

The effect of integrated reporting on corporate environmental disclosure

A study on the implications of adopting the <IR> Framework

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Abstract:

This thesis investigates what effect adoption of the <IR> framework has on the quality of environmental reporting. A disclosure index was constructed, where environmental performance indicators were evaluated on seven quality criteria. The environmental information disclosed by adopting companies prior to and after implementation of the <IR> Framework was graded according to the disclosure index. The change over time for adopting companies was compared to the corresponding change for a sample of non-adopting companies. Furthermore, it was investigated whether the effect from adoption of the <IR> Framework differed with respect to legal origin and environmental sensitivity. The findings provide no evidence for any impact of the <IR> Framework on the quality of environmental reporting. The change in quality of environmental reporting did not differ between adopting and non-adopting companies over the time period studied. Finally, there is no difference in the effect on the quality of environmental reporting with respect to legal origin or environmental sensitivity.

Keywords: sustainability reporting, IIRC, <IR> framework, content analysis

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LIST OF ABBREVIATIONS

A4S – The Prince’s Accounting for Sustainability Project

DJSI – Dow Jones Sustainability Index

GRI – The Global Reporting Initiative

<IR> – The International <IR> Framework

IIRC – The International Integrated Reporting Council

1. Introduction

1.1 Background

“The world has never faced greater challenges: over-consumption of finite natural resources, climate change, and the need to provide clean water, food and a better standard of living for a growing global population.”

“All of us have a stake in a sustainable society. While integrated reporting alone cannot ensure sustainability it is a powerful mechanism to help us all make better decisions about the resources we consume and the lives we lead.”

IIRC Press release, 2010

We have been aware of the draining of natural resources since at least 1987, when the report “Our common future” concluded that *“many forms of [economic] development erode the environmental resources upon which they must be based, and environmental degradation can undermine economic development”*, stating that many development trends were degrading the environment (Brundtland Commission, 1987). Despite the insight that economic development is dependent of the state of the environment, we have continued to overuse the resources of the planet and turn a blind eye to the consequences of our actions. In 2012, the United Nations stated that *“we are testing the capacity of the planet to sustain us”*, and that if we continue on the same path as today both people and the planet will be put at risk (UN, 2012). It is therefore obvious that the call for action to focus jointly on economic development and environment in “Our common future” has still not been answered today, 27 years later. Neither people nor companies are apparently taking enough responsibility for the effects their actions have on the environment.

From a larger awareness about environmental issues among the public follows that a company’s value creation for shareholders must be achieved under the constraint that the operations are socially and environmentally sustainable. Through the practice of sustainability reporting, companies seek to inform the public about the effect their operations has on the economy, environment and society. However, publishing a report without actively trying to tailor the company’s operations to contribute to a sustainable development will not do any good for the environment or our future. The sustainability work of a company therefore needs to be integrated into its strategy and long-term objectives.

As a response to the environmental challenges such as the climate change, the organization International Integrated Reporting Council (IIRC) began to develop an international framework for integrated reporting, the <IR> Framework, in 2010. By highlighting value creation over time, the objective was to help companies to integrate sustainability questions into their core business. The aim at the time was to create a “globally accepted framework for accounting for sustainability” in order to “meet the needs of the emerging, more sustainable, global economic model” (IIRC, 2010). An effect from adopting the new framework should therefore be an enhanced environmental reporting as well as an improved environmental performance.

Today, the <IR> Framework has less focus on sustainability. It is stated that integrated reporting “will act as a force for financial stability and sustainability”, without providing any details on how this sustainability will be achieved or accounted for. Lacking specific instructions regarding how a company should disclose their effect on the society and environment, it is not clear-cut how the <IR> Framework will contribute to sustainability, of which the environment is an integral part. The <IR> Framework is thus a new framework that focuses on financial return to investors and that does not require companies to report on their full effect on the environment. In a time where action needs to be taken to preserve what is left of our planet, a framework that does not help to sustain the environment might not be relevant to implement.

The aim of this thesis is therefore to investigate what effect the <IR> Framework has on environmental reporting, as IIRC argues that implementation of the framework will lead to improved environmental reporting and performance.

1.2 Research question

In accordance with the aim of the thesis to investigate what effect the <IR> Framework has on environmental reporting, the research question is as follows:

Has the adoption of the <IR> Framework changed the quality of environmental reporting?

The research question will be addressed by answering two questions:

- 1. Is there a change in the quality of environmental reporting between 2011 and 2013 for companies that have adopted the <IR> Framework and does the change differ from companies that have not?*
- 2. Does the effect from adopting the <IR> Framework differ with respect to environmental sensitivity?*

After presenting and testing two pairs of competing hypotheses, the thesis finds that the <IR> Framework does not have any effect on the environmental reporting and

does not help the companies to achieve a better environmental performance. The necessity of another framework focused on financial value creation without any positive impacts on environmental performance can be questioned. Companies and regulators interested in having a positive contribution to the environmental challenges we face today should consider these findings before implementing the <IR> Framework.

1.3 Scope and delimitations

In late 2011, a Pilot Programme was launched by IIRC where participating companies were given the possibility to contribute to the development of the <IR> Framework. Among these, only the companies that have chosen to report according to the <IR> Framework will be evaluated in this study. To capture the effect of an adoption of the <IR> Framework has on the quality of environmental reporting, reports published prior to the adoption and two years after the adoption of the <IR> Framework are analysed. The disclosure index used to evaluate the reporting on relevant environmental disclosures is based on the external sustainability framework Global Reporting Initiative G.3.

Traditional sustainability reporting includes the effect a company's actions have on the economy, society and environment. This thesis is limited to considering what effect the <IR> Framework has on the environmental aspects of sustainability reporting. The <IR> Framework does not require the integrated report to be one single document, meaning that a company that publishes an integrated report can choose to also publish a stand-alone sustainability report. For this reason, the reports evaluated are integrated reports, sustainability reports and annual reports. To make sure that all companies are evaluated on equal terms, any additional reports are disregarded.

1.4 Contributions

The release of the <IR> Framework in December 2013 offered a possibility to study a relatively unexplored perspective of reporting. To the authors' knowledge, this thesis is the first study performed on the IIRC Pilot Programme. Furthermore, the relationship between the <IR> Framework and sustainability reporting has not been previously analysed. This thesis offers an insight into what effect the <IR> Framework has on the quality of environmental reporting and if the environmental performance has evolved following adoption. It is important to assess if the <IR> Framework contributes to an improved environmental reporting and performance, or if the framework is an unnecessary additional reporting process.

Additionally, the disclosure index proposed by Clarkson et al. (2008) to evaluate the quality of environmental disclosure is improved by including a new quality aspect. Visual aid is considered by the Global Reporting Initiative to increase the quality of reporting, and was therefore included as a quality-enhancing characteristic in the disclosure index. Visual aids are used by a majority of the companies in the Pilot Programme and are seen to enhance the quality of the environmental disclosures. The

authors argue that inclusion of visual aid as an indicator of quality will provide a better measure of the quality of a company's reporting.

1.5 Outline of the thesis

The thesis is structured as follows. The next section explains the theoretical context of sustainability reporting. The third section develops the hypotheses. The fourth section describes the method chosen along with its implications for the findings. The fifth section analyses the empirical findings and relates them to the theory presented. The final section contains conclusions as well as suggestions for future research.

2. Theoretical context

2.1 Sustainability reporting

2.1.1 Background

Corporate sustainability is a business approach that creates long-term shareholder value, not only by accounting for financial performance, but also by accounting for the economy, society and environment (DJSI, 2014a). The concept recognizes the importance of financial performance but highlights that companies are also required to work for a sustainable development (Wilson, 2003). Wilson (2003) argues that the foundation of corporate sustainability is laid by four concepts – sustainable development, corporate social responsibility, stakeholder theory and accountability.

Sustainable development, as established in “Our common future”, is development that “*meets the needs of the present without compromising the ability of future generations to meet their own needs*”. Environmental resources are often eroded in the aspiration for economic development, which in turn can undermine the economic development because of this resource dependence. Economic development is therefore said to be inseparable from the environment. The environment is also negatively affected by for example poverty and inequality. Environmental issues can therefore not be handled without taking a broader perspective, as the environment is inseparable from both society and economy (Brundtland Commission, 1987). The idea of the economy, society and environment being connected was conceptualized into the Triple Bottom-Line framework during the Rio de Janeiro Conference on Environment and Development, held by the United Nations in 1992. This development meant that the traditional objective of achieving shareholder value maximization was expanded to incorporate environmental and social elements (Christofi, 2012). Sustainable development contributes to corporate sustainability in two ways. First, it maps the areas that companies should focus on: economic, social and environmental performance. Second, it provides the goals to work towards: sustainability with regard to economy, society and environment (Wilson, 2003).

Corporate social responsibility addresses the needs of society. The first definition of corporate social responsibility originated in 1953, when Bowen (1953) stated that “[it is] the obligation of businessmen to pursue those policies, to make decisions, or to follow those lines of action which are desirable in terms of the objectives and values of our society”. Companies thus have an ethical responsibility to work not only in the interest of the shareholders but also in the interest of society. Today, it is expected by the public that companies take this responsibility. The contribution of corporate social responsibility to corporate sustainability is the ethical argument for why companies should consider sustainable development important (Wilson, 2003).

Stakeholder theory considers the relationships a company has with its different stakeholder groups. Wilson (2003) argues that strong relationships with external stakeholders is one mean to achieve a competitive advantage. Working towards a sustainable development is in the company's own economic interest as it will strengthen the relationships with its stakeholders, which in turn will help the company to meet its business objectives. Stakeholder theory contributes to corporate sustainability with the business argument for why companies should consider sustainable development important.

Accountability refers to the legal or ethical responsibility of a company to justify its actions for which the company is held responsible. Accountability is different from responsibility in the sense that responsibility refers to the obligation to act in a certain way, while accountability refers to the obligation to explain or report on ones actions. In the everyday business of a company, it enters into both explicit and implicit contracts with its stakeholders. These contracts can result in the company entering into an accountability relationship with a stakeholder, where the stakeholder is holding the company accountable for its actions. A company that has received an environmental permit to operate a facility will be held accountable by regulators as to whether the company meets the terms of approval. On a societal level, it can be argued that each company is given a "licence to operate" by the society as long as the company behaves as expected by the society. This means that the company is accountable for its actions towards the society as a whole. Accountability contributes to corporate sustainability by defining what is expected in the relationship with its stakeholders as well as providing arguments for why companies should report on their social and environmental performance and not only on its financial performance (Wilson, 2003).

Prior to the new millennium, sustainability reports had mostly addressed environmental issues and were targeted at investors. Around that time companies started to include information about economic and social actions. This change in reporting practice had not gone unnoticed by the investors. In cooperation with the sustainable asset management group RobecoSAM, Dow Jones created the Dow Jones Sustainability Index (DJSI) in 1999 (White, 2005). The index includes approximately ten percent of the companies in the Dow Jones Global Index, based on their performance in economic, social and environmental aspects (DJSI, 2013). DJSI is one of the most recognized sustainability indices and membership is seen as a signal of leadership in terms of sustainability practice (Cho et al., 2012).

The change in reporting practice was accompanied by a change of primary target group. The fact that companies were being held accountable by different stakeholder groups not only for their financial performance but also societal and environmental actions entailed an increase in their focus on other stakeholders than their shareholders. This increased awareness and scrutiny of corporate behaviour was a contributing factor to the increase in sustainability reporting. While most companies

now reported on economic, social and environmental activities, the methods for measuring and reporting were not universal or standardized. This misalignment between companies obstructed the possibilities of comparison (White, 2005). Furthermore, sustainability reporting was, and still is, an area with limited regulations, which implies that a majority of the sustainability reports are published in line with voluntary guidelines on a voluntary basis (Eccles & Krzus, 2010).

2.1.2 The Global Reporting Initiative

History

In an attempt to achieve consistency within sustainability reporting, the Global Reporting Initiative (GRI) was formed in 1997 with the objective to create a framework for environmental reporting, primarily targeted at investors. The organization did however at an early stage decide to broaden its scope to include social, economic and governance issues and to adopt a multi-stakeholder approach. The first framework for sustainability reporting was released in 2000 and a total of five versions have been launched up until today. The framework provides companies with methods and metrics to measure and report the effects that their activities have on the economy, society and environment. GRI argues that the framework facilitates enhanced organizational transparency and accountability (GRI, 2014). The reports are supposed to give a fair view of the company, including both positive and negative impacts on the economy, society and environment (GRI, 2011). The mission of GRI is “*to make sustainability reporting standard practice for all companies and organizations*” (GRI, 2014). GRI is currently perceived as the world leader and largest producer of sustainability reporting frameworks (Christofi et al., 2012). It is the most widely used voluntary sustainability reporting framework, implemented by more than 80 percent of the world’s 250 largest companies (KPMG, 2013).

The framework

The current framework G3.1 was released in 2011³. The framework consists of two parts – one with reporting principles and guidance, and one with standard disclosures. The two parts instruct the companies how and what to report. The intention with the reporting principles is to aid companies in their decision on how to report, considering both content and quality of the sustainability report, with all reporting principles being of equal importance. The intention with the standard disclosures is to identify what information that is relevant and material to a majority of organizations and that is of interest to stakeholders (GRI, 2011).

Report content is defined through the principles of materiality, stakeholder inclusiveness, sustainability context, and completeness. The *materiality process* helps companies to report on topics and indicators that reflect the organization’s significant impact on the economy, society and environment or which are believed to

³ The latest version, G4, was released in spring 2013. One main difference from G3.1 is that the indicators are no longer classified as core or additional. It is not yet mandatory to report according to the new version (GRI, 2013). Therefore, G4 will not be further elaborated on.

substantially influence the decisions of stakeholders. *Stakeholder inclusiveness* is the identification of relevant stakeholders and the explanation of how their expectations and interests have been taken into consideration by the company. *Sustainability context* implies that the organization has to place its performance in the relevant context, for example the current or future contribution to improved sustainability, rather than only reporting on the company's individual performance. *Completeness* of information implies that the information in the report should be sufficient to reflect the company's impacts and for stakeholders to make decisions. A report produced with these concepts in mind will give a balanced and reasonable view of the company's activities (GRI, 2011).

The quality of the report is determined through the principles of balance, comparability, accuracy, timeliness, clarity, and reliability. A *balanced report* takes positive as well as negative information into consideration in order to provide an unbiased picture of the company's performance. *Comparability* implies that information should be selected and reported consistently. It should allow stakeholders to compare the company's performance over time or to benchmark it with that of other companies. The information in the report enables stakeholders to make an assessment of the performance if it is sufficiently accurate and detailed. *Accuracy* is achieved in different ways depending on the nature of information. *Timeliness* is achieved if the report covers information that is up-to-date for the stakeholders and occurs on a regular basis. *Information clarity* is achieved if the information presented to the stakeholders is understandable and accessible. *Reliability* concerns the gathering and processing of data. All information should be evidenced so that it can be confirmed and reviewed. GRI argues that taking these principles into consideration will enhance the transparency of the sustainability report. A report taking all the above-mentioned concepts into account will help stakeholders "*to make sound and reasonable assessments of performance, and take appropriate action*" (GRI, 2011).

The standard disclosures are divided into three groups – strategy and profile, management approach, and performance indicators. The two first areas provide the necessary context needed to understand the information disclosed in the performance indicators. The performance indicators report on the performance of the company and are separated into three areas – economic, environmental and social. GRI has, together with international stakeholder groups, concluded that the standard disclosures of the framework should be applicable for companies independently of size, industry or geographical location. The indicators have been divided into core indicators and additional indicators, where the core indicators should be material to report on for most companies⁴. For the purpose of this thesis, only environmental performance indicators are taken into consideration. The G3.1 framework includes 30

⁴ Depending on how many indicators that are reported on, the company is reporting according to application level A, B or C. If the information is externally assured, a "+" is added to the application level. The purpose of this thesis is not to evaluate different application levels of GRI and this is therefore not elaborated on further.

environmental performance indicators, of which 17 are considered to be core and 13 additional. The indicators are divided into nine aspects – materials, energy, water, biodiversity, ‘emissions, effluents and waste’, products and services, compliance, transport, and overall (GRI, 2011).

2.1.3 Integrated reporting

History

Integrated reporting is the practice of combining financial and non-financial reporting to clarify the impacts the different types of performance have on each other. This stands in contrast to the practice of complementing the annual report with a sustainability report, where the linkage between these two reports could be weak. According to Eccles & Krzus (2010), applying integrated reporting will show the company’s real commitment to sustainability issues, through integration of sustainability issues into the business strategy and long-term objectives. Disclosure and transparency will be improved through simplification, which will favour all stakeholders. The practice of integration and integrated reporting is seen as one of the key solutions to the problems in dealing with challenges such as climate change and financial crises. The King III Report argues that issuance of integrated reports will increase the trust and confidence of the company’s stakeholders (IoDSA, 2009).

Prior to 2007, the development of integrated reporting had primarily been driven by innovative companies. The Danish company Novozymes was the first to publish an integrated report in 2002 (Eccles & Krzus, 2010). The first step towards a framework for integrated reporting was taken when the British organization The Prince’s Accounting for Sustainability Project (A4S) published a framework for connected reporting in 2007. The objective of the framework was for companies to present key sustainability information together with traditional financial information to provide a more holistic view of the company (Eccles & Krzus, 2010). On a national level, South Africa has been, and still is, a leading country in sustainability reporting practice. In 2009, the South African code on corporate governance, the King Code, was updated to its third version. The King III Report requires companies to publish an integrated report and offers some guidance for the reporting process, although not a complete framework. Companies listed on the Johannesburg Stock Exchange (JSE) are stipulated to comply with the King Code (IoDSA, 2014).

Despite these steps taken by A4S and JSE towards an integrated reporting practice, the main barrier for integrated reporting to become a reporting norm was in 2010 still the lack of standards. Eccles & Krzus (2010) argued that the best result would be achieved if the organizations responsible for financial reporting standards would cooperate with the leaders of non-financial reporting standards.

The IIRC

The International Integrated Reporting Council (IIRC) was founded in 2010 by A4S and GRI, with the mission to “*enable Integrated Reporting to be embedded into mainstream business practice in the public and private sectors*” (IIRC 2014). It was stated that the intention of the IIRC was to “*create a globally accepted framework for accounting for sustainability*” as a response to the environmental and social challenges, such as climate change and living standards for a growing global population. The framework was supposed to merge financial, environmental, social and governance information into an integrated report (IIRC, 2010). In the Discussion paper published in September 2011, IIRC stated their definition of the concept of integrated reporting <IR>, which is still valid today:

“Integrated Reporting brings together the material information about an organization’s strategy, governance, performance and prospects in a way that reflects the commercial, social and environmental context within which it operates. It provides a clear and concise representation of how an organization demonstrates stewardship and how it creates value, now and in the future” (IIRC, 2011).

The purpose of IIRC is for companies to publish an integrated report and to incorporate integrated thinking into their business strategies. IIRC argues that a company that incorporates integrated thinking will enhance its decision-making by taking the interdependencies between the capitals used by the company into account, which will benefit value creation over time. Integrated thinking is defined by IIRC as “*the active consideration by an organization of the relationships between its various operating and functional units and the capitals that the organization uses or affects*” (IIRC, 2013a).

IIRC initiated a Pilot Programme in September 2011. The participating companies were given the possibility to contribute to the further development of the <IR> Framework. IIRC argued that this market-led approach meant that the needs of the companies, investors and society would be better taken into consideration (IIRC, 2014b). The Pilot Programme is viewed by IIRC as an “*innovation hub that is testing the practical application of Integrated Reporting and contributing to the development of the Framework*” (IIRC, 2012). The Pilot Programme had 102 members when it came to an end in September 2014.

The <IR> Framework

The IIRC published a Discussion paper on the <IR> Framework in September 2011. In the first half of the year 2013, IIRC published five Background papers on different topics to clarify uncertainties and to explain underlying requirements. These papers were based on feedback received regarding the Discussion paper. At the same time, an updated version of the framework was published in the form of a Consultation draft. The first and so far only version of the final <IR> Framework was published in

early December 2013 (IIRC, 2014b). The changes between the Consultation draft in spring 2013 and the final <IR> Framework are minor and concerns clarifications on how words and concepts should be interpreted and used.

A central part of integrated reporting is the value creation process. Value creation should be interpreted as “value creation for <IR> purposes” and should not be mixed up with any other definition of value creation (IIRC, 2013b). Value creation is defined by IIRC in the following way⁵:

“Value is created through an organization’s business model, which takes inputs from the capitals and transforms them through business activities and interactions to produce outputs and outcomes that, over the short, medium and long term, create or destroy value for the organization, its stakeholders, society and the environment” (IIRC, 2013b).

The company’s dependence on several types of resources for its value creation should be taken into consideration in the integrated report. It should not only refer to financial capital but also include all types of capital that are relevant for the companies’ value creation in the short, medium and long-term. IIRC identifies six types of capitals – financial capital, manufactured capital, intellectual capital, human capital, social and relationship capital, and natural capital. However, all capitals might not be relevant for all companies (IIRC, 2013a). An integrated report should enable a provider of financial capital to assess if the company’s outcomes will add to the financial value of the company. If quantitative measures (monetized) are not appropriate, a change in capitals can also be described in qualitative terms. However, IIRC does not provide any metrics for the purpose of measuring value (IIRC, 2013b).

Traditional sustainability reporting covers a company’s impacts on the economy, society and environment. Translated into the capitals of IIRC, it includes social and relationship capital, human capital, and natural capital. This thesis will focus on environmental reporting, which translates into natural capital. Natural capital includes “ecosystem services” as well as resources that can generate returns for a company, e.g. minerals, timber and water (IIRC, 2013d). IIRC defines natural capital as *“all renewable and non-renewable environmental resources and processes that provide goods or services that support the past, current or future prosperity of an organization”* (IIRC, 2013a).

The <IR> Framework consists of two parts – guiding principles and content elements. The guiding principles should support the preparation and presentation of the integrated report. The seven principles are strategic focus and future orientation, connectivity of information, stakeholder relationships, materiality, conciseness, reliability and completeness, consistency and comparability.

⁵ See Appendix I for a visual presentation of the value creation process.

The information provided in an integrated report should provide insight into a company's *strategy*, explain the link between the strategy and value creation over time, and explain how the strategy affects the use of capitals. *Connectivity* implies that an integrated report should provide a holistic overview of the interrelatedness, combination and dependencies between the factors that create value for the company. Furthermore, the report should provide an understanding of the company's relationships with its *key stakeholders* and how the company takes the needs of its key stakeholders into consideration. Only issues that can affect the company's ability to create value are *material* enough to be included in an integrated report. The information provided in the report should be *concise*, meaning that it should be provided within a sufficient context but without unnecessary information. The report should take positive as well as negative information into consideration in order to provide an unbiased and *reliable*⁶ picture of the company's performance. Information should be selected and reported *consistently*, and it should allow stakeholders to *compare* the company's performance over time or to benchmark it with that of other companies.

The framework consists of eight content elements - organizational overview and external environment, governance, business model, risks and opportunities, strategy and resource allocation, performance, outlook, and basis of presentation. The content elements are interrelated and cannot be considered in isolation. An integrated report has to answer the principal question for each content element in order to be considered as being in compliance with the <IR> Framework. The principal questions can be found in Appendix I. The <IR> Framework is principle-based and it is up to the preparers of an integrated report to decide what information that is material to include and how it should be reported (IIRC, 2013a).

An integrated report published in accordance with the <IR> Framework can be either a stand-alone report or a distinguishable part of another publication. IIRC recognizes that the <IR> report should be a complement to, rather than a duplication of, established reporting standards such as GRI (IIRC, 2013c). This means that a company that publishes an integrated report can choose to also publish a stand-alone sustainability report.

The <IR> Framework has three features that distinguish it from current reporting practice - its focus on long-term value creation, the principle of connectivity and its shareholder focus. These features have to be understood in order to predict what effects the framework will have on environmental reporting.

⁶ It is emphasized that the reliability of an integrated report is enhanced if the information is independently, externally assured. As the <IR> Framework contains predictions about the future, it has been argued that the information will be hard or impossible to verify. This is however outside the scope of this thesis and all information in integrated as well as annual and sustainability reports is assumed to be correct and faithful.

Integrated reporting shall consider the relationship between past and future performance and report on how the company balances interests with different time horizons. Furthermore, it should be explained how a company will create value in the long term. A company will naturally strive for value maximization. While value-maximization in the short term can be achieved by considering only one type of capital, most commonly financial capital, IIRC argues that value-maximization in the long term can only be achieved when considering the effects a company has on all types of capital. Negative effects on certain capitals cannot be disregarded at the expense of positive effects on other capitals; instead the effects have to be balanced. Value creation in the long term will therefore consider the company and its shareholders, as well as the society and environment (IIRC, 2013b).

Connectivity is one of the guiding principles of the <IR> Framework and is considered to be a central principle of the framework. IIRC has described connectivity as the “*connections between the different components of the organization’s business model, external factors that affect the organization and the various capitals on which the organization and its performance depend*” (IIRC, 2013d). The connection of all these components will enhance the company’s understanding of its business and strategy. Connectivity is a crucial determinant for an organization to successfully implement integrated thinking and is described as “*the essence of integrated thinking*”. Integrated thinking, which is the opposite of silo thinking, will help the organization to break down internal barriers and to improve the understanding of the relationships between its different business units. The organization will take into account the interdependencies and connectivity between all factors that have a material effect on the organization’s ability to create long-term value. Integrated thinking will therefore make it possible for decision-makers to get a holistic view of the company, which will lead to integrated decision-making. This will in turn help the organization to execute a strategy that will generate value in the long term, which is dependent on a bundle of different resources rather than only financial capital (IIRC, 2013d). IIRC argues that integrated thinking will “*act as a force for financial stability and sustainability*” (IIRC, 2013a). Eccles & Krzus (2010) argued that the key to sustainable development lies within the integration of sustainability issues with the core business of the company. This is what IIRC argues will happen when a company implements integrated thinking, which takes all factors that could affect the organization’s long-term value creation into account by integrating other factors than pure financials into the company’s strategy and long-term objectives.

The primary purpose of an integrated report is “*to explain to providers of financial capital how an organization creates value over time*”. This means that providers of financial capital are the primary target group for IIRC. IIRC argues that integrated reporting will enable a more efficient and productive capital allocation by providers of financial capital, as they can now choose to invest in sustainable businesses. It is highlighted that the financial returns provided by the company are interrelated with value creation for society at large, implying that the society will benefit as well. The

value effects on the capitals should however only be included in the integrated report when they affect the company's ability to create value for itself (IIRC, 2013a). Therefore, stakeholders cannot be certain that all effects on society and environment will be reported in the integrated report.

The shift in focus

In 2010, IIRC argued that they would create a “*globally accepted framework for accounting for sustainability*” (IIRC, 2010). According to the Discussion paper released in 2011, companies should disclose the impacts of its activities on for example the environment, its employees and society in general. In the final version of the <IR> Framework released in 2013, the only references to sustainability relates to stand-alone sustainability reports prepared in accordance with other frameworks. Furthermore, and as described above, the impact of the company's activities should only be reported on if “*the value creation (destruction) may ultimately impact an organization's own ability to create value*” because only then will it create financial returns to the providers of financial capital. This means that if the operations of a company cause damage on something that is not owned by the firm and is not generating any value for the company, such as a public park, the company does not have to disclose this information according to the <IR> Framework. The purpose of integrated reporting according to IIRC has gone from being a framework for accounting for sustainability in 2010, to a framework that describes for providers of financial capital how companies create value over time, given that the activities has an impact on the company's own value creation. The decreased focus on sustainability reporting can be illustrated by a word-count of the words “sustainability”, “sustainable” and “sustain”. They appear ten times in the press release from 2010, 27 times in the Discussion paper from 2011 and only one time in the final <IR> Framework from 2013 (Flower, 2014).

2.2 Previous studies

This section begins with an overview of the field of social and environmental reporting research. It continues with research regarding the adoption of a new framework. Finally, it presents research conducted on integrated reporting, both the concept in general and the <IR> Framework in specific.

2.2.1 Social and environmental reporting research

Corporate social reporting can be defined as “the process of communicating the social and environmental effects of organizations' economic actions to particular interest groups within society and to society at large” (Gray et al., 1996). One field within social and environmental reporting research that has received particular attention is the relationship between environmental performance and environmental disclosure. After giving an overview of this field of research, the literature review will continue with studies on the adoption of a new framework as well as on integrated reporting.

Wiseman (1982) evaluated the environmental disclosure in the annual reports of 26 US companies operating in environmentally sensitive industries. The author argued that information about environmental performance by companies in environmentally sensitive industries is of higher interest to investors and other stakeholders than such information from companies in non-sensitive industries. Based on previous studies, the author constructed a disclosure index with 18 items relating to environmental information. The author concluded that even though many companies reported on most of the items, there was a lack of specificity in the disclosed information. The disclosures were vague and incomplete since a majority of the firms did not voluntarily report quantitative information about the environmental performance. Furthermore, the author found that there was no relationship between environmental disclosure and environmental performance.

Patten (2002) examined the relation between environmental disclosure and environmental performance for 131 US companies. Based on legitimacy theory, the author argued that companies with larger amounts of toxic release would disclose more environmental information as poorer environmental performance increases the threat to the company's legitimacy. The author specified a disclosure index regarding environmental information based on previous studies. First, one point was awarded for each item that was disclosed in the annual report. Second, the number of lines allocated to the items in total was counted and aggregated to a total number. The results showed an overall low level of disclosure. As for the relation between environmental disclosure and environmental performance, a higher level of toxic release (i.e. worse environmental performance) was associated with a higher level of environmental disclosure. This relationship indicates that the level of environmental disclosure is a function of the company's exposure to the socio-political environment. This relation was true both when using disclosure-score and number of lines allocated.

Clarkson et al. (2008) studied if there was a relation between environmental performance and the level of discretionary environmental disclosure. The sample consisted of 191 companies, out of which 122 provided environmental disclosures, from the five most polluting industries in the US. The companies were divided into good and bad environmental performers based on percentage of toxic waste treated in the production. Together with an expert on environmental reporting, a disclosure index was constructed on the basis of the GRI reporting guidelines. Ten items were classified as being "environmental performance indicators" (EPI), and being of such a nature that the companies had a chance to disclose more details about their actual environmental performance. The grading scale for the EPI ranges from 0 to 6 points with 1 point being awarded for each dimension of quality disclosed. The authors developed two competing hypotheses regarding the relation between environmental performance and the level of discretionary environmental disclosure. Voluntary disclosure theory predicts this relationship to be positive, as good performers want to inform stakeholders about their superior performance by disclosing information that

cannot be easily mimicked by poor performers. Socio-political theories predict that companies whose legitimacy is threatened have incentives to increase environmental disclosures in order to inform the public about changes in their performance. In line with Patten's (2002) findings, the authors predict a negative relationship between environmental performance and the level of discretionary environmental disclosure.

The authors found a positive relationship between environmental performance and the level of discretionary environmental disclosures, which is in line with what was predicted by the voluntary disclosure theory. The result was therefore inconsistent with the predictions from socio-political theories, which suggests that these theories are not predicting the level of discretionary disclosure correctly based on the environmental performance of a company. As for the level of disclosure, the authors found that the compliance with the GRI reporting guidelines was low for both good and bad performers. Poor performers scored lower, consistent with the argument that they will not be able to disclose as much information on the EPI as such information is hard for bad performers to mimic.

2.2.2 Adoption of a new framework

Another type of study that is deemed to be relevant to this thesis is concerned with the adoption of a new framework, as it provides insights regarding which factors that affect implementation of a new framework and the effects that such an implementation have on environmental reporting. Due to the scarcity of studies on adoption of the <IR> framework, two studies on what effects adoption of the IFRS and GRI frameworks has on sustainability reporting will be presented.

Nikolaeva & Bicho (2011) investigated what factors in the institutional environment that made companies adopt the voluntary GRI framework by looking at the worlds' 600 largest companies over the time period 1999-2009. The authors considered GRI adoption as a tool to increase the legitimacy and reputation of the adopting company. The adoption is therefore argued to be a response to pressure from stakeholders and to be driven by corporate identity communication. Based on institutional theory, the authors argue that when the profitability of a new practice is not clear, the decision to adopt tends to be based on the number and reputation of previous adopters rather than the economic effect. Therefore, it is predicted that a more widespread adoption of the GRI reporting guidelines will positively influence non-adopting companies to adopt the guidelines. However, the theory of diminishing returns indicates that the adoption rate will decrease as more firms in an industry adopt the GRI reporting guidelines. Furthermore, they argue that companies whose CSR activities are more visible in the media will be more likely to adopt the guidelines as they would then be able to either better promote their accomplishments or defend themselves against negative media reporting about their activities. The authors got evidence for both predictions being correct, where the positive relation between media exposure and GRI adoption supports the argument from legitimacy theory that more visible companies are under a larger pressure from the public for accountability. The authors argue that GRI

adoption helps companies to get legitimacy as a responsible corporate citizen by adhering to the GRI norm.

Van der Laan Smith et al. (2014) studied the impact of the implementation of IFRS on the level of corporate social disclosures (CSD), based on whether the companies were domiciled in a shareholder or a stakeholder oriented country. The sample consisted of 43 European companies from the Fortune Global 500 list and all nine Australian companies included on the list. A disclosure index with 68 indicators was developed based on “Guidance on Corporate Responsibility Indicators in Annual Reports”, published by the UNCTD Secretariat. Each indicator was coded as 1 if presented and 0 if not. The periods studied were pre-IFRS (2003-2004) and post-IFRS (2006-2007). The authors argue that over the years, there has been an increased interest in CSD. Shareholder countries already have legislation similar to IFRS, giving those companies more time to adapt to the increased demand for CSD and thus provide more CSD. The legislation in stakeholder countries is less similar to IFRS, which means that these companies need to devote more time to adjust to IFRS and will thus decrease their focus on the voluntary CSD. The authors find that the overall level of CSD was low for all years. Companies domiciled in shareholder countries presented significantly more CSD post-IFRS than pre-IFRS, which is what was expected. The shift in focus from CSD to shareholder demands (meaning more financial disclosures) for companies domiciled in stakeholder countries resulted in no significant change in the level of CSD post-IFRS adoption.

2.2.3 Integrated reporting

Previous studies on integrated reporting can be divided into two categories: studies on the adoption of integrated reporting, and studies on compliance with the <IR> Framework. The former category is concerned with the general concept of integrated reporting. The latter is concerned with the <IR> Framework. It consists of two unpublished master theses due to the fact that the <IR> Framework is relatively new and research is thus scarce.

García-Sánchez et al. (2013) examined what impact the Hofstede national cultural system have on the decision to publish an integrated report. The authors analysed 1590 companies selected from the Forbes Global 2000 list, coming from 20 countries, for the period 2008-2010. For each company and year, it was decided if the published report was in an integrated form or not, based on a classification made by GRI. It should be noted that the reports did not have to comply with the <IR> Framework in order to be classified as being integrated. Using data presented on the website *Geert Hofstede™ Cultural Dimensions*, each country was coded as being or not being characterized by higher than average collectivism, feminism, tolerance of uncertainty, long-term orientation, and lower than average power distance. The results showed that integrated reports are more likely to be published in countries characterized by high values of collectivism and feminism. However, the level of power distance, long-term orientation and tolerance of uncertainty are not determining factors for the choice of

publishing an integrated report or not.

Lambooy et al. (2014) examined what motivations companies and legislators have to introduce integrated reporting and how integrated reporting can be supported by national legislation. The motivation is argued to consist of several aspects. When preparing an integrated report, the authors argued that the company is forced to apply a comprehensive and well-structured approach, which will show what risks and opportunities that are associated with the company's operations. Furthermore, the connection between financial and non-financial information can show the companies how the business model could evolve to become more sustainable. Finally, it is argued that the relationship with the stakeholders will be improved as the stakeholders get a better insight into the company. Regarding the legislative situation in Europe, the authors argue that a uniform model for integrated reporting needs to be developed and put into practice and that ideally, it would be supported by legislation.

Focusing on 43 South African mining companies listed on the JSE, Joubert (2014) assessed how compliant their integrated or annual reports were with the <IR> Framework. South African companies listed on the JSE are required by law to publish an integrated report, but it does not have to be in compliance with the <IR> Framework specifically. The author constructed a disclosure index based on the contents elements in the Consultation draft for the <IR> Framework issued by IIRC, giving a total of 63 indicators relating to the Consultation draft. To evaluate the level of compliance, each indicator was graded on the scale a) no – not applied, b) yes – room for improvement, and c) yes – clear and effective. The decision in which category to place each indicator was made on the basis of the level and amount of detail, such as quantification and comparison to other content elements. The results indicate that the companies that prepared an integrated report had a higher quality of their reporting, with quality being measured as a higher proportion of the disclosures belonging to the category c) yes – clear and effective. The companies publishing an integrated report were also in higher compliance with the IIRC Consultation draft compared to companies publishing stand-alone annual and sustainability reports.

Larsson & Ringholm (2014) examined to what extent the annual reports published by 21 Swedish companies listed on the Stockholm Stock Exchange (SSE) met the guidelines regarding governance in the <IR> Framework, as a publication by PwC on integrated reporting in Sweden had shown that the area of governance was poorly reported. None of the companies in the study did however claim to comply with the <IR> Framework. Furthermore, the authors examined whether there was any relationship between the extent of compliance with the guidelines regarding governance, and the size of the company. The sample contained seven randomly selected companies from each of the segments small cap, mid cap and large cap. A disclosure index was constructed where the guidelines for the content element "Governance" was rephrased into ten items to be fulfilled. The scoring system was a) 0 points – nothing mentioned, b) 1 point – mentions, c) 2 points – describes, and d) 3

points – linkage to the ability to create value. Most companies mentioned all items but failed to disclose more detailed information on more than a few items. The authors concluded that the companies were not in compliance with the <IR> Framework, as the majority failed to disclose the linkage to the ability to create value for each disclosure item. Furthermore, the authors found a positive relationship between compliance and size. However, this relationship was based on descriptive statistics and was not statistically tested.

2.3 Theory explaining environmental reporting

For analysing corporate social reporting from a theoretical perspective, Gray et al. (1995a) argue that socio-political theories have given the *"most penetrating analyses"*. Such socio-political theories include for example stakeholder theory, which puts a company's disclosure in relation with its stakeholders, and legitimacy theory, which relates a company's activities to its need of being perceived by external parties as being legitimate. Another theoretical perspective is the voluntary disclosure theory, which has its foundation in the studies by Verrecchia (1980) and Dye (1985). This theory relates a company's disclosure to the proprietary cost of disclosure.

2.3.1 Stakeholder theory

Within stakeholder theory, the organization is viewed as being part of the social system. As a consequence, the organization both impacts, and is impacted by, other groups in the society. It is acknowledged that within the society there are different groups with different interests, referred to as stakeholder groups. As these different stakeholder groups will have different expectations regarding how the organization is conducting its operations, it is necessary for the organization to negotiate different social contracts with each of the different stakeholder groups instead of negotiating only one social contract for the society as a whole⁷. These interactions between the organization and its different stakeholders are the focus of stakeholder theory. The actions of an organization therefore have to be carried out with the organization's stakeholders in mind (Deegan & Unerman, 2011).

Freeman (1984) defined a stakeholder as *"any group or individual who can affect or is affected by the achievement of the firm's objectives"*. Such stakeholders would include for example stockholders, creditors, employees, customers, suppliers, public interest groups and governmental bodies (Roberts, 1992). The stakeholder concept was further developed by Clarkson (1995) who divided the stakeholders into primary and secondary stakeholders. A primary stakeholder was defined as *"one without whose continuing participation the company cannot survive as a going concern"*, while a secondary stakeholder was defined as *"those who influence or affect, or are*

⁷ The social contract is defined by Shocker & Sethi (1973) as: *"any social institution - and business is no exception - operates in society via a social contract, expressed or implied, whereby its survival and growth are based on:*

- 1) the delivery of some socially desirable ends to society in general, and*
- 2) the distribution of economic, social or political benefits to groups from which it derives its power."*

influenced or affected by, the company, but they are not engaged in transactions with the company and are not essential for its survival". Gray et al. (1995a) states that the more power the stakeholder has, the more the company needs to adapt to the needs of this stakeholder. Both Clarkson (1995) and Grey et al. (1995) is thus arguing that the nature of the stakeholder is dictating how the company will respond to the stakeholder's demands.

Applying stakeholder theory to corporate social disclosure, Gray et al. (1995a) concluded that social disclosure is seen as being a part of the dialogue that a company has with its stakeholders. Regarding stakeholders that are demanding information about the environmental impact of a company, Moneva & Llenda (2000) found that when a company has identified the demands of such a stakeholder to be valid, the company tends to voluntarily disclose more environmental information.

2.3.2 Legitimacy theory

Within legitimacy theory, legitimacy is seen as a resource that is needed for the organization's survival. Legitimacy is attributed to an organization by society, and it is sought after by the organization. Through strategies relating to disclosure, an organization can impact or manipulate the amount of legitimacy they get from society. Such strategies can be implemented with the aim of gaining, maintaining or repairing legitimacy and they include, for example, targeted disclosures or collaboration with a partner that is perceived by society to be legitimate.

It is not the actual behaviour of an organization that is important, but what society knows or perceives about the organization's behaviour. This means that information disclosure is of high importance when establishing corporate legitimacy. The organization must appear to consider the rights of the entire society and not only the rights of its investors. If an organization fails to comply with the expectations of society, the social contract that has been negotiated with society could be revoked for example by imposing fines on the organization for not complying with environmental restrictions (Deegan & Unerman, 2011).

2.3.3 Voluntary disclosure theory

The voluntary disclosure theory is based on two studies published during the 1980s: Verrecchia (1980) and Dye (1985). Verrecchia found that disclosure is associated with proprietary costs and that full disclosure can only be performed by a company in the absence of these proprietary costs⁸. When there are costs associated with disclosure, only those companies that will be able to disclose sufficiently good news will find that it is worth to incur the cost of the disclosure.

The performance of the firm thus needs to exceed a threshold before it is worth taking the cost of disclosing information about that performance. Lang & Lundholm (1992)

⁸ Proprietary cost is defined as the cost of preparing the disclosure as well as the "*cost associated with disclosing information which may be proprietary in nature and therefore damaging*". Together, these represent the total cost of disclosing information (Verrecchia, 1983).

found that the level of disclosure is a function of three factors. It will increase when the firm's performance is improving, as a larger quantity of news about the performance will be sufficiently good. On the other hand, it will decrease when the threshold level is increasing, as it will be harder for the news about the performance to be sufficiently good. Finally, it will increase when the sensitivity to outsiders' perceptions is increasing, as it is more important for the firm to disclose information that will convey the desired image about the company.

Dye (1985) suggested that companies with a superior environmental performance will disclose objective information about their performance that is difficult to mimic for companies with an inferior environmental performance, for example the level of greenhouse gas emissions. Companies with inferior environmental performance will either disclose less or be completely silent about their performance.

3. Hypothesis development

The effect on the quality of environmental disclosure from adopting the <IR> Framework will be discussed from two competing perspectives, leading to two pairs of competing hypotheses based on different theoretical foundations. The hypotheses are presented in their alternate form, i.e. stating what is predicted to happen with the quality of the environmental disclosure. The quality of the environmental disclosure is measured as the total level of environmental disclosure, where a higher level of disclosure equals a higher quality. This relationship will be further elaborated on in the methodology section.

3.1 Change in environmental disclosure over time

When adopting the <IR> Framework, companies will not only publish an integrated report but also implement integrated thinking. Integrated thinking implies that internal decision-makers will get a holistic view of the company, which helps the company focus on all types of capital. In turn, this will maximize value creation in the short, medium and long-term. Implementation of the <IR> Framework requires the company to integrate all capitals into its business strategy. Natural capital will therefore become an integral part of the company's strategy and long-term objectives. This increased focus on natural capital implies that the effect of the company's operations on the environment will receive more attention, which in turn should improve the environmental performance.

According to voluntary disclosure theory, there should be a positive relationship between environmental performance and the level of environmental disclosure. As adoption of <IR> Framework leads to better environmental performance, the companies should disclose more environmental information. This leads to the first hypothesis:

H1: Following an adoption of the <IR> Framework, the level of environmental disclosure will increase

Another characteristic of the <IR> Framework is its focus on shareholders, as the primary purpose of an integrated report is to provide information to providers of financial capital. According to stakeholder theory, a company discloses information to the stakeholders they deem to be relevant. Shareholders are primarily interested in financial information and not environmental information (Deegan & Rankin, 1997), which implies that companies with a shareholder focus are not facing any explicit demands for environmental information.

The companies that focus on their shareholders prior to the adoption of the <IR> Framework will maintain this focus after adoption and therefore not face any explicit demands for environmental information neither before nor after adoption. As the <IR> Framework does not include any specific environmental indicators that should be disclosed in order to be in compliance with the framework, the adoption of the

<IR> Framework will not lead to an increase in the level of environmental disclosure. Rather, these companies will maintain the same level of disclosure.

Those companies that prior to adoption of the <IR> Framework focus on their stakeholders will on the other hand face demands regarding environmental information, given that they have stakeholders that are interested in the environment. This means that prior to the adoption of the <IR> Framework these companies have a higher level of environmental disclosure. As the <IR> Framework focuses on information to providers of financial capital and does not provide specific disclosures about the environment, the level of environmental disclosure will decrease since stakeholder groups other than shareholders will not be of the same importance to these companies as prior to the adoption.

Overall, due to the nature of the <IR> Framework, companies will either maintain or decrease the level of environmental disclosure. The net effect of this will be a decrease in the level of environmental disclosure, leading to the second hypothesis:

H2: Following an adoption of the <IR> Framework, the level of environmental disclosure will decrease

3.2 Change with respect to environmental sensitivity

A distinction can be made among the companies in the IR sample regarding whether they are operating in an environmentally sensitive industry or not.

As argued by Bewley & Li (2000), a stakeholder's opinion about the environmental impact of a company is influenced by the public knowledge about the industry the company is in. Companies in industries with a large potential environmental impact will be associated with the negative image that the public has about these industries. They will therefore disclose more information about their environmental performance to distinguish themselves from the negative industry image. Companies in environmentally non-sensitive industries are not expected by the public to disclose information about their environmental performance since they have less impact on the environment. Wang & al. (2013) found that companies in environmentally sensitive industries disclose more corporate social responsibility information than companies in non-sensitive industries, thus supporting the argumentation put forward by Bewley & Li (2000).

Prior to adoption of the <IR> Framework, environmentally sensitive companies will have a high level of environmental disclosure. As the <IR> Framework shifts focus to shareholders, the pressure from environmentally focused stakeholders will no longer be as highly prioritized, which should lead to a reduced level of environmental disclosure made by environmentally sensitive companies. However, it has been established that environmentally sensitive companies face a pressure from the public regarding their impact on the environment. They thus need to be perceived as

legitimate by the public in this aspect, as they otherwise risk having their social contract with the society revoked. The environmental disclosure made by environmentally sensitive firms is therefore used as a tool to get legitimacy from the public. This implies that even though the <IR> Framework shifts focus to the shareholders, environmentally sensitive companies cannot ignore the need for legitimacy from the public. They will therefore continue to disclose the same amount of environmental information in order not to lose legitimacy. Environmentally sensitive companies will thus remain on the same level of environmental disclosure.

Regarding companies in non-sensitive industries, the shift of focus to shareholders will not have an effect on their level of environmental disclosure. As they have a smaller impact on the environment, they do not need legitimacy from the public regarding this aspect and do not have the need to inform the public about their environmental performance. Furthermore, assuming that they already are at a level of environmental disclosure accepted by the shareholders, this indicates that these companies will remain at the same level of environmental disclosure, as the <IR> Framework does not give them any reason to improve their level of environmental disclosure. This leads to the third hypothesis:

H3: Following an adoption of the <IR> Framework, both environmentally sensitive and non-sensitive companies will maintain their level of environmental disclosure

Environmentally sensitive and non-sensitive companies will react differently to the enhanced environmental performance, which is argued to be the effect when implementing integrated thinking. Voluntary disclosure theory predicts that improved environmental performance will lead to an increase in the level of environmental disclosure. When environmentally sensitive companies improve their environmental performance, this distinguishes them more than before from the negative picture about their industry. The threshold for when a disclosure is sufficiently good to warrant the cost of disclosing is therefore very low for environmentally sensitive companies, which means that a large part of the information about their enhanced environmental performance will actually be disclosed. The level of environmental disclosure will therefore increase for environmentally sensitive companies.

Companies in non-sensitive industries do not have to disclose information about their environmental performance in order to distinguish themselves from a negative picture about the industry. Their threshold for when a disclosure is sufficiently good to warrant the cost of disclosing is therefore higher, as they do not benefit from additional disclosure. This means that the information about their enhanced environmental performance will not be disclosed, as the positive effect will not be large enough to warrant the associated cost. The level of environmental disclosure will therefore be maintained for environmentally non-sensitive companies. This leads to the fourth hypothesis:

H4: Following an adoption of the <IR> Framework, environmentally sensitive companies will increase their level of environmental disclosure while non-sensitive companies will maintain their level of environmental disclosure

4. Methodology

4.1 Research approach

To answer the research question, a deductive approach that develops and tests a hypothesis was judged to be suitable. When applying a deductive approach, the first step is to develop a hypothesis from theory. This hypothesis is expressed in operational terms, which also defines the relationship between two concepts or variables. Following the definition of the hypothesis, it is tested by collecting quantitative data for the variables representing the relationship under investigation as well as data for control variables, i.e. factors that could influence the result from the quantitative data collection. By the means of statistical testing, the hypothesis is either rejected or accepted. If the theory is not confirmed, it might be necessary to modify the theory taking into consideration the findings from the testing of the hypothesis. Finally, generalization about the outcome is possible when the sample is of sufficient numerical size (Saunders et al., 2009). Due to uncertainties regarding the intentions of IIRC with the <IR> Framework, there is no clear-cut hypothesis about what effect the framework will have on environmental reporting. The thesis is therefore partly exploratory in nature.

4.2 Sample selection

4.2.1 IR sample

The original sample consisted of the participants in the Pilot Programme as of June 6 2014, yielding a sample of 102 companies. The <IR> Framework does not require the integrated report to be a stand-alone report, meaning that a company that publishes an integrated report can choose to also publish a separate sustainability report or to incorporate the integrated report into the annual report. For this reason, integrated reports as well as sustainability reports and annual reports will be evaluated for all companies. All these reports for the years 2011 and 2013 were gathered for the 102 companies. In the case where reports were missing, the company was contacted by e-mail in an attempt to get a hold of the missing reports. A final deadline for the missing reports was set to the date where the data coding would start, meaning that those companies that had not published their reports by this date were excluded from the sample. This resulted in 84 companies with all relevant reports. As evidenced by the downloaded reports, the participants in the Pilot Programme were not obliged to apply the <IR> Framework in their reporting. To evaluate the reports of participants that did not apply the <IR> Framework as of 2013 would be inappropriate for this study. In order to differentiate between the participants, a classification was done of the 2013 reports based on what a company's annual report said about their participation in the Pilot Programme. The companies were classified into the following groups: a) no mention of IIRC or mentioning the participation in the Pilot Programme but not applying the <IR> Framework, and b) reporting influenced by or fully compliant with the <IR> Framework. Companies in group b) were deemed to be

of interest for the study, which lead to a sample of 41 companies. As a final step, these companies were classified into industries based on three digit SIC-codes.

As discussed below, companies that are members of DJSI were considered to constitute an appropriate control sample. Slightly less than half of the companies in the IR sample are however also members of the DJSI. This does not pose a problem per se since it is the effect of adopting the <IR> Framework that is investigated. The fact that slightly less than half of the adopting companies are also DJSI members is however taken into consideration in the statistical tests, where two sub-groups are created. One group contains the 22 IR-companies that are not members of DJSI and the other group contains the 16 IR-companies that are members of DJSI. The groups are evaluated separately to exclude the risk of overlooking a possible differing effect between the two subgroups.

4.2.2 Control group: DJSI

To evaluate if the change in quality of environmental reporting for the IR sample is related to the adoption of the <IR> Framework or a general environmental reporting trend, a control group with companies that are members of the DJSI was introduced. The DJSI was chosen in order to find the best performing companies in sustainability since it was expected that these companies would respond quickly to general trends in environmental reporting due to the fact that these companies are considered to be at the forefront of sustainability reporting.

The members of DJSI are selected by RobecoSAM that each year performs a corporate sustainability assessment on 2500 companies worldwide. The assessment consists of pre-specified criteria covering an equal weight of economic, social and environmental aspects (Christofi et al., 2012). The assessment is carried out through an extensive industry-specific questionnaire sent to the companies. Only the highest scoring companies in each of the 59 defined industries are included in DJSI, which each year contains around 300 companies (DJSI, 2014b).

Contact was made with RobecoSAM, which provided lists of the participants for September 2012 and 2014 (DJSI, 2012; DJSI, 2014c). These lists are confidential and a compilation of the companies included in the study is therefore not included in an appendix. The companies complete the questionnaire during the first half of the year (RobecoSAM, 2014), which corresponds to when the information analysed in the reports in this study is released. The lists were compared to get a final list of companies that were included in the DJSI both in 2012 and 2014. To narrow down the sample from the 319 companies that were included each year to 41 companies that would match the IR-companies, the participants were classified based on SIC-codes and then matched with the IR-companies on a three digit level. This means that the industry matching between the two samples is very exact. One company in the IR sample had no matching partner in DJSI. The company was therefore excluded from

the sample. This resulted in a final sample of 40 companies in the IR sample and 40 companies in the DJSI sample, thus 80 companies in total.

4.2.3 Choice of years studied

The choice of the first year in the study was based on two opposing constraints. The first constraint concerns the adoption of the <IR> Framework, which should not yet affect the reporting, i.e. the level of environmental reporting will be measured pre-adoption. As the Pilot Programme and Discussion paper was both launched in September 2011, the reporting for the year 2011 will not be in line with the <IR> Framework since full implementation was not possible due to the short time-frame. This implies that the first year in the study could be 2011 or prior to that year. The second constraint concerns the effect from other sustainability trends. As an attempt to isolate the effect on environmental reporting from adoption of the <IR> Framework, the first year should be as close as possible to the first year influenced by the adoption (2012). This is considered important since there has been a rapid development of sustainability reporting over the last decade. This minimizes the effect of other trends in sustainability reporting. As a result of these constraints, 2011 was chosen as the first year in the study. In the case where the reporting year differed from the calendar year, the report from the financial year 2010/2011 was chosen in order to make sure that the company was unaffected by the adoption of the <IR> Framework.

The choice of the second year in the study was based on the fact that a longer time frame gives the companies the opportunity to present a larger change in their level of disclosure. Therefore, the latest year possible, 2013 was chosen as the second year. Based on the classification conducted on all companies in the Pilot Programme, it is established that all companies in the IR sample apply the <IR> Framework as of 2013. In the case where the reporting year differed from the calendar year, the latest available report was chosen.

It should also be highlighted that not all companies have been participants in the Pilot Programme since the start in September 2011. Approximately half of the companies have entered the programme at a later stage. This implies that neither early nor late adopters were affected by the adoption of the <IR> Framework in 2011, while both early and late adopters were affected by the <IR> Framework to some extent in 2013 since all companies stated that they applied the framework. Taken together, this implies that some companies have been affected by the <IR> Framework for a longer period of time than others. This issue is however addressed in the sensitivity analysis, section 5.4.3.

4.3 Research design

4.3.1 Content analysis

Within the literature on corporate social and environmental reporting, the dominant method used to analyse disclosure is the content analysis (Branco & Rodrigues,

2007). For the last 20 years, an extensive literature on corporate social and environmental reporting has used content analysis as the method to gather data on disclosures (Guthrie & Abeysekera, 2006). The aim is to quantify the extent of disclosures with numerical values (i.e. giving points for disclosures made), numbers that then can be analysed statistically (Joseph & Taplin, 2010). The extent of disclosure is assumed to be a symbol of the importance of a specific issue to the reporting company, where a larger extent means higher importance (Gray et al., 1995a). Furthermore, disclosures that present certain characteristics are assumed by several authors to be of a higher quality to the reader (Branco & Rodrigues, 2007).

Disclosure quantification can be divided into two main methods. Disclosure abundance, which counts the amount of disclosure (e.g. words or sentences) for each item on a pre-specified disclosure index, and disclosure occurrence, which counts how many items in a disclosure index that are disclosed (Joseph & Taplin, 2010). Another form of content analysis is to not only look at the presence or non-presence of an item but to also look at the characteristics of each disclosure. Within this area of research, two main types of grading scales can be identified. The first type, developed by Wiseman (1982), uses a grading scale from 0 to 3 points where disclosure with monetary or quantitative information is argued to be the preferred disclosure form. This is consistent with Gray et al. (1995a), who argue that quantitative (financial and other numeric) disclosure is of a higher quality than declarative information. The second type, developed by Clarkson et al. (2008), awards each disclosure item a score between 0 to 6 points depending on how many dimensions that are present in each disclosure, without assigning the dimensions different weights.

4.3.2 Development of disclosure index

The disclosure index used in this study is based on Clarkson et al. (2008) and assesses the quality of the environmental disclosure. The total score represents the overall quality of the environmental reporting of a company. It is comprised of two dimensions: quantity (number of indicators disclosed) and quality-enhancing characteristics (items) of the disclosed indicators. Quality can therefore be improved either by disclosing a larger number of indicators or by disclosing more of the quality-enhancing characteristics on the same number of indicators as before. For the final disclosure index used, see Table 1.

As this study is interested in the effects of the <IR> Framework on the environmental disclosure, a disclosure index with a focus on environmental issues needs to be developed. In line with Clarkson et al. (2008), the indicators are chosen based on the GRI guidelines. This will give indicators about the environmental performance of a company that is hard to mimic by those companies with a worse environmental performance, since they focus on objective measures of performance. Clarkson et al. (2008) argue that this is the type of information that is demanded by stakeholders. An increase in the number of indicators reported will therefore represent an actual improved performance and not just be an attempt to depict the company as a better

environmental performer than it actually is. Furthermore, the <IR> Framework is lacking specific environmental indicators and it was therefore necessary to obtain environmental indicators from an external source. Based on the previous discussion about the GRI framework, the developed disclosure index should be applicable and material for all companies in the sample. The GRI indicators demand a lot of details and evaluating the degree of compliance with the GRI G3.1 framework is not the purpose of this study. By simplifying the indicators, the bar for being considered to have disclosed a certain indicator was lowered. This allows more disclosures to be evaluated on the quality items than if the indicators demanded a higher specificity of the disclosure. 14 indicators are based on core GRI indicators while seven indicators are based on additional GRI indicators but deemed to be of such a nature that they are applicable for all companies. The disclosure index is thus comprised of 21 indicators that are based on the GRI G3.1, with some modifications to make the indicators more accessible to all companies. As an example, the indicator of waste is only concerned with the weight of waste in this disclosure index, whereas GRI G3.1 also demands disclosure on how it is disposed of.

With a total of 80 companies included in the sample, reports for two years being studied and 21 indicators in the disclosure index, the total number of indicators graded was 3360. When all grading was completed, further consideration made it apparent that the weighting was not equal between the different aspects presented by the GRI. This led to an adjustment where four indicators were excluded from the final total score. Three of these were additional indicators⁹.

Once all indicators were decided upon, the items that represent quality-enhancing characteristics used by Clarkson et al. (2008) was adopted for this study as well. In addition to this, visual aid was introduced as a seventh item. Visual aid is defined as disclosure of information without using actual numbers, e.g. by using bar or pie charts. This was introduced as another dimension that increases quality, which is supported by the reasoning on the reporting principles for quality put forward by GRI G3.1. Performance data presented, item a), represents the quantity. If this item is not fulfilled it is not possible to obtain any further points. Following is a list of all items assessed:

- a) Performance data is presented
- b) Performance data is presented relative to peers/rivals or industry
- c) Performance data is presented relative to previous periods (trend analysis)
- d) Performance data is presented relative to targets
- e) Performance data is presented in both absolute and normalized form
- f) Performance data is presented at a disaggregate level (i.e., plant, business unit, geographic segment)
- g) Performance data is presented using visual aid

⁹ The excluded indicators were influenced by GRI G3.1 EN9, EN13, EN30 and EC2.

As GRI G.3 assigns equal importance to all reporting principles of quality, the index is not weighted and each item reported is assigned 1 point. With 17 indicators and 7 items in the final disclosure index, the maximum total score is 119.

Clarkson et al. (2008) provide no explicit guidance on why the six items applied were supposed to be good measures of quality. The items can however be derived from the GRI reporting principles for quality discussed previously. Item a) is the result of the reporting principles for content, i.e. if a certain matter should be reported on or not. Item b), c) d) and e) can all be derived from the reporting principle of comparability. It is stated that the possibility to compare the performance of a company over time and relative to its objectives as well as to its competitors or other benchmarking companies can enhance the quality of the reporting. Furthermore, a company should report both total numbers as well as ratios to allow for analytical comparisons. Item f) and g) can be derived from the reporting principle of clarity. Clarity is enhanced if information is presented in an understandable and accessible manner to the stakeholders, which can be achieved by for example including graphics and considering the level of aggregation. It is thus clearly stated that visual aid is seen as quality enhancing, why it was decided to introduce it as an additional item in the disclosure index.

The quality measure for each company was obtained by adding all scores to a final quality score. This is the technique used by Clarkson et al. (2008), and it acknowledges that quality can be obtained in two ways. The same score can be obtained either by disclosing on many indicators but not on many items (high score for the item “performance data is presented”, low score or zero for the rest), or by disclosing on fewer indicators but more items (low score for item “performance data is presented”, high score for the rest). This is consistent both with the studies that define quality as a higher extent of reporting, and those studies that define quality as disclosures presenting certain characteristics.

In the hypothetical case where a company reports on all possible indicators for its industry (and thus the quantity-aspect cannot be improved) it is still possible to achieve a higher score on the quality-items for each indicator, given that the company is not already achieving the maximum score on all items. The results showed that no company received the maximum score for 2011 for neither quantity nor quality meaning that there was room for improvement for all companies. Furthermore, no company received the maximum score for 2013 for neither quantity nor quality meaning that no total score was held down by the fact that a company was not “allowed” to improve more due to the fact that not all industries have the possibility to disclose on all indicators.

In the case that it is not possible for a certain industry to report on an indicator, the fact that the companies in the IR sample and the DJSI sample come from the same industries implies that this will have the same effect in both samples. The overall

quality score will thus be punished in the same way for both samples and not affect the comparisons. For results within the IR sample, it is the change over time that is of interest and not the actual scores per company for one specific year. As was discussed above, no company in the IR sample received the maximum score for 2011 meaning that there was room for improvement for all companies.

4.3.3 Legal origin and environmental sensitivity

Within the IR sample, companies were classified as being either shareholder- or stakeholder-focused, as well as being environmentally sensitive or non-sensitive. Based on differing legal and accounting structures, the legal origin of a country represents the type of corporate governance model. Common law countries are assumed to have a shareholder-oriented model, which implies a primary focus on shareholder value maximization. Civil law countries are assumed to have a stakeholder-oriented governance model where companies have responsibilities towards not only the shareholders but towards all stakeholders (Ball et al., 2000; van der Laan Smith et al. 2005). The classification has been conducted in line with the World Factbook 2013-2014 (Central Intelligence Agency, 2014) and can be found in Appendix II. This resulted in 16 (13) companies having a shareholder focus and 22 (25) companies having a stakeholder focus in the IR sample (DJSI sample).

An industry is considered to be environmentally sensitive if the activities involve a higher risk of environmental impact, such as natural resource depletion or pollution (Branco & Rodrigues, 2008). Based on previous studies, companies in the sample that belong to the following industries are classified as environmentally sensitive: mining, oil and gas, chemicals, construction and building materials, forestry and paper, electricity, gas distribution and water supply, and petroleum refining (Branco & Rodrigues, 2008; García & Patten, 2007; Patten, 2002). See Appendix III for further information on all industries included in sample. In line with Cowen et al. (1987) and Patten (2002), SIC-codes retrieved from the Orbis database were used to identify companies in the relevant industries, giving 18 environmentally sensitive companies and 20 non-sensitive companies in each sample. To ensure that no companies were classified incorrectly, a description of the operations of each company was compared to the industry classification according to the SIC-code.

4.3.4 Effectiveness of the content analysis

For a content analysis to be effective, four technical requirements need to be met (Guthrie et al., 2004). First, the categories for the classification must be clearly and operationally defined. By basing the disclosure index on the widely used GRI G3.1, it is made sure that the indicators are specified in such a manner that they are understandable and possible to provide information on.

Second, objectivity is important, which is why it must be clear whether a disclosure belongs to a certain category or not. The specific nature of the quantity indicators minimizes the risk of a disclosure being categorized as belonging to the wrong

indicator. The quality items are very exact in terms of what should be classified as quality (e.g. either data is presented relative to previous years or it is not). Thus, the decision rule regarding what category to place the disclosure in is well specified for both the indicators and quality-items.

Third, the information needs to be quantified. As the disclosure index covers all nine aspects from the GRI environmental performance indicators, all environmental information that is deemed to be relevant by GRI will be quantified in the disclosure index, as they will pertain to a specific indicator. This means that all relevant information disclosed about a company's environmental performance is covered by the disclosure index.

Fourth, it is necessary with a reliable coder. To fulfil this requirement the first reports were coded together by the two authors. In the case of uncertainty regarding the grading of the rest of the reports, the two coders decided on the score together. In combination with the specific nature of the disclosure index, which leaves less room for personal interpretation, consistency between the two coders is assured.

Validity and reliability

The validity of a study refers to how well a test measures what it is supposed to measure. The disclosure index used in this study is based on the GRI, a widespread and well-considered framework for sustainability reporting. The indicators represent all environmental areas in the GRI framework. This means that all relevant disclosures regarding the environment are covered by the disclosure index. Furthermore, the disclosure index measures the quality of reporting taking both the quantity and quality-enhancing characteristics of the disclosure into consideration. This is in line with the two types of previous studies within disclosure research – those that measure quality as the extent of reporting and those that measure quality by the characteristics of the disclosure.

The reliability of a study refers to whether another researcher could perform the same study under the same conditions and get the same results. The use of a disclosure index means that there is a degree of personal opinion when the reports are graded. However, the well specified decision rules generates a “shared meaning” (Gray et al., 1995b), which leaves less room for personal interpretation by the coders. This should minimize the risk that the score attributed to a report is influenced by the researcher's own opinion.

4.4 Statistical testing

In order to verify if the change in environmental disclosure differed between the two groups under investigation, independent sample t-tests were performed. The t-test falls within the group of parametric tests and is used to test a hypothesis about the nature of a population (Newbold et al., 2013). The use of t-tests is common in

previous research about environmental disclosure (see for example Cho & Patten, 2007 and Clarkson et al., 2008).

As described above, the DJSI companies were chosen on the basis of a three digit SIC code in order to make sure that a comparison between the samples would not be significantly disturbed by industry differences. The relative scarcity of companies in certain industries, including the availability of reports, made it hard to control for other factors believed to influence environmental disclosure, such as size or profitability. The samples are therefore considered to be independent (Newbold et al., 2003).

To verify that the effect the research variables have on the dependent variables remains when controlling for other influencing factors, linear multiple regressions were performed as a complement to the t-tests. Multiple regressions have been used in previous research to examine the factors that might influence environmental disclosures (see for example Al-Tuwaijri et al., 2004 and Zeng et al., 2012). The regressions were performed with two different dependent variables and can be expressed with the base regressions below. For certain regressions, some variables have been excluded and two of the three dummy variables for year, environmental sensitivity, and sub-group of the IR sample have been merged to represent a specific sub-group of companies analysed.

$$(1) \quad TD_{it} = \alpha + \beta_{Size} \cdot Size_{it} + \beta_{Lev} \cdot Lev_{it} + \beta_{ROA} \cdot ROA_{it} + \beta_{Y2013} \cdot Y2013_i \\ + \beta_{Envsen} \cdot Envsen_i + \beta_{Share} \cdot Share_i + \beta_{IR(2)} \cdot IR(2)_i + \beta_{DJSI} \cdot DJSI_i + \varepsilon_{it}$$

$$(2) \quad Change \, TD_i = \alpha + \beta_{Size} \cdot Size_i + \beta_{Lev} \cdot Lev_i + \beta_{ROA} \cdot ROA_i \\ + \beta_{Envsen} \cdot Envsen_i + \beta_{Share} \cdot Share_i + \beta_{IR(2)} \cdot IR(2)_i + \beta_{DJSI} \cdot DJSI_i + \varepsilon_i$$

4.4.1 Dependent variables

TD_{it} is the total environmental disclosure score obtained by a company for a specific year. It is the proxy for environmental disclosure quality.

$Change \, TD_i$ is the change in total environmental disclosure score between 2011 and 2013 for a company. It is the proxy for the change in environmental disclosure quality between 2011 and 2013.

4.4.2 Research variables

$IR(2)_i$ is a dummy variable that takes a value of 1 if the company belongs to the IR sample and is a member of DJSI and 0 if otherwise.

$DJSI_i$ is a dummy variable that takes a value of 1 if the company belongs to the control sample of firms included in DJSI and 0 if otherwise.

The two variables are used to answer the question about a potential difference in the change in environmental disclosure quality between companies that have adopted the <IR> Framework and those who have not, taking into consideration that adopting companies might also be members of the DJSI. The variables are thus related to hypothesis 1 and 2. None of the companies in the DJSI sample are taking part in the Pilot Programme or have implemented the <IR> Framework.

Share_i is a dummy variable that takes a value of 1 if the company is domiciled in a country with a common law system and a value of 0 if the company is domiciled in a country with a civil law system. It is related to hypothesis 2, when applying stakeholder theory to assess a change in total environmental disclosure.

Envsen_i is a dummy variable that takes a value of 1 if the company belongs to an environmentally sensitive industry and 0 if otherwise. The variable is related to hypotheses 3 and 4, and answers the question regarding whether environmentally sensitive companies are affected in a different way than non-sensitive companies following an adopting on the <IR> Framework.

4.4.3 Control variables

A set of control variables that have been seen in previous studies to affect the total level of environmental disclosure was included to see if the effect from adopting the <IR> Framework remained. The data for the control variables was retrieved from the Orbis database.

Size_{it} is measured as the natural logarithm of total assets at the end of the year, which has been the most common measurement in similar research (Clarkson et al., 2008; Patten, 2002). Larger companies are assumed to disclose more information than smaller companies since they are more scrutinized by the public and accountable to more shareholders than smaller companies. The results from previous research support the hypothesis of a positive relationship between size and environmental disclosure (Moroney et al., 2011; Patten, 2002). Based on previous research, it is predicted that size will have a positive relationship with the level of environmental disclosure.

Lev_{it} is the leverage of the company. It is measured as the ratio of debt to assets at the end of the year (Branco & Rodrigues et al., 2011; Clarkson et al., 2008). Previous research has received inconclusive results regarding the effect of leverage on environmental disclosure. Clarkson et al. (2008) argued, and got empirical support for, that companies with a higher leverage have a higher monitoring demand and therefore disclose more environmental information. Branco & Rodrigues (2008) argued that companies with high leverage might have closer relationships with their creditors and therefore disclose less. Their results reveal no significant relationship for sustainability disclosures made in annual reports. Based on the inconclusive

results in previous research, a sign of the relationship between leverage and the level of environmental disclosure will not be predicted.

ROA_{it} is a proxy for the profitability of the company. ROA is measured using the net income after tax, in line with Moroney et al. (2011). The advantage with using an accounting-based measure like ROA is that it acknowledges all stakeholder groups, in contrast to market-based measures based on investors' opinions. However, a market-based measure is not dependent on past performance and is less sensitive to earnings manipulation (Branco and Rodrigues, 2008). As accounting-based measures have been more frequently used in previous studies, ROA was chosen as the measure of profitability. Moroney et al. (2012) and Bewley & Li (2000) find no relationship between financial performance and environmental disclosure. Based on the inconclusive results in previous research, a sign of the relationship between profitability and the level of environmental disclosure will not be predicted.

5. Results and Analysis

The level of environmental disclosure has been measured by grading the reports in line with the disclosure index developed in the methodology section. The final total score for each company represents the quality of its environmental reporting. This reporting quality is composed of the extent of disclosure, represented by the item “performance data presented”, and the quality-enhancing characteristics. Furthermore, the indicators are of such a nature that they are hard to mimic for companies with poor environmental performance. An increase in the disclosure score therefore implies an improved environmental performance. After all reports had been graded, two reports were identified as outliers and were excluded from further analysis. Both companies belonged to the IR sample, and for consistency their partners in the DJSI sample were also excluded. The results are therefore based on 38 companies in each sample. It should be kept in mind that the sample size for some tests is relatively small, which might impact the results. Quality is measured as the level of environmental disclosure and will therefore be referred to as the level of environmental disclosure in the discussion of the results.

5.1 Descriptive results

5.1.1 Results from the content analysis

Table 2 presents the results per indicator. The frequency of the indicators, i.e. the percentage of firms reporting on the indicator, shows that the indicators that are most often reported on concern the generated quantity of water, greenhouse gas emissions and waste as well as initiatives to mitigate the environmental impact of products and services. The latter indicator is more frequently reported on, as it does not require any results to be disclosed as opposed to the other indicators regarding initiatives. This result implies that this type of indicator is easy to report on, but difficult for the reader to evaluate. Volume of material used is less reported on, which could be due to the banking industry not reporting any input material for its operations or that material used has been classified as competitive information. The mean scores of the indicators, i.e. the average score for all companies in the sample, show the same pattern between the years and samples. There are no large changes between the years for a certain indicator and the two samples have similar scores on the individual indicators, although DJSI score higher on a majority of the indicators. In general, the indicators that are most frequently reported on are also the ones with the highest mean score. The “main indicator” (usually the quantity indicator) of each area is better reported on than the “sub-indicators”.

Table 3 presents the results per item. The items with the highest score are for both samples, in falling order, “performance data presented”, “relative to previous periods”, and “using visual aid”. The item “performance data presented” should show the highest score as this represents quantity. If an indicator is disclosed but the disclosure is lacking all other items this will be the only item scored. The results

indicate that it was a good choice to include visual aid in the disclosure index, as it was one of the largest contributors to the total score. The item “relative to peers” has the lowest reported mean score, which is in line with Clarkson et al. (2008). This could be due to the fact that it might be difficult to decide on appropriate peers, or that companies simply do not wish to compare themselves to their competitors. As for differences between the samples, the score for item “performance data presented” shows that DJSI reports on more items for both years. The largest difference between the samples can be found for item “on a disaggregate level”, which companies in the DJSI sample use on average twice as many times as companies in the IR sample. The mean total disclosure is low for both years and samples, which is in line with previous studies.

Table 1 gives the descriptive statistics for the total disclosure score (TD), change in total disclosure score (Change TD) and the control variables. It can be seen that the highest value of TD for IR (DJSI) is 42 (42) for 2011 and 47 (38) for 2013. This implies that even the best scoring companies in the total sample have relatively low scores compared to a possible maximum of 119, with the best score corresponding to 39.5 percent. The highest and lowest score for the total sample both pertain to the IR sample. The range of the TD variable is therefore wider for the IR sample than for the DJSI sample.

The change in environmental disclosure differs a lot between the individual companies, as can be seen on the minimum and maximum values. The changes has been positive as well as negative, generating a mean value of 0.32 (1.34) for the IR (DJSI) sample. The wide range between minimum and maximum scores for the two dependent variables implies that the standard deviations are large.

Table 1
Descriptive statistics- all variables

Variable	IR (N=76)				DJSI (N=76)			
	Mean	Std dev	Min	Max	Mean	Std dev	Min	Max
2011								
TD	19.63	10.25	0.00	42.00	23.79	8.05	11.00	42.00
Size	23.68	1.84	18.60	27.33	24.23	1.75	21.34	28.51
Leverage	0.65	0.22	0.09	1.03	0.64	0.21	0.18	0.96
ROA	0.06	-0.02	0.26	0.06	0.07	0.08	-0.01	0.42
2013								
TD	19.95	10.43	1.00	47.00	25.13	6.86	11.00	38.00
Change TD	0.32	4.81	-14.00	11.00	1.34	5.03	-14.00	14.00
Size	23.84	1.93	18.63	27.35	24.29	1.73	21.44	28.40
Leverage	0.67	0.21	0.15	0.97	0.63	0.23	0.16	1.28
ROA	0.05	0.07	-0.04	0.36	0.04	0.07	-0.29	0.16

Table 2**Disclosure index - environmental performance indicators assessed**

	GRI G3.1	Frequency (all obs.)	Mean score 2011		Mean score 2013	
			IR	DJSI	IR	DJSI
1. Materials used by weight or volume	EN1	43%	1.13	1.11	1.05	1.16
2. Percentage or volume of materials used that are recycled input materials	EN2	32%	0.74	0.53	0.45	0.50
3. Total energy consumption by primary energy source	EN3, EN4	74%	1.76	2.68	2.00	2.97
4. Initiatives to increase energy efficiency and the use of renewable energy and the results of these initiatives	EN5, EN6	72%	0.79	1.00	1.16	1.32
5. Total water consumption	EN8	84%	2.68	3.03	2.89	3.05
6. Percentage and/or total volume of water recycled and reused	EN10	32%	0.58	0.61	0.45	0.66
7. Location and size of land in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	EN11	35%	0.42	0.39	0.26	0.42
8. Description of significant impacts of activities, products, and services that might harm biodiversity	EN12	21%	0.21	0.18	0.18	0.26
9. Total greenhouse gas emissions by weight	EN16, 17	93%	3.13	3.87	3.53	4.11
10. Initiatives to reduce greenhouse gas emissions and the results from these initiatives	EN18	71%	0.84	1.26	0.79	1.71
11. NO and SO emissions by type and weight	EN20	53%	1.37	1.66	1.08	1.53
12. Total volume of water released	EN21	40%	0.87	1.16	0.74	1.21
13. Total weight of waste	EN22	80%	2.08	2.58	2.42	2.42
14. Total number and volume of significant spills	EN23	38%	0.37	0.61	0.32	0.55
15. Initiatives to mitigate environmental impacts of products and services	EN26	87%	0.87	1.08	0.89	1.13
16. Monetary value of significant fines and/or total number of non-monetary sanctions for non-compliance with environmental laws and regulations	EN28	58%	0.71	0.74	0.71	0.84
17. Significant environmental impacts of transporting products and other goods and materials used for the organization's operations, and/or transporting members of the workforce	EN29	55%	1.08	1.34	1.08	1.29
Total score			19.63	23.79	19.95	25.13

The table shows the mean score for all indicators assessed for the IR and DJSI sample respectively. Frequency indicates the percentage of firms in the total sample reporting on the indicator

Table 3**Disclosure index - quality items assessed**

	Mean score 2011		Mean score 2013	
	IR	DJSI	IR	DJSI
a) Performance data presented	8.87	10.24	8.71	10.84
b) ... relative to peers	0.11	0.03	0.05	0.11
c) ... relative to previous periods	4.87	5.47	4.71	5.82
d) ... relative to targets	0.97	0.92	1.03	1.05
e) ... in absolute and normalized form	1.32	1.92	1.50	1.89
f) ... on a disaggregate level	1.29	2.63	1.42	2.68
g) ... using visual aid	2.21	2.58	2.53	2.74
Total score	19.63	23.79	19.95	25.13

The table shows the mean score for all items assessed for the IR and DJSI sample respectively. The maximum score is 119

5.1.2 Regressions

The regression 1.1 in table 4, with TD for the total sample as dependent variable, demonstrates that the positive relationships with size and environmental sensitivity verified in previous research holds for this thesis as well. The coefficient for size is positive for the total sample as well as all regressions performed on the IR sample, but is only significant for the total sample. Profitability and leverage does not have a significant impact on TD. The regression 1.1 has an adjusted R^2 of 17.8 percent. Although seemingly low, it is not uncommon when predicting the level of social and environmental disclosure (see for example Bewley & Li, 2000 and Alnajjar, 2000).

The results from regression 1.1 reveal that environmentally sensitive companies disclose significantly more information than non-sensitive companies, which is in line with previous research and predictions made in this thesis. The coefficient has a value of 4.20 (significant on a one percent one-tailed level), indicating a rather large difference in TD between the groups. Furthermore, companies that have their legal origin in a shareholder-oriented country disclose less environmental information than companies with their legal origin in a stakeholder-oriented country, which is in line with the prediction. The coefficient has a value of -1.47 for shareholder focused companies, but it is however not significant. Additionally, the regression verifies that companies included in the DJSI sample disclose more environmental information than companies in the IR sample, with a coefficient of 3.60 (significant on a one percent one-tailed level). As the voluntary disclosure theory predicts that good environmental performers should disclose more environmental information than bad performers, the results indicate that inclusion in the DJSI implies a superior environmental performance. The results for regression 1.2 in table 4, performed on the observations for the IR sample alone, yield similar results as regression 1.1, although the control variables show no significant relationship with TD.

For the regressions in table 5, with Change TD as dependent variable, the values for 2011 are used for the control variables. The regressions demonstrate that size has a positive relationship with the change in total environmental disclosure. The relationship is significant for the IR sample but not for the total sample. Profitability has no significant relationship with the change in total environmental disclosure for neither the total sample nor the IR sample. On the contrary, leverage has a significant negative relationship with the total sample as well as the IR sample. This negative relationship implies that companies with a higher leverage disclose less environmental information, which could be due to the fact that companies with a higher debt-to-assets ratio have closer relationships with their creditors and therefore chose other ways than disclosure to communicate environmental information. This finding is in line with Branco & Rodrigues (2008). The control variables commonly used in previous research to explain the level of total disclosure is seen to have an impact on the change in total environmental disclosure, with the exception of profitability.

Table 4
Multiple regressions- TD

	Predicted sign	Dependent variables							
		TD (Total sample)		TD (IR sample)		TD (IR sample)		TD (IR sample)	
		(1.1)	t-Stat.	(1.2)	t-Stat.	(1.3)	t-Stat.	(1.4)	t-Stat.
<i>N</i>		152		76		76		76	
Intercept		-5.59		-1.816		-1.91		-6.30	
Size	(+)	1.27***	2.661	0.65	0.892	1.14	1.510	1.14	1.510
ROA a.t.		-11.08	-0.982	-11.62	-0.586	-4.00	-0.193	-4.00	-0.193
Leverage		-7.87*	-1.954	1.80	0.282	-2.70	-0.416	-2.70	-0.416
Y2013	(+/-)	0.51	0.359	0.04	0.016				
Envsen	(+)	3.55***	2.485	5.88***	2.497				
Share	(-)	-2.28*	-1.540	-0.62	-0.247	-2.44	-0.946	-2.44	-0.946
DJSI	(+)	3.60***	2.525						
IR(2)	(+)			7.14***	2.788				
Envsen*Y2011								4.39	1.305
Envsen*Y2013						-0.02	-0.005	4.37	1.309
Nonsen*Y2011						-4.39	-1.305		
Nonsen*Y2013						-4.11	-1.214	0.278	0.086
Adj. R2		0.139		0.118		0.017		0.017	

***, ** and * represents that the results are significant on 1, 5 and 10 percent respectively. Significance levels are one-tailed where one sign is predicted and two-tailed otherwise

Table 5
Multiple regressions- Change TD

	Dependent variables									
	Change TD (Total sample)		Change TD (Total sample)		Change TD (IR sample)		Change TD (IR sample)		Change TD (IR sample)	
	(2.1)	t-Stat.	(2.2)	t-Stat.	(2.3)	t-Stat.	(2.4)	t-Stat.	(2.5)	t-Stat.
<i>N</i>	76		76		38		38		38	
Intercept	-1.89		-3.55		-20.85		-18.78		-18.80	
Size	0.26	0.612	0.40	0.977	1.08**	2.103	0.93*	1.724	0.93*	1.724
ROA a.t.	-4.85	-0.518	-3.11	-0.335	7.04	0.476	4.05	0.265	4.05	0.265
Leverage	-7.31**	-2.168	-8.30**	-2.523	-8.21*	-1.984	-7.32*	-1.708	-7.32*	-1.708
Envsen	-0.27	-0.236	-0.51	-0.442	-0.05	-0.031				
Share	0.78	0.655	0.50	0.422	1.39	0.410	1.83	1.049	1.83	1.049
IR(2)	2.17	1.255								
DJSI	1.80	1.285	0.78	0.677						
Envsen*IR(1)									0.025	0.011
Envsen*IR(2)							2.42	0.984	2.44	0.890
Nonsen*IR(1)							-0.03	-0.011		
Nonsen*IR(2)							1.49	0.704	1.51	0.641
Adj. R2	0.027		0.019		0.046		0.023		0.023	

***, ** and * represents that the results are significant on 1, 5 and 10 percent respectively. Significance levels are two-tailed

5.2 Hypothesis testing

5.2.1 Hypothesis H1 and H2

As discussed in the method, slightly less than half of the companies in the IR sample are also members of DJSI. Two sub-groups are therefore created, one with the 22 IR-companies that are not members of DJSI [IR(1)] and one with the 16 IR-companies that are members of DJSI [IR(2)]. A visual presentation of the group classification can be found in figure 1, Appendix IV. Due to their inclusion in DJSI, the environmental reporting of companies in IR(2) will not only be influenced by the adoption of the <IR> Framework but also by their membership in DJSI. Given the public's increased awareness of the companies' impact on the environment, it is not plausible that a new sustainability trend will affect the level of disclosure negatively, i.e. the effect from a trend will be positive. In the case of a new trend in sustainability reporting, the companies that are members of DJSI will adapt to this trend and their change in environmental disclosure will be attributable not only to the adoption of the <IR> Framework but also the sustainability trend. Therefore, a change in the level of environmental disclosure for IR(2) will always be more positive than the change for IR(1). Furthermore, companies in IR(2) are expected to adapt quicker to the <IR> Framework as they are accustomed to work with sustainability and already have an interest in the area. This means that IR(2) should show a more positive change in the level of disclosure, thus the t-test is assessed on a one-tailed significance level. It is tested if there is a significant difference between the mean change in the level of environmental disclosure for IR(1) and IR(2). As predicted, the t-test showed on a ten percent significance level that IR(2)-companies had a larger positive change in the level of environmental disclosure. The test can be found in table 6, panel A.

For this reason, the hypotheses 1 and 2 are tested for each sample individually. T-tests were performed to evaluate if the mean TD differed between 2011 and 2013 for the two groups. The tests can be found in table 6, panel B and C. Neither IR(1) nor IR(2) experienced a significant change over time, meaning that the empirics did not provide any support for the hypotheses. Adoption of the <IR> Framework has not affected the level of environmental disclosure since there is no significant difference between the years prior to and after adoption.

H1, which was based on voluntary disclosure theory, predicted that all adopting companies would get a better environmental performance, which would lead to an increase in their level of environmental disclosure. The results of the t-tests showed no significant change in the level of disclosure prior to and after the adoption of the <IR> Framework. As the adopting companies showed no increase in their level of disclosure, voluntary disclosure theory states that their environmental performance has not been improved. This implies that adoption of the <IR> Framework does not lead to an enhanced environmental performance.

H2, which was based on stakeholder theory, predicted that shareholder-focused companies would maintain the same level of environmental disclosure while stakeholder-focused companies would decrease their level of environmental disclosure. In order to evaluate the predictions made in line with stakeholder theory, it was tested how shareholder-focused and stakeholder-focused companies were affected individually. The companies in sub-groups IR(1) and IR(2) were therefore divided into shareholder-focused and stakeholder-focused companies. A visual presentation of the group classification can be found in figure 1, Appendix IV. First, the shareholder-focused groups in IR(1) and IR(2) were tested individually to see if there was any significant difference in the mean level of the environmental disclosure between 2011 and 2013. The tests can be found in table 7, panel A and B. The same tests were performed for the stakeholder-focused groups in IR(1) and IR(2). The tests can be found in table 7, panel C and D. Neither test gave significant results, implying that adoption of the <IR> Framework did not affect neither shareholder-focused nor stakeholder-focused companies. Both shareholder-focused companies and stakeholder-focused companies maintained their level of environmental disclosure after adoption of the <IR> Framework.

The prediction made based on stakeholder theory can therefore be confirmed for shareholder-focused companies, as they maintained the level of environmental disclosure. This implies that the environmental disclosure for shareholder-focused companies is not enhanced by adoption of the <IR> Framework, due to its focus on shareholders and its lack of specific environmental indicators. However, stakeholder theory did not predict the effect on stakeholder-focused companies correctly. The stakeholder-focused companies managed to maintain their level of environmental disclosure although the <IR> Framework lacks environmental indicators. This indicates that they perceive a need for legitimacy from their stakeholders that are still holding them accountable for their impact on the environment. They therefore continue to provide their stakeholders with disclosures even though it does not have to be done in order to be in compliance with the <IR> Framework.

An increased environmental performance for the companies in the DJSI sample would according to voluntary disclosure theory lead to an increase in their level of environmental disclosure. However, they already have the environmental performance necessary for inclusion in the index and do therefore not have any explicit incentives to enhance their performance. The level of environmental disclosure should not decrease either, since this would mean that they are no longer qualified for inclusion in the index. Thus, the only factor that could impact their level of environmental disclosure is a new sustainability reporting trend. A t-test performed on their mean level of environmental disclosure for 2011 and 2013 showed no significant difference. The tests can be found in table 8, panel A. This implies that their level of disclosure has not changed between the years and thus confirms the non-presence of a sustainability trend.

To analyse if adopting and non-adopting companies have experienced different changes in their mean level of environmental disclosure, a t-test was performed comparing IR and DJSI. As the t-test revealed a difference between IR(1) and IR(2), the test between IR and DJSI had to take this into consideration. The DJSI sample was therefore split into DJSI(1) and DJSI(2) to construct two sub-groups with the partner companies for IR(1) and IR(2). As the effect from adopting the <IR> Framework is uncertain, and the DJSI sample showed no change in the level of environmental disclosure, the t-test is assessed on a two-tailed significance level. The t-tests showed that there was no significant difference in the change in the level of disclosure between IR(1) and DJSI(1) nor between IR(2) and DJSI(2). This means that the change in the level of environmental disclosure for the companies that have adopted the <IR> Framework does not differ from the change in the level of environmental disclosure for non-adopting companies.

Regressions

To validate the results from the t-tests regarding H1 and H2, three regressions with two different dependent variables were performed. Regression 2.1 was performed with Change TD as dependent variable. The t-tests indicated that a difference existed between IR(1) and IR(2). There is no support for such a difference in regression 2.1, as the value of the coefficient for IR(2) is not significant. This implies that the IR(1) and IR(2) are affected in the same way from an adoption of the <IR> Framework and further testing will therefore be performed on the IR sample as a whole.

Regression 1.2 was performed on the IR sample with the total level of environmental disclosure as dependent variable. The results reveal that there is no significant difference in level of environmental disclosure between 2011 and 2013 for adopting companies since the coefficient for Y2013 is positive but not significant. This is in line with the results from the t-tests and indicates that adoption of the <IR> Framework has no effect on the level of environmental disclosure. Regression 2.3 was performed on the IR sample with Change TD as dependent variable. The value of the coefficient for Share is not significant, which implies that the effect from adopting the <IR> Framework is the same for shareholder-focused and stakeholder-focused companies. Furthermore, as can be seen in regression 2.2, there is no significant difference between the DJSI sample and the IR sample.

As the results from the regressions performed on the IR sample as a whole are in line with the results from the t-tests, all conclusions drawn for H1 and H2 are valid also when conducting regressions that are controlling for other potential influencing factors.

Summary H1 and H2

It can be concluded that adoption of the <IR> Framework has not impacted the level of environmental disclosure. The adopting companies were categorized into subgroups based on membership in DJSI to avoid misleading results due to the effect

from this membership. None of the groups IR(1) and IR(2) showed any effect in the level of environmental disclosure following adoption of the <IR> Framework. The predictions from stakeholder theory were confirmed for shareholder-focused companies but not for stakeholder-focused companies. The DJSI sample showed no change, meaning that there were no sustainability trends that affected the environmental reporting substantially during the time period. This implies that the lack of change in level of environmental disclosure for the IR sample pertains to the adoption of the <IR> Framework, and not to the fact that a potential negative effect has been cancelled out by a sustainability trend affecting the environmental disclosure positively. The change in the level of environmental disclosure resulting from adoption of the <IR> Framework does not differ from the change in the level of environmental disclosure for non-adopting companies.

Table 6
Two sample independent t-test - Difference between IR(1) and IR(2)

	N	Mean score	Std dev	t-Stat
<i>Panel A</i>				
Change in total environmental disclosure				
IR(1)	22	-0.77	4.70	
IR(2)	16	1.81	4.70	-1.675*
<i>Panel B</i>				
Total environmental disclosure for IR(1)				
2011	22	17.50	10.58	
2013	22	16.73	10.22	0.246
<i>Panel C</i>				
Total environmental disclosure for IR(2)				
2011	16	22.56	9.32	
2013	16	24.38	9.27	-0.552

***, **, * represent significance levels at 1%, 5% and 10%, respectively. Panel A is tested for a one-sided significance while the others are tested for a two-sided significance

Table 7
Two sample independent t-test - Difference between shareholder- and stakeholder-focused companies

	N	Mean score	Std dev	t-Stat
<i>Panel A</i>				
Total environmental disclosure for shareholder IR(1)				
2011	12	13.58	10.483	
2013	12	13.00	9.506	0.143
<i>Panel B</i>				
Total environmental disclosure for shareholder IR(2)				
2011	4	27.75	12.606	
2013	4	31.50	14.434	-0.391
<i>Panel C</i>				
Total environmental disclosure for stakeholder IR(1)				
2011	10	22.20	9.041	
2013	10	21.20	9.624	0.239
<i>Panel D</i>				
Total environmental disclosure for stakeholder IR(2)				
2011	12	20.83	7.872	
2013	12	22.00	5.970	-0.409

***, **, * represent two-tailed significance levels at 1%, 5% and 10%, respectively

Table 8
Two sample independent t-test - Difference between IR and DJSI

	N	Mean score	Std dev	t-Stat
<i>Panel A</i>				
Total environmental disclosure for DJSI				
2011	38	23.79	8.05	
2013	38	25.13	6.86	-0.782
<i>Panel C</i>				
Change in total environmental disclosure				
IR(1)	22	-0.77	4.70	
DJSI(1)	22	1.05	4.49	-1.312
<i>Panel D</i>				
Change in total environmental disclosure				
IR(2)	16	1.81	4.70	
DJSI(2)	16	1.75	5.83	0.033

***, **, * represent two-tailed significance levels at 1%, 5% and 10%, respectively

5.2.2 Hypothesis H3 and H4

Hypothesis 3 and 4 predicted what effect an adoption of the <IR> Framework has on the level of environmental disclosure for environmentally sensitive and non-sensitive companies. T-tests were performed to evaluate how environmentally sensitive companies and environmentally non-sensitive companies were affected individually. As previous tests showed that companies in IR(1) and IR(2) responded differently to the <IR> Framework, the environmentally sensitive companies were divided into two groups with IR(1) and IR(2) companies respectively. The same categorization was done for the environmentally non-sensitive companies. A visual presentation of the group classification used in the hypothesis testing can be found in figure 2, Appendix IV. A t-test was performed on the change in environmental disclosure for the environmentally sensitive companies to see if there was a difference between environmentally sensitive companies from IR(1) and IR(2). The test got no significant result, implying that all environmentally sensitive companies have reacted in the same way. When the same test was performed for non-sensitive companies, the same conclusion was drawn. The tests can be found in table 9, panel A and B. This means that hypothesis 3 and 4 can be tested on the total IR sample, giving more robust results due to a larger sample size. A visual presentation of the new group classification can be found in figure 3, Appendix IV.

For environmentally sensitive companies, the t-test to evaluate a change over time did not show a significant result. The test can be found in table 9, panel C. This implies that environmentally sensitive companies have not changed their level of environmental disclosure after adoption of the <IR> Framework. For environmentally sensitive companies, the empirics provide support for H3 but not for H4. This indicates that environmentally sensitive companies perceive the need for legitimacy from the public that is still holding them accountable for their impact on the environment. They therefore continue to disclose the same amount of environmental information even though the <IR> Framework is focused on disclosing information to shareholders and lacks specific environmental indicators. The prediction based on

legitimacy theory is therefore confirmed. Furthermore, their environmental performance has not improved, as they are not disclosing more environmental information than before. Voluntary disclosure theory implies that their threshold for disclosure is very low which means that even a minor improvement of the environmental performance would warrant a disclosure.

For environmentally non-sensitive companies, the t-test to evaluate a change over time did not show a significant result either. The test can be found in table 9, panel D. This means that non-sensitive companies did not change their level of environmental disclosure after adoption of the <IR> Framework. For environmentally non-sensitive companies, the empirics provide support for both H3 and H4. This indicates that they continue to disclose environmental information at a low level and that adoption of the <IR> Framework has not provided them with a reason to increase their level of environmental disclosure, as the <IR> framework is focused on shareholders and does not provide specific environmental indicators. Furthermore, their environmental performance has not improved to such a level that it warrants the cost of disclosure. Their threshold for disclosure is higher than for environmentally sensitive companies, meaning that there could have been an improvement in their environmental performance but that it was not good enough to warrant the cost of disclosure.

Taking both environmentally sensitive and non-sensitive companies into consideration, the empirics provide support for H3 but not for H4. Finally, a t-test was performed to see if the change in the level of disclosure differed for environmentally sensitive and non-sensitive companies. The test can be found in table 9, panel E. The test showed no significant results, implying that there is no difference in the affect of adopting the <IR> Framework between environmentally sensitive and non-sensitive companies.

Regressions

To validate the results from the t-tests regarding H3 and H4, three regressions with two different dependent variables were performed. The results from regression 2.4 indicate that for environmentally sensitive companies, there is no difference between IR(1) and IR(2), as the variable $Envsen*IR(2)$ is not significant. This implies that $Envsen*IR(2)$ is not significantly different from the base group $Envsen*IR(1)$. As can be seen in regression 2.5, the same result was obtained for non-sensitive companies. The regression can therefore be performed for the IR sample as a whole.

Regression 1.3 and 1.4 evaluates how environmentally sensitive and non-sensitive companies were affected individually. The regressions were performed with Change TD as dependent variable. Regression 1.3 shows that environmentally sensitive companies did not experience a change between the years, as $Envsen*Y2013$ is not significantly different from the base group $Envsen*Y2011$. As can be seen in regression 1.4, the same result was obtained for non-sensitive companies. Adoption of the <IR> Framework does not affect the companies differently with regard to their

environmental sensitivity and the conclusions drawn for H3 and H4 are therefore valid also when testing the hypotheses with regressions, controlling for other potential influencing factors.

Summary H3 and H4

The effect from adopting the <IR> Framework does not differ with respect to environmental sensitivity as environmentally sensitive and non-sensitive companies are affected in the same way. The prediction made in line with legitimacy theory was correct for environmentally sensitive companies as they continued to provide their stakeholders with the same amount of environmental information as prior to adoption. Furthermore, they did not improve their environmental performance at all while non-sensitive companies did not improve their performance to such a level that it was disclosed.

Table 9
Two sample independent t-test - Difference between environmentally sensitive and non-sensitive companies

	N	Mean score	Std dev	t-Stat
<u>Panel A</u>				
Change TD Environmentally sensitive				
IR(1)	12	-0.75	5.74	
IR(2)	6	2.17	3.66	-1.126
<u>Panel B</u>				
Change TD Environmentally non-sensitive				
IR(1)	10	-0.80	3.36	
IR(2)	10	1.60	5.40	-1.193
<u>Panel C</u>				
TD Environmentally sensitive IR				
2011	18	21.94	8.71	
2013	18	22.17	8.36	-0.078
<u>Panel D</u>				
TD Environmentally non-sensitive IR				
2011	20	17.55	11.27	
2013	20	17.95	11.85	-0.109
<u>Panel E</u>				
Change in total environmental disclosure IR				
Environmentally sensitive	18	0.22	5.22	
Non-sensitive	20	0.40	4.55	0.112

***, **, * represent significance levels at 1%, 5% and 10%, respectively. The significance levels are one-tailed for panel A and B and two-tailed for the others

5.3 Critical discussion about the <IR> Framework

As was described in section 2.1.3, the <IR> Framework does not provide any specific environmental indicators. Furthermore, companies reporting according to the <IR> Framework should only report the impact the company has on the environment if it will affect their own value creation. IIRC has decreased its focus on sustainability over time, and today, improved sustainability reporting and performance are merely side effects from a successful implementation of integrated thinking. This decreased focus on sustainability seems to have happened gradually over time and has not been clearly communicated. It is therefore argued that an adoption of the <IR> Framework is still perceived as a sign of commitment to sustainability issues.

The results from the grading of the environmental information disclosed by the adopting companies reveal that the <IR> Framework has no effect on the environmental reporting or environmental performance. This is not in line with the statement from IIRC that integrated thinking will “*act as a force for financial stability and sustainability*”. At the time when IIRC was founded and the Pilot Programme was initiated, the <IR> Framework was promoted as a framework for accounting for sustainability and that it would help adopting companies make better decisions about their resource consumption. Since the results of this study imply that environmental performance has not been enhanced for the adopting companies, there is no evidence of any reduction in their resource consumption and the statement from the IIRC was therefore an empty promise. Those companies that adopted the <IR> Framework for its beneficial effects on sustainability have not gotten the positive outcome regarding sustainability that was implied by IIRC.

Furthermore, the <IR> Framework can work as a form of window-dressing for companies that are not engaged in sustainability questions. The adopting companies are associated with the positive perception of the <IR> Framework regarding sustainability without having to actually make an effort to decrease their negative impacts on the environment. Additionally, it is convenient for companies with a large environmental impact to only have to disclose their negative impacts that affect their own value creation. This means that they are not obliged to disclose their full environmental impact. The <IR> Framework therefore presents these companies with an opportunity of presenting themselves to the public in a more positive light. The question is therefore whether the <IR> Framework benefits other stakeholder groups than providers of financial capital.

Finally, as was evidenced in section 2.1.3, p.13, the <IR> Framework does not provide any metrics on how to measure value or instructions on how to achieve connectivity. It is therefore questionable if even the most engaged companies could be successful in implementing integrated thinking and the <IR> Framework.

5.4 Sensitivity analysis

To validate the results and limit the risk that incorrect conclusions are drawn, a set of tests taking additional factors into consideration was performed. First, the normality of the data was assessed. Second, all t-tests performed above were repeated as Mann-Whitney U-tests. Third, a t-test was performed to take into consideration that some companies in the IR sample joined the Pilot Programme at a later stage than others. Fourth, an adjustment was made to the dummy variable for environmentally sensitive companies. The data was also checked for autocorrelation, heteroscedasticity and multicollinearity.

5.4.1 Normality test of data

One of the assumptions for the t-test is that the variable is normally distributed. Shapiro-Wilk tests, tests of skewness and kurtosis as well as a visual inspection of histograms, normal Q-Q plots and box plots were performed to assess the normality of TD as well as Change TD. The tests indicate that the variable for total level of disclosure is approximately normally distributed. The change in total disclosure is approximately normally distributed for the IR and DJSI samples individually. The whole sample taken together is not normally distributed according to the Shapiro-Wilks test statistic, this is however taken into consideration by performing Mann-Whitney U-tests.

5.4.2 Mann-Whitney U-tests

When the sample sizes get smaller, the t-test becomes more sensitive to the assumption of a normal distribution. Since the assumption of normality can be questioned for the dependent variables and since the sample sizes are rather small, Mann-Whitney U-tests were performed as a robustness test of the results from the t-tests. The Mann-Whitney U-test is a non-parametric test that does not require the dependent variable to be normally distributed. Furthermore, the test is less sensitive to outliers since it is a rank-based test. The results from the Mann-Whitney U-tests can be found in Appendix V. All Mann-Whitney U-tests confirm the results from the corresponding t-tests. The conclusions drawn from all hypotheses are therefore still valid.

5.4.3 Early and late adopters

Slightly less than half of the IR companies have been members of the Pilot Programme since it was launched in September 2011. The rest of the companies in the sample have joined the Pilot Programme at a later stage. The progress of adoption of the <IR> Framework might therefore differ between early and late adopters. Based on a review of the 2013 annual reports of all participants of the Pilot Programme, it is however established that the all companies in the IR sample have implemented the <IR> Framework for their financial year 2013. A t-test indicates that there is no significant difference in the change of total environmental disclosure between early and late adopters, why it is concluded that this fact has not disturbed the results. The results of the test can be found in table 11, Appendix V.

5.4.4 Environmental sensitivity

Industries where the companies' operations do not have a direct impact on the environment, but where either their products have an environmental impact (e.g. car manufacturers) or where they buy products that had an environmental impact when they were produced (e.g. department stores)¹⁰ is argued to have an indirect environmental impact. Companies from these industries were excluded from the sample to achieve two more distinct groups. The t-tests in table 9 were therefore

¹⁰ The excluded industries have SIC-codes 202, 232, 371, 400, 431, 478, and 531. See Appendix III for names.

repeated with the adjusted grouping and can be found in table 12, Appendix V. All tests were insignificant and the results and conclusions drawn from H3 and H4 are therefore still valid.

5.4.5 Further tests of the quality of the data

The data has furthermore been tested for heteroscedasticity, multicollinearity and autocorrelation. The Durbin-Watson test verifies that the variable for total level of disclosure does not suffer from autocorrelation neither for the whole sample nor for the IR sample in isolation, as the test statistic exceeds the upper limit. A visual inspection of the histograms with standardized residuals, normal P-P plots and scatterplots with standardized residuals and standardized predicted values indicates that neither TD nor Change TD is heteroscedastic. Furthermore, as can be seen in table 13, Appendix IV, there are no strong correlations between the independent variables that would indicate multicollinearity.

6. Conclusion

6.1 Conclusion and discussion

This thesis evaluated what effect an adoption of the <IR> Framework has on the quality of a company's environmental disclosure. The quality of environmental disclosure made by adopting companies prior to and after implementation of the <IR> Framework was evaluated by performing a content analysis based on a disclosure index, constructed in line with previous research.

The results provide no evidence for any impact of the <IR> Framework on the quality of environmental disclosure. Furthermore, the change in environmental disclosure does not differ between adopting and non-adopting companies. According to the voluntary disclosure theory, the unchanged quality of environmental disclosure indicates that adoption of the <IR> Framework has not resulted in an improved environmental performance. Additionally, predictions made in line with stakeholder theory were correct for shareholder-focused companies but not for stakeholder-focused companies. This implies that stakeholder-focused companies continue to provide environmental information to their stakeholders after adoption, probably due to a perceived need for legitimacy, as the public holds companies accountable for their environmental impact.

The thesis also evaluated if the effect from adopting the <IR> Framework differs with respect to environmental sensitivity. The results provide no evidence for companies in environmentally sensitive and non-sensitive industries changing their quality of environmental disclosure in a differing way following an adoption of the <IR> Framework. The prediction made in line with legitimacy theory was correct for environmentally sensitive companies, which continued to provide their stakeholders with environmental information after adoption of the <IR> Framework despite the focus on shareholders and the lack of specific environmental indicators in the <IR> Framework. It is concluded based on the voluntary disclosure theory that the environmental performance of environmentally sensitive companies has not improved, while for non-sensitive companies it has not improved to such a level that it warranted the cost of disclosure.

As evidenced by the results, the <IR> Framework had no effect on the quality of environmental disclosure. Although the <IR> Framework lacks environmental indicators, companies continued to provide environmental information on the same level as prior to adoption. Since the quality of environmental disclosure has not increased, adoption of the <IR> Framework has not lead to an improved environmental performance. If a company wants to implement a framework that promotes enhanced sustainability reporting and leads to an improved environmental performance, the company should consider other options.

It should be noted that implementation of a new framework and introduction of integrated thinking is a process that could be assumed to take some time for the companies to complete. It might therefore be too early to see the effects from an adoption of the <IR> Framework and to draw any definite conclusions about the implications of the <IR> Framework on environmental reporting. However, the results of this study indicate that the <IR> Framework has no positive impacts on neither environmental reporting nor performance.

6.2 Limitations and generalizability of the study

The choice to evaluate the reports through a disclosure index comes with a certain number of limitations, which have been thoroughly discussed in the methodology section. These are general limitations of studies that use content analysis, which is the predominant method in studies on corporate social disclosure. Additionally, the disclosure index in this study does not evaluate what the disclosure actually communicates about the environmental performance. This implies that an improved environmental performance that only results in the company disclosing a different number, e.g. lower emissions, will not be reflected in the index and in the discussion about the effect of the <IR> Framework on the environmental performance of a company.

The generalizability of a study refers to whether the results from the study can be extended to a larger population. Even though this study includes a majority of the adopting companies, the sample size of adopting companies is small due to the <IR> Framework being recently released. A smaller sample size means that the overall results are more affected by the result of an individual company. Therefore, to be able to generalize the findings of the effects on environmental reporting from adopting the <IR> Framework, it is desirable to study a larger sample of adopting companies.

6.3 Suggestions for future research

The results in this thesis show that adoption of the <IR> Framework does not affect the quality of environmental disclosure. However, only a short period of time has passed since the <IR> Framework was released and it is therefore proposed to repeat the study in a few years. This would give the adopting companies a longer time to adapt their reporting and to implement integrated thinking. It would also provide IIRC with the opportunity to clarify how connectivity should be achieved and provide metrics to use for the measurement of value. Such a study could determine if the lack of effect from adoption that is found in this study is because the <IR> Framework does not have an effect on the quality of environmental reporting, if the companies did not have enough time to implement the framework, or if the implementation has been hindered by the lack of instructions and metrics on the part of IIRC. The scope could also be broadened to include all three areas of sustainability reporting instead of focusing on the environment. A final research topic in this field would be to study if and how the companies that adopt the <IR> Framework change the way they are working within the organization. Adopting the <IR> Framework entails that the

company should not only report according to the framework but also implement integrated thinking. This would be interesting to evaluate, as it would bring clarity to the question whether companies fully commit to the concept of integrated reporting or merely adopt the <IR> Framework in order to be associated with what has been called the key to sustainable development.

Over time, IIRC has decreased its focus on sustainability. A qualitative study on how the development from the foundation of IIRC to the organization that it is today would therefore be of much interest. Specific questions that are proposed for further study are to investigate the decision-making process from the foundation of the IIRC until the release of the final <IR> Framework, and what the rationale behind the shift of focus was. Such a study would give insights into what shaped the <IR> Framework as well as how a standard setting organization develops its framework over time.

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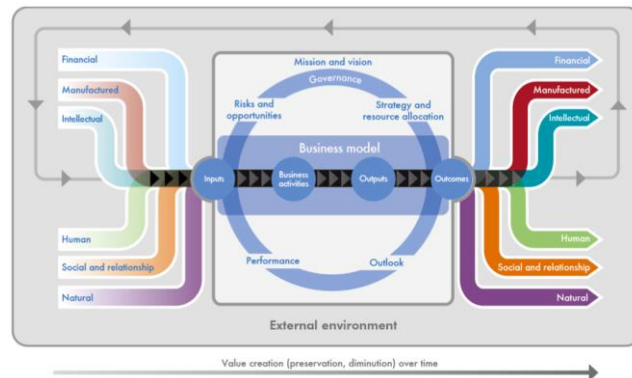
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Appendix I

Figure 1: The value creation process
The International <IR> Framework, 2013



Principal question for each content element

A. Organizational overview and external environment

What does the organization do and what are the circumstances under which it operates?

B. Governance

How does the organization's governance structure support its ability to create value in the short, medium and long term?

C. Business model

What is the organization's business model?

D. Risks and opportunities

What are the specific risks and opportunities that affect the organization's ability to create value over the short, medium and long term, and how is the organization dealing with them?

E. Strategy and resource allocation

Where does the organization want to go and how does it intend to get there?

F. Performance

To what extent has the organization achieved its strategic objectives for the period and what are its outcomes in terms of effects on the capitals?

G. Outlook

What challenges and uncertainties is the organization likely to encounter in pursuing its strategy, and what are the potential implications for its business model and future performance?

H. Basis of presentation

How does the organization determine what matters to include in the integrated report and how are such matters quantified or evaluated?

Appendix II

Common law / Shareholder	IR(1)	IR(2)	DJSI
Australia	-	2	3
Canada excl. Quebec	1	-	1
Hong Kong	1	-	-
India	-	-	1
New Zealand	1	-	-
Singapore	1	-	2
South Africa	4	1	-
Sri Lanka	1	-	-
United Kingdom	1	1	3
United States of America	2	-	3
	12	4	13

Civil law / Stakeholder	IR(1)	IR(2)	DJSI
Brazil	5	1	-
Chile	1	-	-
Colombia	-	-	2
Denmark	-	1	1
Finland	-	-	1
France	-	1	1
Germany	1	1	3
Italy	1	2	2
Japan	1	-	1
Netherlands	-	1	2
Portugal	-	-	1
Quebec	-	-	2
Republic of Korea	-	1	3
Russian Federation	1	-	-
Spain	-	3	4
Sweden	-	1	-
Switzerland	-	-	1
Thailand	-	-	1
	10	12	25

Appendix III

Environmentally sensitive		# of companies
Industry	SIC-code	in each sample
Gold and silver ores	104	1
Crude petroleum and natural gas	131	1
General building contractors - residential	152	1
Millwork, veneer, plywood, and structural wood	243	1
Drugs	283	3
Soap, detergents, and cleaning preparations; perfumes cosmetics, and other toilet preparations	284	2
Petroleum refining	291	1
Miscellaneous products of petroleum and coal	299	1
Cement, hydraulic	324	1
Electric services	491	5
Gas production and distribution	492	1
		<hr/> 18

Environmentally non-sensitive		# of companies
Industry	SIC-code	in each sample
Dairy products	202	1
Men's and boys' furnishings, work clothing and allied garments	232	1
Motor vehicles and motor vehicle equipment	371	2
Railroad transportation	400	1
United States postal service	431	1
Miscellaneous services incidental to transportation	478	1
Communications services, not elsewhere specified	489	1
Department stores	531	1
Commercial banks	602	4
Federal and federally-sponsored credit agencies	611	1
Insurance carriers	630	1
Real estate agents and managers	653	1
Land subdividers and developers	655	1
Miscellaneous investing	679	1
Computer programming, data processing, and other computer related services	737	2
		<hr/> 20

Appendix IV

Figure 1

Visual presentation of group classification: H1 and H2

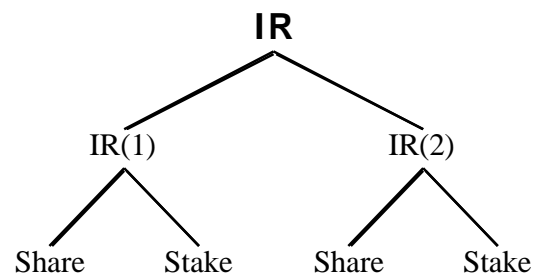


Figure 2

Visual presentation of group classification: H3 and H4

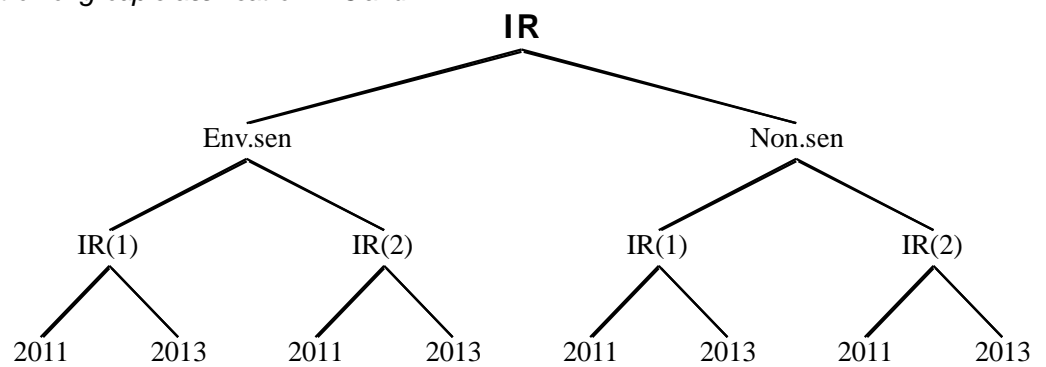
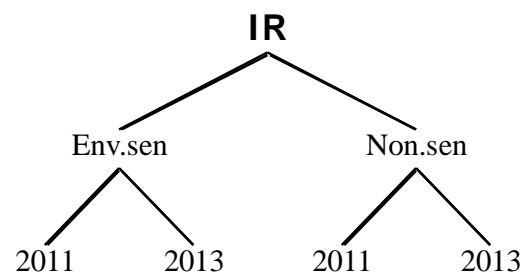


Figure 3

Visual presentation of group classification: H3 and H4



Appendix V

Table 10
Corresponding Mann-Whitney U-test for all t-tests in table 6, 7, 8, and 9

	N	Mean rank	Mann-Whitney U
<u><i>Panel A</i></u>			
Change in total environmental disclosure			
IR1	22	17.23	
IR2	16	22.63	126.000
<u><i>Panel B</i></u>			
Total environmental disclosure IR1			
2011	22	22.91	
2013	22	22.09	233.000
<u><i>Panel C</i></u>			
Total environmental disclosure IR2			
2011	16	16.03	
2013	16	16.97	120.500
<u><i>Panel D</i></u>			
TD shareholder IR(1)			
2011	12	12.50	
2013	12	12.50	72.000
<u><i>Panel E</i></u>			
TD shareholder IR(2)			
2011	4	4.00	
2013	4	5.00	6.000
<u><i>Panel F</i></u>			
TD stakeholder IR(1)			
2011	10	10.85	
2013	10	10.15	46.500
<u><i>Panel G</i></u>			
TD stakeholder IR(2)			
2011	12	12.25	
2013	12	12.75	69.000
<u><i>Panel H</i></u>			
Total environmental disclosure for DJSI			
2011	38	35.95	
2013	38	41.05	625.000
<u><i>Panel I</i></u>			
Change in total environmental disclosure			
IR(1)	22	19.93	
DJSI(1)	22	25.07	185.500
<u><i>Panel J</i></u>			
Change in total environmental disclosure			
IR(2)	16	16.75	
DJSI(2)	16	16.26	124.000
<u><i>Panel K</i></u>			
Change TD Environmentally sensitive			
IR(1)	12	8.71	
IR(2)	6	11.08	26.500
<u><i>Panel L</i></u>			
Change TD Environmentally non-sensitive			
IR(1)	10	9.05	
IR(2)	10	11.95	35.500
<u><i>Panel M</i></u>			
TD Environmentally sensitive IR			
2011	18	18.00	
2013	18	19.00	153.000
<u><i>Panel N</i></u>			
TD Environmentally non-sensitive IR			
2011	20	20.63	
2013	20	20.38	197.500
<u><i>Panel O</i></u>			
Change TD IR			
Environmentally sensitive	18	20.14	
Non-sensitive	20	18.93	168.500

Table 11
Difference between early and late adopters

Two sample independent t-test					MWU	
	N	Mean score	Std dev	t-Stat	Mean rank	Mann-Whitney U
Panel A						
Change TD						
Early	16	0.56	5.79		21.31	
Late	22	0.14	4.10	0.266	18.18	147.000
***, **, * represent two-tailed significance levels at 1%, 5% and 10%, respectively						

***, **, * represent two-tailed significance levels at 1%, 5% and 10%, respectively

Table 12
Difference between environmental sensitive and non-sensitive companies

	Two sample independent t-test				MWU	
	N	Mean score	Std dev	t-Stat	Mean rank	Mann-Whitney U
<i>Panel A</i>						
Change TD Environmentally sensitive						
IR(1)	12	-0.75	5.74		8.71	
IR(2)	6	2.17	3.66	-1.126	11.08	26.500
<i>Panel B</i>						
Change TD Environmentally non-sensitive						
IR(1)	6	0.00	1.67		5.33	
IR(2)	6	2.83	6.74	-1.000	7.67	11.000
<i>Panel C</i>						
TD Environmentally sensitive IR						
2011	18	21.94	8.71		18.00	
2013	18	22.17	8.36	-0.078	19.00	153.000
<i>Panel D</i>						
TD Environmentally non-sensitive IR						
2011	12	17.17	13.83		12.38	
2013	12	18.58	14.90	-0.241	12.63	70.500
<i>Panel E</i>						
Change TD IR						
Environmentally sensitive	18	0.22	5.22	0.629	15.14	
Non-sensitive	12	1.42	4.91		16.04	101.500

***, **, * represent significance levels at 1%, 5% and 10%, respectively. The significance levels are one-tailed for panel A and B and two-tailed for the others

Table 13
Pearson correlation matrix

Total disclosure, all observations					Change in total disclosure, all observations				
	TD	Size	Leverage	ROA		Change TD	Size	Leverage	ROA
TD	1				Change TD	1			
Size	0.202*	1			Size	-0.014	1		
Leverage	-0.064	0.525**	1		Leverage	-0.250*	0.548**	1	
ROA	-0.089	-0.355**	-0.373**	1	ROA	0.007	-0.448**	-0.347**	1

N= 152

N= 76

Two tailed Pearson correlations. Significance at the 0,05 level is denoted with * and at the 0,01 level with **