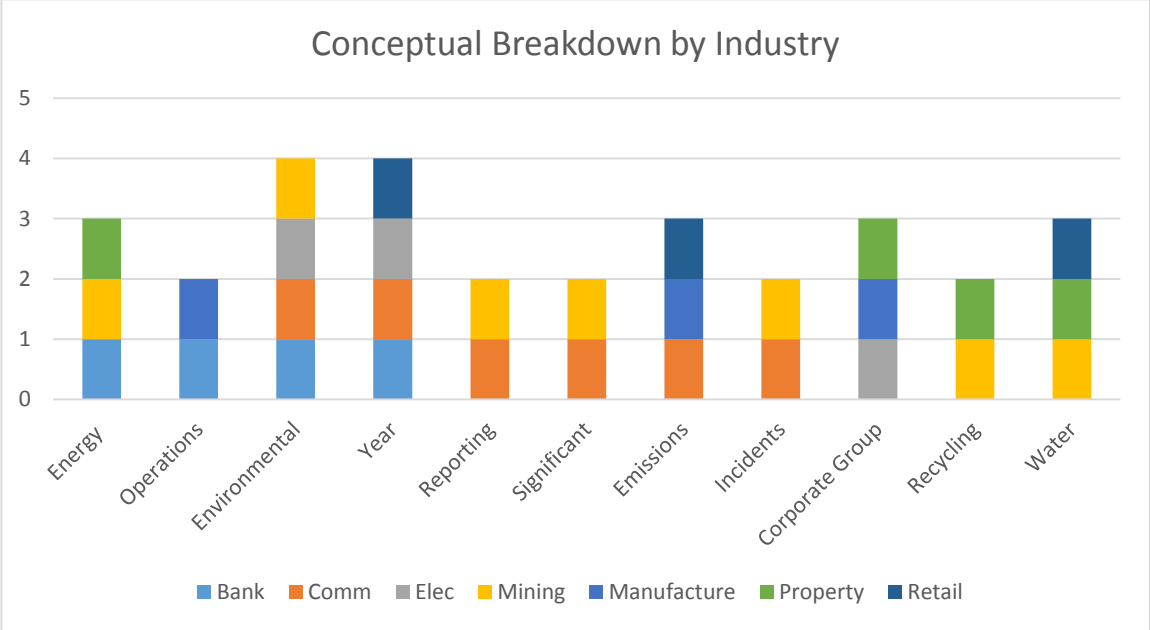

Figure 4.19: Conceptual Breakdown by Industry

Figure 4.19 illustrates, breaks down and attributes the core common concepts to their respective industries. As shown, mining is the most prolific green reporter, with seven concepts of the eleven most commonly found concepts being present within mining-sector green statements. On the other hand, the health and community services sector shares none of the most common concepts with the other industries.

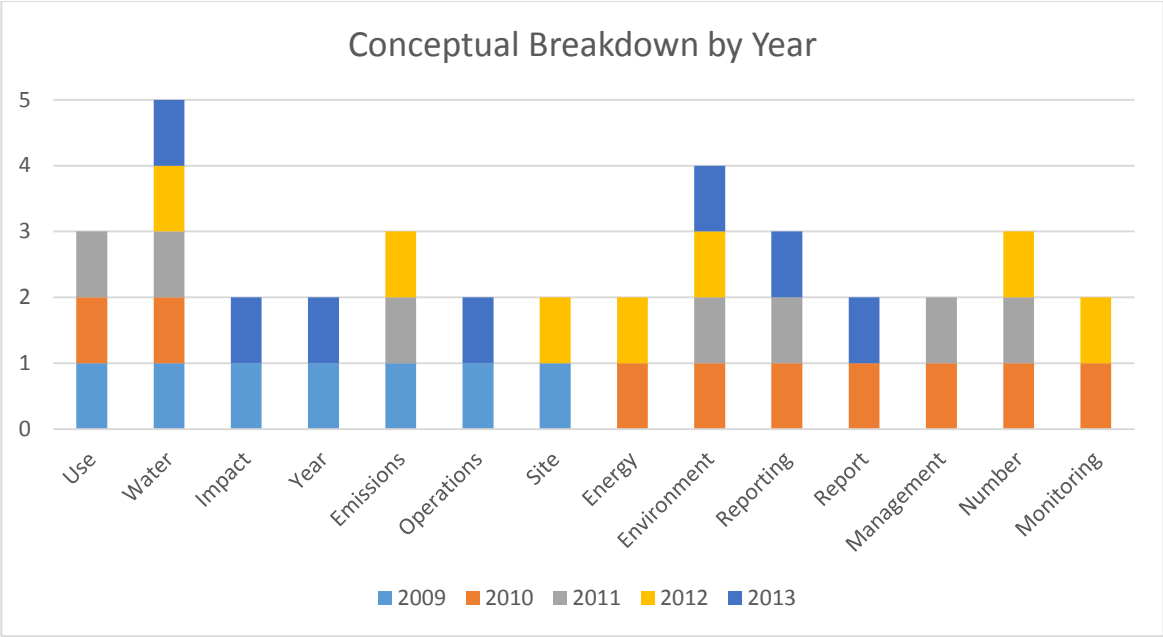

Figure 4.20: Conceptual Breakdown by Year

Figure 4.20 illustrates, breaks down and attributes the core common concepts to their respective Years. As discussed earlier, Water is the most consistent concept, appearing every year in the observed period (2009-2013). Another concept was 'site', which was prevalent in the year 2009, then disappeared from the analyses of years 2010-2012, before re-appearing in the year 2013. This implies that a boom in activity concerning sites occurred in 2009, and that the terminology faded out of use until it was re-reported in 2013.

4.6.3 Conceptual Categories

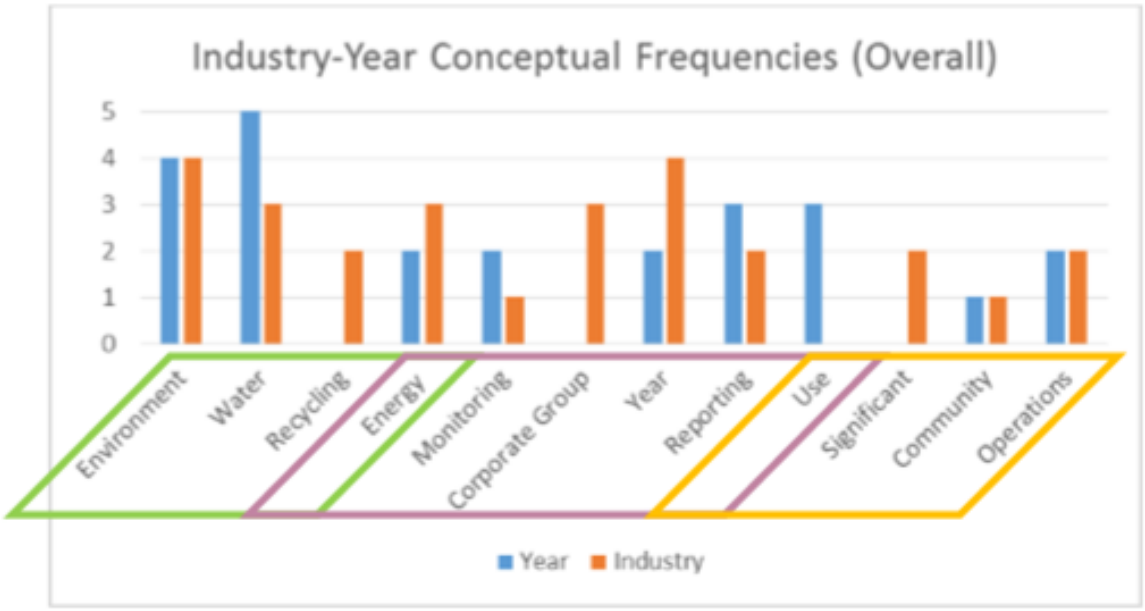

Figure 4.21: Conceptual categories

Figure 4.21 displays the primary concepts found within the overall diagram and divides these concepts into three categories. These are:

Resource-Driven concepts – These concepts focus on Resource Minimisation efforts utilised by an organisation to meet its environmental strategy.

Technology-Driven concepts - These concepts focus on Technologies and Procedures developed and utilised by an organisation to assist its environmental strategy.

Initiative-Driven concepts - These concepts focus on Initiatives undertaken by an organisation to contribute towards its environmental strategy.

These concepts correspond with the three principles set out in the UN global compact S*ection 2 Literature Review.*

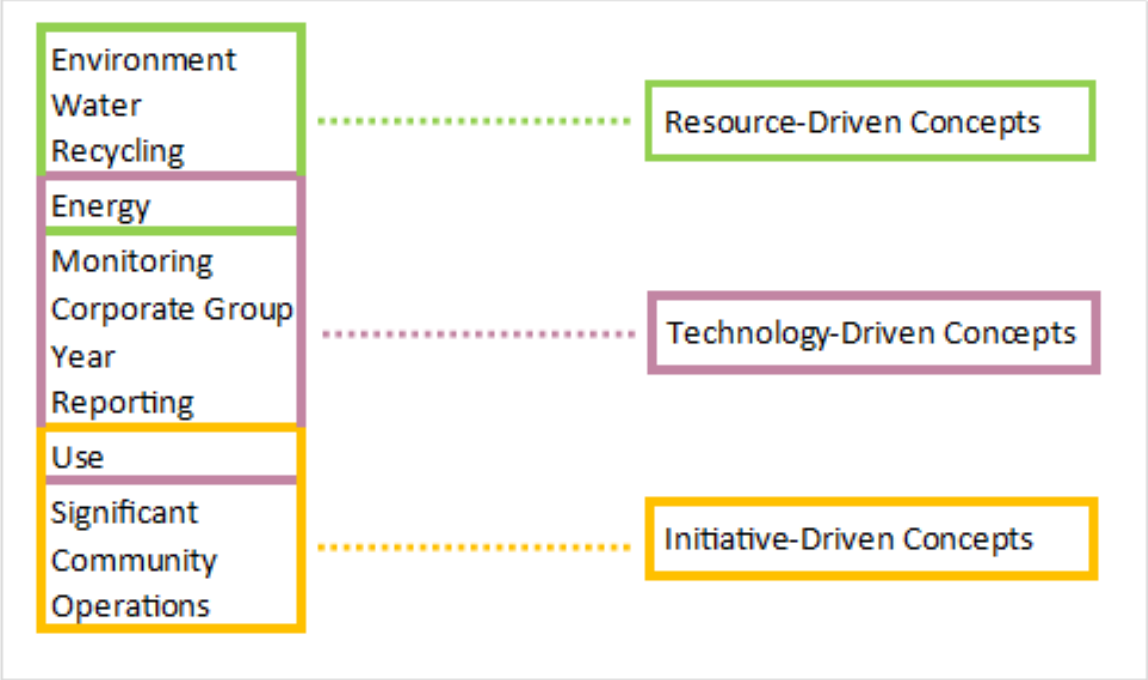

Figure 4.22: Concepts by Category

The above diagram further illustrates the division of the primary concepts by category. Within this diagram, the main Resource driven concepts are: Environment, Water and Recycling. Furthermore, Energy is a concept which tends to apply to both Resources and Technology. The main Technology-driven concepts are: Monitoring, Corporate Group, Year and Reporting. Furthermore, Use is a concept which tends to apply to both Technology and Initiatives. Finally, the main Initiative-Driven concepts are Significant, Community and Operations.

4.7 Information Systems

Information Systems have greatly influenced the way organisations create and distribute Green statements. This section will seek to highlight the findings which are relevant to Research Question 2:

- *How has IS affected the creation and distribution of organisational Green Statements?*

As shown in section 4.6.3 *Conceptual Categories*, technology-driven concepts are a key element of Green Statement content. Figure 4.22: Concepts by Category highlights the main Technology-Driven concepts found within the overall Leximancer analysis. Specifically, these are:

- Energy
- Monitoring
- Corporate Group
- Year
- Reporting
- Use

These concepts are highly involved in shaping the creation and distribution of organisational Green Statements.

The use of resource monitoring technologies as demonstrated by the dominance of the Energy concept has demonstrated that organisations are increasingly using information systems to gather and calculate their emissions data. This data is then utilised to report to regulatory organisations, calculate applicable environmental taxes and create Green Statements. This data is then bolstered by a wealth of general Monitoring data which highlights the areas of greatest environmental impact in order to provide feedback to organisational stakeholders.

The Corporate Group and Use concepts show how organisational management systems are being utilised to manage organisational processes and improve environmental outcomes through the prudent exercise of managerial control. Finally, the Year and Reporting concepts demonstrate the use of organisational frameworks and functions in order for an organisation to meet its reporting duties. While impact reduction schemes have existed for many years, in recent times organisations have been increasingly adopting data-driven reporting systems to help shape and create their Green Statements. Finally, with the advent of the internet age, information systems are being utilised ever-increasingly by organisations as a means to publish and portray their Green Information.

4.8 Conclusion

This chapter analysed the data sample and illustrated the results of the Leximancer analysis. Firstly, a preliminary analysis was conducted in order to attain descriptive statistics of the sample and provide an overall image of the entire sample's primary concepts. Second, the

sample was analysed by Industry, in accordance to the Australian Industry classifications with the major themes and concepts tabulated. Then the sample was analysed by Year, with major themes and concepts identified and tabulated.

Next, the results of the industry analysis and year analysis were cross-checked and compared against the initial analysis to ensure the internal validity of the research analysis. Afterwards, the sample was analysed on a conceptual basis, highlighting the main concepts within all green statements and categorizing the findings. Following this, a brief analysis of the role of Information systems within the Green Statement sphere was provided. Then, a glossary of the analysis' key concepts was provided. Finally, the results were summarized and notable trends found within the data were identified and reported.

Chapter 5 – Discussion

5.1 Introduction

This chapter will discuss and disseminate the implications of the research analysis. Firstly, the chapter will discuss the implications of the conceptual and thematic findings demonstrated in Section 4.7 *Information Systems*. Then, the chapter will discuss the role of Information systems in the creation and distribution of Green Statements. Next, the chapter will relate the outcomes of this study to activity theory and discuss other significant findings. Finally, this chapter will conclude with a summary of this chapter's main points of discussion.

5.2 Green Statement Discussion

This section will discuss the findings of the investigation pertaining to research question 1. The discussion regarding Green Statement themes will be divided into four parts. Firstly, this section will discuss the most prominent and notable general Green statement observations. Then, this section will discuss notable general Green statement observations by Industry. Then, this report will discuss the notable Green Statement observations by Year. Finally this section will highlight the notable thematic and conceptual patterns which pervaded the analysis, and the implications of these patterns.

5.2.1 Green Statement Concepts

Following the initial analysis of the data, the conceptual data outputs were sorted tabulated in order to fulfil the requirements of Research Question 1:

- *What are the dominant themes present within organisational Green Statements in Australia?*

The Leximancer analysis identified 18 major themes with multiple occurrences across the Green Statement dimensions of analysis. These were:

- Community
- Corporate Group
- Emissions
- Energy
- Environment
- Environmental

- Impact
- Management
- Monitoring
- Number
- Operations
- Recycling
- Reporting
- Significant
- Site
- Use
- Water
- Year

These themes were present in multiple analyses across both the industry and year-based analytical dimensions investigated by this study.

5.2.2 Green Statements by Industry

The results of the Leximancer analyses clearly demonstrate a high degree of thematic variety within Green Statements as well as a substantial array of thematic differences between each statement. Between industries, the size and intensity of the core concepts associated with their respective green statements greatly varied. This largely confirms the perspectives of Boiral (2013) which speculated that organisations faced a vast array of differing organisational issues and would thus report a similarly vast array of organisational environmental issues, Compounded with the effects of emerging external legislative demands over time, and it is clear to see that even within the ASX 200, there is an immense level of variance in regards to the relative importance and topics associated with organisational Green Statements.

The Mining sector was perpetually the most active sector in terms of the creation and development of Green statements. While other industries also produced Green Statements, the mining sector was especially devoted to the creation of lengthy reports. However, this also stands in stark contrast to the traditional associations of the mining industry, as a collection of environment-polluting conglomerates. In comparison to the other industries, the Mining industry was also the host to a wider variety of concepts and concerns, such as ‘water’, ‘sites’ and ‘waste’ This signifies that not only does the mining industry feel inclined to report greater quantities of green information , but it also faces issues which are otherwise alien to most other industries. It is possible that the proliferation of Green Statements and their content could be related to industry-specific motivations such as corporate image and

reputational management, which are key concerns to mining organisations and the governments they negotiate with.

The Manufacturing sector was the second-most active industry in terms of Green Statement reporting. Like the mining sector, the manufacturing sector is also commonly associated with environmental degradation and industrial waste. This pattern highlights an emergent trend where organisations with greater environmental impacts are producing greater-sized Green Statements. Although the purpose of a Green statement should be to inform stakeholders of the environmental activities of an organisation, it seems that Green Statements are being widely utilised as a marketing tool to sway consumers sway from seeing the negative environmental impacts of organisations and paint high-impact companies in a more positive light. These trends largely confirm prior research which claimed that Green Statements were increasingly being utilised for marketing purposes, rather than the disclosure of environmental information (Dahl, 2010; Lyon and Maxwell, 2011). This suggests that, while organisations may have some noble reasons to create environmental reports, self-interest tends to govern their disclosure motivations.

The Health and Community Services sector was the least active Green Statement sector. This was mostly due to the relative lack of environmental impact pertaining to most organisations within this sector. Many of these statements typically contained a phrase which stated 'There were no major environmental activities which the organisation was liable for within this time period' or a similar statement to that effect. This contrast with the mining and manufacturing sectors reinforces the view that an organisation's sustainability strategy or lack of strategy is affected by their stakeholders (Freeman, 1984). These results tended to imply that wide-scale environmental reporting is motivated by high levels of environmental interactivity.

Electricity and Gas Supply was a sector with a high regard for reporting their lack of environmental incidents. In this sector, the reporting of a lack of environmental incidents reporting played a key role in their greater environmental strategy, which was reflected in their Green Statements. However overall, this sector was relatively quiet on the reporting of environmental issues, which contrasts with the sector's reputation as a source of wide-scale

greenhouse gas emissions (Baumert et al., 2005). The relative lack of reporting found within these organisations support the views of Bedsworth and Hanak, which stated that organisations tended to select environmental strategies which offered the greatest net benefit (Bedsworth and Hanak, 2010). In the case of electricity and gas supply, it is possible that the sector follows the old adage: 'If you don't have anything nice to say, don't say anything at all'.

Finally, Retail Trade was a sector characterised by their reporting of customers, safety and performance. This echoes the priorities of many retailers, and falls in line with the old saying 'the customer is always right'. Although the saying may not always hold true in the literal or figurative senses, the Green Statements published by Retail Trade organisations reflect a customer-centric focus, and an adherence to green processes. The prevalence of these process focused statements points to a long-term view for the retail trade sector, with reactionary adaptations to green priorities. This falls in line with the expectations of Baumgartner and Ebner, which explained that corporations select and enact sustainability strategies based on their respective interests (Baumgartner and Ebner, 2010).

5.2.3 Green Statements by Year

The dominant themes present within Green Statements tended to evolve over time, with organisations reporting different themes for different years. This evolutionary effect suggests that organisations tended to report on issues relevant to their immediate context, which may have changed over time. Although some themes, such as *site* were irregularly reported within Green Statements, others, such as *water* remained consistent across the five year examined in this study. This suggests that although some elements of an organisation's environmental concerns may change over the years, others elements remain as a consistent core issue and a key part of that organisation's environmental strategy.

In the Year 2009, Water was the primary concept of focus within the sample of organisational Green Statements.

In the Year 2010, Management was the primary concept of focus within the sample of organisational Green Statements.

In the Year 2011, Water was the primary concept of focus within the sample of organisational Green Statements.

In the Year 2012, Environment was the primary concept of focus within the sample of organisational Green Statements.

Finally, in the Year 2013, Water was once again the primary concept of focus within the sample of organisational Green Statements.

As can be shown from the pattern above, Water was the primary focus of Green Statements throughout the majority of the years. However, the changes of dominant themes from year to year suggests that organisations vary their Green disclosures on an annual basis in order to reflect the current and pressing needs of their current contexts. The prevalence of Water on a year by year basis seems to imply the existence of an overall trend in water-based environmental schemes within Australia's leading organisations. Additional research could align these findings with worldwide to discover if the cause of this trend is geographical, technological, or broadly sociological.

5.2.4 Notable Thematic Green Statement Observations

Across both the industry based analysis and the year based analysis of Green Statements, there were several key thematic concepts which constantly appeared throughout the entirety of the sample. These could be classed into three prominent categories. These were:

Resource-Driven concepts – These concepts focus on Resource Minimisation efforts utilised by an organisation to meet its environmental strategy.

Technology-Driven concepts - These concepts focus on Technologies and Procedures developed and utilised by an organisation to assist its environmental strategy.

Initiative-Driven concepts - These concepts focus on Initiatives undertaken by an organisation to contribute towards its environmental strategy.

These findings were consistent with the principles laid out by the UN Global compact (UN Global Compact, 2011).

On the whole, the results of the investigation were largely consistent with the expectations found in prior literature. The discovery of the three categories signals a baseline level of conformity among Green Statements. These findings are highly significant as they imply a baseline level of organisational synchronicity in regards to their Green Statements. This symmetrical convergence of organisational green statements may be due to either an isolated reporting phenomenon or part of a greater convergence of organisational processes. A possible explanation for this synchronicity can be found in both institutionalist and stakeholder-centric writings, which operationalize organisational responses as a reaction to external influences (DiMaggio and Powell, 1983; Scott, 2001; Freeman, 1984). As all the organisations within this study fall within the Australian context, the external pressures are also fairly similar.

5.3 Information Systems Discussion

This section will discuss the findings of the investigation pertaining to research question 2. The discussion regarding Information Systems will be divided into four parts. Firstly, this section will discuss the most prominent and notable Information systems observations. Then, this section will discuss the most notable Information Systems observations derived from the industry-based analysis. Then, this report will discuss the notable Information Systems observations as derived from the year-based analysis. Finally this section will highlight the notable thematic and conceptual patterns which pervaded the analysis, and the implications of these patterns.

5.3.1 Information Systems Concepts within Organisational Green Statements

Utilising the data within the analysis section and following on from the discussion in the prior sections, the major Information-Systems-related themes were identified and sorted in order to answer Research Question 2:

- *How has IS affected the creation and distribution of organisational Green Statements?*

Deriving from the themes found within the Leximancer analysis, six main technology related themes were identified to be highly dominant within the entire sample of Green Statements. These themes were identified as follows:

- Energy
- Monitoring
- Corporate Group
- Year
- Reporting
- Use

These themes were highly associated with the use of Information Systems in the creation, development and/or publication of Green Statements.

5.3.2 Information Systems Themes by Industry

The results of the Leximancer analyses clearly demonstrate a high degree Information Systems influence within the sample of Green Statements. These influences are further elaborated on in the paragraphs below.

The Banking and Financial services sector was rife with institutionally-led change and environmental strategies stemming from strategic resource minimisation. This was mostly reported through Green Statements as an increased utilisation of Green Infrastructure, as demonstrated with the office concept. Additionally, this sector was highly drawn towards regulation-driven environmental disclosure strategies. These findings support the claims of earlier literature which suggested that organisations are increasingly voluntarily adopting Green disclosure programmes in order to increase their environmental credentials (Baumgartner and Ebner, 2010).

Communications Services was a sector with a high level of integration between their Information systems and their environmental Strategy. Within the Communications sector, multiple themes were identified which highlighted the use of Information Systems assisted green statement creation. Of these, network was the most notable. The Communications Services sector utilised Information-Systems-based networks in order to create efficiencies along the aspects of their organisations as well as help monitor environmentally-relevant activities in order to aid in the creation of their Green Statements. These findings fall in line with the expectations of Boudreau, who stated that organisations are increasingly likely to

adopt Green Information Systems which offer multiple benefits to their institution (Boudreau et al., 2008).

Lastly, the Property and Business Services sector tended to be highly concerned with recycling and water preservation systems. This once again echoes the works of previous literature which states that organisations select environmental-technology-strategies based on the net sum of benefits the technology offers. (Boudreau et al., 2008; Baumgartner and Ebner, 2010).

5.3.3 Information Systems Themes by Year

While information systems themes pervaded throughout the Green Statement sphere on a yearly basis, their presence was relatively moderate, with no strong patterns regarding the increasing or decreasing utilisation of information systems within the Green Statements being identified. However, it should be noted that although there were no vast changes in the frequency of information systems activities through the passage of time, there were changes in the type of information systems themes which were dominant from year to year. This suggests that the utilisation of specific types of information-systems-driven environmental programmes is potentially cyclical, as the information demands and the usage of technology changes over time.

In the Year 2009 Sites and Use were key foci of Green Statements.

In the Year 2010 Monitoring and Energy were key foci of Green Statements.

In the Year 2011 Reporting was a key focus of Green Statements.

In the Year 2012 Monitoring and Energy were key foci of Green Statements.

Finally, in the Year 2013 Sites and Use were key foci of Green Statements.

5.3.4 Notable Information Systems Observations within Organisational Green Statements

Organisations tended to highly integrate their Green Statement production with their Information Systems processes, although this took one of three main forms. These were: -

- Monitoring technologies
- Regulating technologies
- Publication technologies

These results indicate that while organisations do utilise Information systems as an aid do help create, develop and publish Green Statements, they prefer to utilise technologies with multiple benefits in other sectors of the organisation.

The widespread use of technologies suggests a high level of 9th principle activities within Australian organisations (UN Global Compact, 2011). This in turn signals a high degree of innovative-strategic behaviour permeating throughout the Australian organisational context (Baumgartner and Ebner, 2010; IPCC, 2014). These findings are highly congruent with overall global trends and the Australian technological adoption expectations found within the literature (IPCC, 2014; Boudreau et al., 2008; Williams et al, 2010).

In general, these results point towards a high degree of technological utilisation within Australian organisations in order to achieve their Green goals. This in turn signals a shift in the approaches utilised by organisations to implement their environmental strategies. The use of technology and its increase in recent times over more traditional environmental conservation methods such as tree-planting and employee-education programs implies that technology has been evaluated by a majority of organisations to be both efficient, significant and compatible with broader organisational goals. Additionally, the prevalence of monitoring technologies seems to imply that active psychological decision-making elements are in play when concerning the active pursuit of organisational environmental strategy.

5.4 Activity Theory Perspectives

This section will discuss the implications of the research findings through the lens of activity theory.

The usage of Activity theory was primarily motivated by its combination of human, technological and sociological factors when amalgamating data and creating connections between findings. Futhermore the theory had been proven multiple times in previous studies

such as Hasan & Pfaff (2012), which demonstrated its effectiveness in modelling the interactions between humans, technologies and their social contexts. As this study concerns the relationship between human desires (preservation of the environment), human technologies (for environmental conservation) and social contexts (organisations), Activity theory presents itself as a perfect lens. The theory's relevance is demonstrated by the correlations of human, technological and social elements on the next page. Further discussion on the rationale behind the use of activity theory can be found in 2.7.2 *Appropriateness of Activity Theory as an Investigative Lens* and is further discussed in section 3.6 *Operationalisation of Activity Theory in data analysis*.

The presence of Activity theory elements was highly detected and reflected within the Leximancer analysis. While not every theme fell along the elemental categories laid forth in activity theory, most of the concepts fell into place at some part of the activity theory framework. This indicated that the creation of factors was guided by a combination of factors relating to the context and tools surrounding the Green Statement producers. This subsequently implies that Green Statements are a product of context and are influenced heavily by the environment in which they are created.

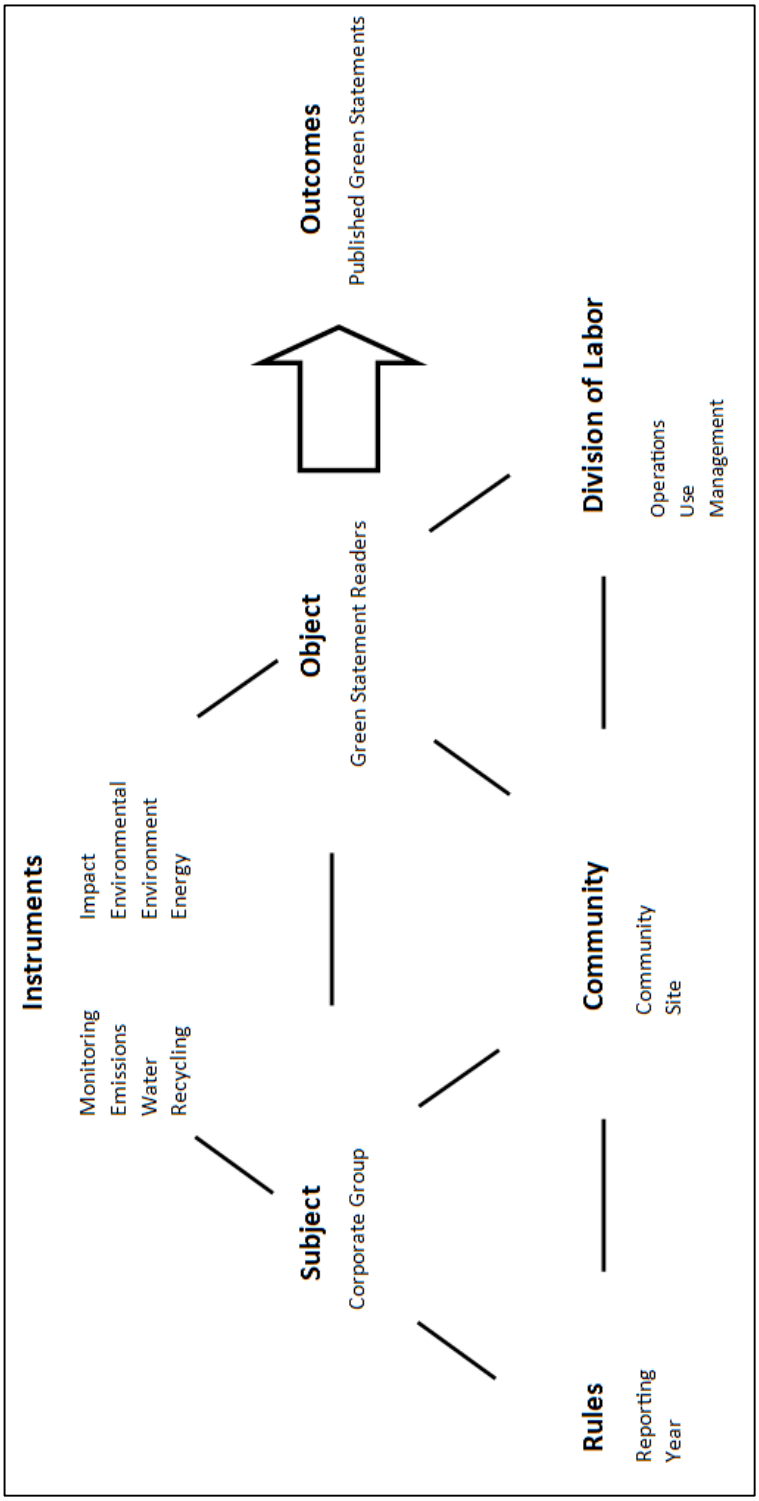

Figure 5.4: Concepts categorized using Activity Theory

The above diagram highlights the distribution of the major green concepts when overlayed with the activity theory framework. As can be seen, the concepts overlap strongly with the expectations of activity theory. Interestingly enough, there is a significant bias towards the Instruments element of activity theory. This suggests that there is a significant utilisation of tools and technologies reported by organisations within their Green Statements. These findings support the view that organisations are increasingly and heavily utilising Information Systems to create, develop and publish their Green Statements.

It is also interesting to note the associations that Community, Rules and Division of Labor bear on the creation of Green Statements. This could help explain the Industry-based and Year-based thematic variances. As different industries and years bore slightly different surroundings, they each created slightly differently themed Green Statements. Furthermore, the relative lack of Green Statement regulation could be a driving force enabling this leeway of topical content (Lynch, 2010; Williams, 2011).

5.5 Conclusion

This chapter discussed the major implications of the analysis section and presented the major findings of the investigation. It was found that there was a large variety of Green Statement themes. Additionally it was discovered that Information systems were used in tandem with Green Statement production, but were not the focus of report producers. The use of Activity suggested that the difference in Green statements could be due to the differences in yearly and industry-based contexts which could change the content of the reports.

Chapter 6 – Conclusion

6.1 Introduction

This chapter seeks to discuss and elaborate on the impacts and implications of this study. Firstly, the research contributions of this study will be examined and explained in Section 6.2. Then, the research limitations of this study will be highlighted in Section 6.3. Afterwards, Directions for Future research in the field of Green Statements will be proposed in Section 6.4. Finally the concluding remarks for this thesis will be provided in the final section of this chapter, Section 6.5.

6.2 Research Contributions

The findings of this research present a multitude of intriguing contributions for Green Statement Practice at the regulatory level, Green Statement Practice at the organisational level and Green Statement research in Academia. The following section will be structured as follows. In the first section, we will outline the academic contributions of this thesis. Then, the next section will discuss the contributions of the research findings to practice. This will relate to both contributions to policymakers and contributions to organisational Green Statement writers.

6.2.1 Contributions to Academia

This research contributes greatly to academia and the future of research.

A key contribution of this work relates to its applications of emergent investigative methodologies in conjunction with a historically predominant theoretical lens. This study employs the use of software-driven analytical applications, such as Leximancer As a result, the study is able to not only accurately obtain its results but also further the extant body of literature relating to Leximancer driven analyses. Furthermore, this research provides a lexical analysis of the predominant themes present within Green statements. This could serve to drive future behavioural research into Green disclosure patterns. Specifically, future

research could use this study as a framework to conduct further Leximancer-based investigations into organisational reports, government statements or similar phenomena.

Finally, this research bestows upon its readers valuable information in regards to the environmental applications of information systems. This serves to further the research of technology-driven environmental solutions and provides the academic community with valuable information regarding the environmentally-driven employment of information systems within present-day organisations.

6.2.2 Contributions to Practice

This research also has a multitude of implications for practice.

The research findings could be utilised by organisations to help improve their internal Green Statements practices. As each organisation tends to employ their own, personalised approach to environmental disclosure, a cross-industry and cross-chronological analysis could help organisations improve their own internal Green Statement creation processes. This could lead to the creation of high quality, informative and cross-organisationally comparable Green Statements.

Specifically, as this research shows insights into reporting practices across both industries and time, the results of this research could be used to enlighten Green Statement creators enhance the value derived from their Green Statements. The key concepts and themes found within this report can be used comparatively, to help Green statement producers understand the broader environmental concerns across the spectrum. Additionally, the concepts of previous years and the progressions of interest across the board year by year could be used by managers and disclosure producers to peer into past practices and utilise that information to assist in aiding future actions. For example, the year by year importance of the water concept could motivate Green Statement producers to consolidate their water monitoring practices and publish more water-based disclosure devices.

The research's findings could also be used to contribute to the ever-intensifying Green regulatory debate. As the regulation and guidance of Green disclosure remains a contentious

issues across the environmental and reporting sectors, the research findings could be used to help guide professional organisations identify the relevant concerns of pollutant industries, and devise a set of standards which could suit the interests of businesses and their stakeholders.

Finally, the research findings could also aid in guiding the decisions of policymakers. This could subsequently lead to the creation of efficient and effective Green regulatory structures, which could serve to provide tremendous benefits to businesses, governments, and the general community.

6.3 Research Limitations

Although the research investigation was prepared and undertaken with the highest quality, it is not without limitation. As this research was undertaken within the Australian geographical region, the results of this study are heavily influenced by Australian sociocultural values. As such the findings of this study may be identical to a similar study undertaken in a different geographical region. Additionally, as the sample in this study was limited to large firms listed on the ASX200 listing of the Australian stock exchange, statements may reflect the values of high net-worth corporations rather than organisations overall. Furthermore, it is possible that the statements themselves do not accurately reflect the ideals and opinions proliferated throughout the company or the view held by management. However these limitations were mitigated as Green Statements are organisational statements which tend to support the views of management, hence this risk is comparatively minute.

Another limitation of this study revolves around the linguistic nature of the unit of analysis: themes. As linguistic units are largely subjective in nature, linguistic units are subsequently subject to personal interpretations. In other words, the employment of the term ‘environmental sustainability’ could entail a set of biodiversity programmes for one organisation, and the acquisition of a recycling container for another. In a similar vein the theme ‘recycling’ could also refer to an enterprise-wide recycling project for one organisation and the correct disposal of a printer cartridge in another. However these risks were mitigated

as similar themes were often interrelated in the research analysis, thus it is most likely environmental words were utilised in a similar manner.

6.4 Directions for Future Research

Future research should focus on the Green statements of other institutions stemming from different sectors to investigate which themes are most dominant in those sectors. Such research would expand upon the results of this study and investigate the patterns prevalent within universal green statement culture. This would allow for comparison of the priorities within the green reporting collective and allow for a greater insight into the motivations and outcomes of green reporting initiatives pervading within today's society.

Other research could also follow up on the results of this study by conducting a form of secondary analysis to see of an alternate research method could attain a similar result. This follows in the spirit of the writings of Krippendorff who advocated the use of multiple analytical methods to diminish the impact pertaining to the subjectivity of thematic analysis (Krippendorff, 2012). The result of this approach to the investigation of Green Statements would allow for the determination of the integrity of Green statements. Additionally, this serves as a response to the questions raised by Boiral (2013) which queried whether organisational reports were a true reflection of organisational behaviours.

Finally, future research could also investigate deeper into the realm of Green Statements by analysing individual industry sectors by year to determine the incremental changes which occurred over time in regards to each industry's' Green objectives.. This would allow for an in-depth look into the evolution of Green Reporting practice on a more detailed scale, which could enable the creation and facilitation of industry-specific Green Statement guidance, as well as enlighten the research community to each industry's specific green adaptation process.

6.5 Concluding Remarks

This research serves as a starting point for a wider investigation of organisational Green Statements. In this research, organisational Green themes which pervaded within the Australian organisational sphere were identified and discussed, allowing for an in-depth look

into the Green Statement landscape of the recent past and present. Additionally, it was shown that, like multiple other processes in the information era, Information systems are being heavily utilised to aid and enable the creation and distribution of current Green Statements. This work serves as a foundation, a first movement over the threshold which will cascade and inspire the research and improvement of Green statements for many projects to come. Environmental Sustainability may well be the greatest challenge of the 21st century, but Green Statements stand as a strong first step in providing a solution for this challenge.

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Appendix - Conceptual Glossary

There are multiple concepts which were identified during the data analysis. The most common concepts are explained below:

Community – This concept demonstrates an organisational commitment towards environmental initiatives which benefit local communities.

Corporate Group – The concept highlights the role and obligations of the corporate entity in regards to the management and reporting of environmental issues. A combination of the words *Company* and *Group*.

Emissions – This concept highlights a commitment by an organisation to the monitoring and reduction of carbon emissions. May often thematically overlap with *Energy*.

Energy – The concept highlights the use and control of energy consumption by an organisation. May often thematically overlap with *Emissions*.

Environment – This concept refers to the environmental initiatives and compliance measures undertaken by an organisation in order to assist in the implementation of its Green Strategy.

Environmental – This concept is often utilised to refer to the environmental initiatives and compliance measures undertaken by an organisation in order to assist in the implementation of its Green Strategy.

Impact – This concept refers to the environmental impacts inflicted by an organisation.

Management – This concept refers to the management of organisational operations to produce environmentally favourable outcomes.

Monitoring - This concept refers to the monitoring of environmental data in order to aid in the reduction of net environmental impacts.

Number – This concept refers to the annual reporting and compliance obligations of organisations.

Operations – This concept refers to the operations undertaken by an organisation which have an effect on the environment.

Recycling – This concept refers to the recycling programmes utilised within an organisation.

Reporting – This concept refers to an organisations use of data and information in order to assist the reporting functions of the organisation.

Significant – This concept refers to significant environmental impacts or changes incurred by an organisation.

Site – This concept refers to physical sites where great levels of environmental transformation occur.

Use – This concept refers to the use and utilisation of equipment and projects by an organisation in order to achieve an environmental outcome.

Water – This concept refers to an organisation's use of water and water conservation activities.

Year – This concept refers to the annual and corporate reporting obligations of an organisation.