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**Issues on supply and demand for environmental accounting information**

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# Issues on supply and demand for environmental accounting information

**Even Fallan**

LIMAC PhD School  
Department of Accounting and Auditing

PhD Series 41-2013

# **Issues on supply and demand for environmental accounting information**

**Even Fallan**

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## ACKNOWLEDGMENT

I started doing research on environmental accounting in 1998, in connection with my master thesis at Norwegian School of Economics (NHH). The topic was selected following an advice from Lars Fallan. While finishing my cand. merc. thesis on environmental accounting at NHH in 2007, I knew that I wanted to do a PhD on the same topic. In 2010, Trondheim Business School (TØH) engaged me as a research fellow, and I was later enrolled at the PhD program at Copenhagen Business School (CBS).

I am very satisfied with my choice of supervisors. The experience, knowledge, fast responses, pragmatism, and informal, friendly appearance of Jesper Møller Banghøj and Thomas Riise Johansen, both Copenhagen Business School (CBS), have been invaluable. They have respected the fact that a pursuit of my own ideas is an important source of motivation for a large, long term task, such as a PhD. Instead of telling me what to do, they have questioned my work in order to make me see new perspectives and realise challenges. I deliberately targeted them as supervisors because I thought their approaches to research were different from each other, which would provide me with different opinions on my work. I have really appreciated that, and I look forward to publish papers with them in the future. The ideas are already there. I would also like to thank the staff at Department of Accounting and Auditing, CBS, for inviting me to stay with them for several months, and making it feel like home. The flexibility of CBS' PhD program, e.g. when it comes to PhD courses, is a major strength.

I am also very grateful to David Campbell for inviting me to stay at Newcastle University Business School for half a year, where we among other things organised the 2012 EBEN research conference together. He is competent, hospitable, including, has commented on my work, and enabled me to give four presentations. During the stay I also focused on learning more about statistics. It should also be mentioned that I have gotten feedback on several conferences and staff seminars. A crucial moment for me was FIBE 2011, when Kjell Grønhaug, NHH, praised an early draft of my innovation adoption theory paper – the most important and innovative paper of my PhD. With his approval, I know the idea is good.

Even though environmental accounting is not his research field, Lars Fallan has been my most important discussion partner, on a day to day basis, during the work with my PhD thesis. The ideas are all mine, but he knows what is doable. I enjoy working with him and others at TØH. If I am to mention one other person at TØH, I would especially like to thank Tor-Eirik Olsen for many fruitful discussions. The privilege of supervising several master theses has also been of major importance. And not to forget: Knut Eriksen, TØH, is the best lecturer I have ever had, and one of my goals is to learn to teach KE-style. The people closest to me have made it easier to finish the PhD ahead of schedule, with practical help and inspiration. The youngest of them are Sindre and Magnus.

Research cannot be perfect, not even mine. I am responsible for all the errors in this thesis.

Trondheim, November 2013

Even Fallan



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## COMPILATION

### *Environmental accounting information*

Environmental accounting information (environmental disclosure) is the main topic of this dissertation. It started out as sporadic disclosure in company staff newspapers, press releases etc., and developed in the 1970s to become more often incorporated in annual reports for US and Northern- and Central European companies (Lessem, 1979). Since then, environmental disclosure has become common in both annual reports and on corporate web sites. All companies listed on Oslo Stock Exchange (OSE) disclosed environmental information in their annual reports as from year 2000 (Fallan, 2007).

“The concept “environmental” in this context refers to those disclosures where an organizational process or a production process may have impact on the natural environment” (Fallan and Fallan, 2007). In the four papers of this thesis, the term environmental disclosure refers to companies’ self-reported environmental information in media intended for widespread distribution (annual reports, separate environmental reports, web sites, press releases etc.). In addition to publicly available corporate environmental disclosure, environmental information is also supplied as private information by the company itself (private corporate disclosure – e.g. when a company have meetings with one stakeholder to provide or discuss information); publicly available information about the company (and its surroundings) supplied by others than the company itself (public non-corporate information – e.g. news media coverage, research reports, and public databases); and private non-corporate information (e.g. use of independent experts to take water or soil samples and satellite monitoring of land or water). However, the three latter types of environmental information are out of scope of this thesis.

### *Objective, motivation, and background*

The PhD (student) concept seems to have evolved somewhat over time, from being a “masterpiece” to focus more on the process of learning “the trade” of research. Appreciating the learning process, it has been an objective of this PhD thesis to study heterogeneous, though still related, research questions that enable a familiarisation with different parts of the existing research literature, and to use several theories, research methods, and types of data, while being under supervision. This knowledge of research, theory and methods has revealed relevant ideas of new research questions to write a PhD thesis on the theme of each of the four current articles. Together with a large amount of collected data, this forms the basis for many articles to come.

What is the idea behind this thesis? I started doing research on the supply of environmental disclosure in 1998, and later gained another perspective on this supply when working as an auditor. With accumulated knowledge, the question of the general value of these disclosures, and what they are used for, arose. As stated by Fallan (2013b:3), “relatively consistent findings reveal significant variations in quality of disclosure, and point to major weaknesses within the reporting practice, which might undermine its value for stakeholders.” According to Fallan (2013a:36-37), the literature shows that

*“disclosure contains mainly positive or neutral information, while negative information is relatively rarely disclosed (Deegan and Rankin, 1996, Niskanen and Nieminen, 2001, Patten and Crampton, 2003, Frost, 2007, Islam and Deegan, 2010). ... Another trait is that narrative disclosures are more common than monetary or quantitative information (Williams and Pei, 1999, Llena et al., 2007, Beck et al., 2010, Del Bosco, 2011). There are also studies indicating that general rhetoric is (or at least have been) relatively more commonly disclosed than specific information (De Villiers and Van Staden, 2006, Frost, 2007, Brammer and Pavelin, 2008), though this finding is more ambiguous.”*

Additionally, Fallan and Fallan (2009:475) identify research arguing that

*“even mandatory environmental disclosures cannot stop strategic use of voluntary CSR (Larrinaga et al., 2002, Mobus, 2005, Criado-Jiménez et al., 2008), and only a minority of companies comply fully with the statutory regulations (Adams et al., 1995). Companies may disclose environmental information according to their own self-interest, when future earnings and potential cash flows are negatively affected (Walden and Schwartz, 1997). The reports are more likely to appear as a specific event and the content will vary more widely when regulations are lacking. Environmental disclosure is mostly a legitimacy device and not an accountability mechanism, and according to Patten (2005) more legislation is not necessarily required to improve accountability, but rather better review and enforcement are needed. The argument is supported by Larrinaga et al. (2002), who have concluded that the regulation of environmental reporting would not lead companies to report on bad news.”*

Despite the weaknesses of the reporting practice, environmental disclosure is still being disclosed. It must have some value, for the reporting company and/or for stakeholders. Even though there is a large amount of research on supply of disclosure (Fallan, 2013d, Fifka, 2013), this thesis, and especially article 3, clearly shows that there is yet much left to learn. Simultaneously, there is a relative lack of research on demand for environmental disclosure (Deegan and Rankin, 1997, Ho and Wong, 2004, Solomon and Solomon, 2006, Campbell and Slack, 2008). More knowledge is needed about the underlying factors or processes that affect both the supply and demand of disclosure. The supply and demand for environmental disclosure is closely linked, and both have to be considered in order to enhance our understanding of the usefulness of reporting and which measures that are

needed to improve it. The objective of this thesis is therefore to add to the existing knowledge by exploring issues concerning both the supply of and demand for corporate environmental disclosure.

### ***The articles and their contributions***

#### **Article 1: The representativeness of the annual report as data source in CSR reporting research**

Selection of data source is an important methodological issue related to validity. What data sources are used in CSR reporting research, and how is the choice explained? The diffusion of internet and separate CSR reports has made the issue even more relevant. What does this mean to the representativeness of annual reports relative to total disclosure of all used media – is it valid to use the annual report as the only data source in CSR reporting research?

A comprehensive literature study is conducted to examine previous research practices. Content analysis – 13 information content categories each for two datasets – is used to collect data on environmental and working environment/human resources disclosure respectively. Both datasets consists of companies listed on OSE. Annual reports, separate reports, and web sites are used as proxies for total disclosure. Annual report disclosure and total disclosure is compared for each content category for each company, and the differences are aggregated to see the proportion of total disclosure covered by annual reports. The annual report has been and still is the data source of choice in research, but the use of several sources increases. Other sources mainly contain information that is already included in the annual report. Empirical studies of the representativeness of data sources are rarely used to guide the choice of source in CSR research.

This is a comprehensive study compared with previous research. The results and implications are partly in contrast to previous research, which is found to be of limited current relevance due to issues of timeliness and/or weaknesses in the research design. This study reveals that annual reports include approximately all information content of total disclosure in all disclosure media, irrespective of CSR theme, industry, mandatory or voluntary information. Information content is disconnected from volume of disclosure, meaning that each of these two measures cannot be used as a proxy for the other. The annual report can be used as a proxy for total disclosure of information content, and as the only data source in environmental and working environment/human resources disclosure research, for frequently used research questions.

## **Article 2: Voluntarism versus regulation: lessons from public disclosure of environmental performance information in Norwegian companies**

The purpose of this paper is to explore the development of environmental disclosure during periods of voluntarism and during periods with changed statutory requirements. More specific, the question is how volume and content variety of environmental disclosure in financial statements are immediately affected by statutory regulations. In order to compare the effects of such regulations with the development in environmental disclosure during periods without any changes in statutory requirements, a longitudinal study is conducted to test five specific hypotheses. A quasi-experiment with pre- and post-testing of disclosure volume and content variety is carried out to test the effects of the statutory changes.

The most important lesson from this paper is the significance of the voluntary approach to improve the variety of environmental disclosure. The present paper supports the claim of voluntarism that companies will meet the heterogeneous requirements of their stakeholders without any governmental regulations. No statutory regulations are needed to make the companies increase and adapt their environmental disclosure to the demand from their stakeholders and legitimate their existence towards society. The present paper has revealed that the regulation approach has a significant, immediate effect on mandatory environmental disclosure only, and that companies do not fully comply with such statutory regulations. The latter finding might be due to the lack of enforcement.

There is no universal notion of voluntarism. Different countries and societies have different legal requirements and political cultures regarding voluntarism. That is, voluntary reporting in Norway is affected by the national statutory requirements and may be underpinned by a certain set of societal responsibilities that may or may not exist elsewhere. Further research is needed to see whether these findings are readily generalized or whether they should only be interpreted in light of local considerations. This is the first comprehensive study of the development of environmental disclosure in Norwegian companies. A total of 822 financial statements and annual reports, during the period between 1987 and 2005, are analysed.

## **Article 3: Explaining adoption rates of information content of environmental disclosure: an exploration of innovation adoption theory**

Corporate management decides what types of environmental information content to disclose (adopt). It is explored whether internal context – that is decision-makers' perception of characteristics of the information content – might predict the variation in adoption rates of different

types of environmental content, and whether innovation adoption theory might represent the important factors of this decision making process. Actual adoption rates of 13 information content categories are computed using content analysis of annual reports for 62 companies listed on OSE. Each content category is seen as an innovation the company decides to adopt or not.

Interviews with management in several companies illustrate the decision process of disclosure, and help predict adoption rates. Predicted and actual adoption rates are compared. Adoption rates vary considerably between the 13 types of content. The absolute level of adoption rates are affected by company size and environmental risk. However, which of the content categories that have either relatively high or low adoption rates are consistent among the subsamples, regardless of those corporate characteristics.

This consistent variation in adoption rates seems to be predicted well by innovation adoption theory and its focus on five attributes of the information content itself (compatibility, trialability, complexity, observability and relative advantage). The theoretical framework allows for different or changing internal and general context, and should be applicable to other settings, even though the particular predictions for adoption rates in this paper may not.

Compared to the dominant practice in previous research, the level of analysis is changed from company to individual content categories. Perceived attributes of the information content itself (internal context) and innovation adoption theory are used for the first time, and are fruitful tools, to predict (or explain) consistent variations in adoption rates between different types of content. This provides new insight into the driving forces of supply of environmental disclosure.

#### **Article 4: Exploration of resource allocation decision making demand and stewardship demand for environmental disclosure**

The purpose of the study is to explore resource allocation decision making, stewardship decision making, and stewardship incentives demand for environmental disclosure for various stakeholders. The data consists of 23 mini case studies, of which interviews with 22 stakeholders are inspired by the pairwise stakeholder-company (principal-agent) relationships of agency theory (and stewardship), in order to analyse the demand of institutional investors, financial analysts, creditors, customers, non-governmental organisations (NGOs), and reporting and environmental authorities, several of which is split on both public and private sector stakeholders. A framework based on the three types of demand seems to be a fruitful tool to describe central aspects of demand.

It is identified cases having none of these types of demand and others having one, two or all three of these types. However, one type of demand can have different motivations in different cases,

something that seems to be captured by public sector affiliation and effects (and possibly not-for-profit organisations). Knowledge about the reasons for demand is important input to ensure that important information needs of stakeholders are met. The need for sufficiently detailed stakeholder (sub)groups, industries, and several stakeholder groups in each study is emphasized.

Further studies are needed to examine the generalizability of these case study data. This paper is the second to systematically examine both resource allocation and stewardship reasons for demand for environmental disclosure, the first to explore this in depth to improve theorizing, one of few to examine and compare the demand of several stakeholders, and to explore the importance of public and private sector affiliation and effects.

### ***Links between the articles and the main findings***

Each article contributes in different ways. Articles 1, 2 and 3 study the reporting practice (supply of disclosure), while articles 2 and 4 explore demand side issues. The first article examines the information content of CSR disclosure in different communication media, in order to consider the representativeness of the annual report as data source in reporting research. The study shows that the annual report has been and still is the most used data source in CSR disclosure research. However, the diffusion of (disclosure on) web sites, and issuance of CSR reports separate from the annual report, has caused many researchers to question the sole use of annual reports. The most interesting finding in article 1 is that the content of other sources is included in the annual report.

While the research question of article 1 is interesting in itself, it is also important to clarify the validity of the results of articles 2 and 3. Those two articles are also justified regardless of the finding in article 1, but the question is whether the results of articles 2 and 3 are representative of environmental disclosure in general or environmental disclosure in annual reports. Moreover, while the measurement method of disclosed information content in articles 1, 2 and 3 is chosen because of its adequacy in answering those research questions, the fact that the exact same operationalization of information content measurement is used in all three articles is further strengthening the relevance of the results of article 1 for articles 2 and 3. Article 3 is even based on the same data. The results of article 1 suggest that articles 2 and 3 are representative of environmental disclosure in general.

Article 2 illustrates the potentially close relationship between supply and demand for environmental disclosure. Reporting regulations can be seen as a special case of demand. The study examines the effect of introduction of and later changes in reporting regulation on both mandatory, voluntary, and (the sum of them, which is) total disclosure. Changes in regulation cause a significant

increase of disclosure in the annual report of the types of information content that are or become mandatory, but some companies do not fully comply with the regulations. However, the growth of voluntary disclosure (and total disclosure) continues after the statutory regulations are implemented, which might indicate that even other stakeholders' demand influence the supply of disclosure. This is further investigated in article 4, where the demand of both reporting regulation and other stakeholders are explored. It should also be noted that the development in supply of disclosure might be affected by other considerations than demand, which is the topic of article 3.

Article 3 explores elements of corporate managements' decision models concerning adoption of different types of content of environmental disclosure. The voluminous amount of research on supply of environmental disclosure has almost exclusively focused on characteristics of the supplier (company size, industry etc.) and general contextual factors (country, time period etc.) in order to explain reporting practice, while internal context is overlooked (Adams, 2002). However, according to Rogers (2003), perceived characteristics of different types of information content (that management decides whether or not to disclose) are likely to be an important part of managers' decision models. A general example of such a characteristic is the price (cost), which obviously matters to most people and companies when making buy or investment decisions. However, the cost of disclosure is hardly considered in research on disclosure decisions, one partial exception being Belkaoui and Karpik (1989). Rogers (2003) lists five attributes of innovations (here: environmental disclosure) that are discussed in article 3. The management's perception of demand for different types of information content, both regulation and other stakeholders' demand, is a part of their decision model. Hence, indirectly, demand is also considered in this article. Article 3 is meant to be an initial exploration of the relevance of innovation adoption theory for adoption of different types of environmental content, in order to promote further research on this topic. In this respect, it is a striking similarity between the aspects considered in connection with innovation adoption theory in article 3, and the reasoning behind the hypothesis in article 1.

Article 4 is an exploration of the demand for environmental disclosure of various stakeholder groups that are potentially important to companies. According to the theoretical framework in the paper, reporting regulations constitute three different types of demand for disclosure that can explain the results found in article 2. The regulations, especially the incentive mechanism described, might even inspire companies to increase their voluntary disclosure. Though, it should be added that the consequent lack of enforcement of the regulations in Norway has probably reduced the perceived importance of these regulations, as discussed in article 3 as well. There are indications of demand for disclosure from some of the other stakeholders studied in article 4 as well, which is a possible explanation for the increase in voluntary disclosure in article 2. In many of these cases,

concerning various stakeholder groups, there is a demand for disclosure even though the stakeholders do not intend to read it. This is probably due to ex ante effects of reporting – the fact that reporting (a perception of being controlled) may in itself cause the reporting entity to change the way it acts in favour of the stakeholder – an incentive mechanism (Gjesdal, 1981).

News media are potentially important demand side actors that are not included in this study. The reason for this is practical. It is examined in another study which was initially supposed to be a part of the PhD thesis, but is left out in order to make room for article 1, which was deemed currently even more important.

The findings of these studies appear to be mutually compatible. Firstly, the results for both mandatory and voluntary disclosure in article 2 can be explained by supply side considerations (article 3), which include perceptions of stakeholders demand. Perception of demand is likely to be related to actual demand (article 4). Secondly, the recommended use of (at least) the annual report as data source in research on reporting practice in article 1 is followed in article 2 and 3. Thirdly, the currently widespread existence of environmental disclosure; its rapid diffusion from an approximate zero level a few decades ago; and its continuing quality weaknesses, makes studies of the supply of disclosure interesting for researchers. Hundreds of research papers on supply illustrate this (Fallan, 2013d, Fifka, 2013). Therefore, the topic of article 1 – guidance to users of CSR disclosure concerning which data source they should use (out of multiple source used by companies), in order to capture total disclosure of environmental information content – is important, and materially eases data collection. Whether or not there is an *external* demand for such disclosure, as explored in articles 2 and 4, does not affect that fact. On the contrary, if there is a large supply of disclosure despite low external demand, that is just another reason for further research. Would companies continue to disclose environmental information year after year if it has no value? It is likely that there is both some external demand (articles 2, 3 and 4) and internal demand (article 3) for environmental disclosure. However, it is important to acknowledge that disclosure decisions are made by the reporting company. There is a need for new theoretical perspectives in order to understand these considerations of management. Article 3 sets out to explore such decision models, in which external and internal demand, and pragmatic aspects such as costs, are all input in cost-benefit considerations. While internal demand might involve strategic positioning or legitimacy, it might also be very concrete. A quote from article 3 illustrates this – the use of disclosure in on-the-job training:

*“We have chosen to build a report that contains a lot of detailed information, to make it a text book for our employees. We have spent quite some time including information so that it can be used for upgrading skills internally, and for others that may read it. There are many things are put together, quite complex, but it goes behind the headlines. ... The employees are definitely the most important target group for our reporting.”*



## ***Methodological standpoint***

It follows implicitly from the description of the papers that my methodological stand as a researcher is that the choice of research design depends on the research question. Article 1 and 2 are *mainly* based on an ontological position of a more or less objectivist stance and a positivistic approach using quantitative methods as epistemological assumption, while article 4 is mainly based on an interpretive perspective, meaning a more subjectivist ontological stance and an epistemological approach where “knowledge is gained [by qualitative methods] through closer interactions with the phenomenon under study in order to analyse and understand the context and use of disclosure (Kaspersen, 2013:14). While it applies to at least three of them, article 3 is the clearest example of use of “multiple methods in any given study” as recommended by Yin (2009:13): both quantitative and qualitative methods are used. Content analysis, one of several methodologies used in these studies, is an interesting case in a philosophy of science perspective. The basis is an objectivist stance where “reality pre-exists” disclosure practice and research (Hines, 1989:56) and it has ultimately a goal of making generalizability possible, but in the process of getting from the basis towards the goal, subjectivity has an unquestionable role – even though tools are used to objectivise the subjective judgments.

## ***Limitations and future research***

The supply and demand for environmental disclosure does probably affect each other. Companies’ supply of disclosure is at least partly affected by external demand, but might also be affected by other aspects, as seen in this thesis. Article 3 is clearly only an initial exploration into these underlying forces of the suppliers’ adoption decision, and is meant to be an appetizer to inspire more research on this issue. On the demand side, the “information desired by users is likely to be an extension of that currently available” (Deegan and Rankin, 1999:314). Nevertheless, the value of disclosure for stakeholders is partly depending on whether the information is useful for resource allocation and stewardship decision making purposes. Article 4 is only an initial study of the different kinds of demand. It is hopefully a good basis for both additional case studies which also include new stakeholder groups, and survey research, to deepen and broaden knowledge. Another necessary path marked out by article 4 is a need for studies that systematically explore what kind of information characteristics that fulfil the two decision making demands. Studies should also look at the consequences of such findings for the stewardship incentive mechanism. However, the area in which the lack of research is most obvious is probably direct comparisons of the fit between supply and demand. It seems like this issue is only examined by Deegan and Rankin (1999).

The studies of this thesis concern environmental disclosure, as defined above. Knowledge about what companies write about themselves, and what information their stakeholders demand from them, is interesting in itself. However, it is important to acknowledge that stakeholders use multiple sources of information. At least this is the reality in the cases on which article 4 is based. Stakeholder 14 from article 4 illustrates this. (S)he uses publicly available corporate information such as annual reports and environmental reports; publicly available non-corporate information such as Google searches, private corporate disclosure such as writing letters to the company to get specific information (e.g. environmental impact assessments required by the authorities); and private non-corporate information such hiring consultants to do field studies/tests. Solomon and Solomon (2006) study private corporate environmental disclosure, but it is a need for more research on the total use of environmental information.

### ***Publishing status***

- Article 1 is about to be submitted to a journal.
- Article 2 is published in *Journal of Accounting & Organizational Change*, Vol. 5 No. 4, 2009, pp. 472-489. It was elected “Highly commended” in the Emerald Literati Network’s Awards for Excellence – Outstanding Paper Awards 2010.
- Article 3 is currently under review for publication in *Journal of Accounting & Organizational Change* – in second round with minor revisions. A paper based on the same theory is published, following a double blind review process, but is not a part of this PhD (Fallan, 2013c).
- Article 4 will be submitted to a journal soon.

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# THE REPRESENTATIVENESS OF THE ANNUAL REPORT AS DATA SOURCE IN CSR REPORTING RESEARCH

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## ABSTRACT

**Purpose:** Selection of data source is an important methodological issue related to validity. What data sources are used in CSR reporting research, and how is the choice explained? The diffusion of internet and separate CSR reports has made this issue even more relevant. What does this mean to the representativeness of annual reports relative to total disclosure using all media types? Is it valid to use the annual report as the only data source in CSR reporting research?

**Design/methodology/approach:** A comprehensive literature study is conducted to examine previous research practices. Content analysis – 13 information content categories, each for two datasets – is employed to collect data on environmental (ENV) and working environment/human resources (WEHR) disclosure, respectively. Both datasets consists of companies listed on Oslo Stock Exchange (OSE). Annual reports, separate reports, and websites are used as proxies for total disclosure. Annual report disclosure and total disclosure is compared for each content category for each company, and the differences are aggregated to reveal the proportion of total disclosure covered by annual reports.

**Findings:** The annual report has been and still is the data source of choice in research, but the use of several sources increases. Empirical studies of the representativeness of data sources are rarely used to guide the choice of source. Annual reports include approximately all information content of total disclosure provided in all disclosure media, irrespective of CSR theme and industry, and whether the information is mandatory or voluntary. Information content is disconnected from volume of disclosure, indicating that either of these two measures cannot be used as a proxy for the other.

**Research limitations/implications:** The annual report can be used as a proxy for total disclosure of information content, and as the only data source in ENV and WEHR disclosure research aiming to address frequently asked research questions.

**Originality/value:** This comprehensive study provides timely guidance on data source selection, based on the premise that information content (what companies are saying) is more important than volume of disclosure (how many pages they use to say it). The results and implications are clear, and mostly in contrast to previous studies, which are found to be of limited current relevance to this research question due to issues of timeliness and/or material weaknesses in the research design.

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## INTRODUCTION

*“In an era when companies produce stand-alone reports reflecting aspects of their environmental performance and/or social impact, future studies focusing exclusively on annual reports might not produce particularly relevant results” (Unerman, 2000:674).*

Companies use various communication media to disclose corporate social responsibility (CSR) information: annual reports, websites, separate CSR reports, press releases, advertisements, brochures etc. Which media do users have to choose to get a representative picture of the information content of total disclosure? This knowledge is important for users in order to get the information easily and in a cost effective way. The importance is illustrated by an extreme case: data source selection in CSR reporting research. Researchers might face a cost-benefit trade-off between the need for large amounts of valid data and feasible data collection. The representativeness of collected data, compared with total disclosure in all media, increases with each additional data source containing unique information. However, content analysis – the most common data collection method for such disclosure (Milne and Adler, 1999) – is extremely resource-demanding. Hand collected data generally causes samples to be quite small (or data collection to be expensive). Hence, it would be advantageous to include as few data sources as possible while keeping up representativeness. In addition to the representativeness, a cost-benefit perspective of researchers' data source selection will also consider other characteristics: it is easier and less time consuming to collect longitudinal and historic data from annual reports than from websites; the annual report is a clearly defined document, whereas the website content is more difficult to define; while annual reports are issued regularly, the content of websites is often not dated; etc. From most criteria, the annual report stands out as the obvious candidate, if only one medium is to be chosen. This paper focuses on the methodological issue of data source selection in research, aiming to answer the question: Is the annual report representative of the total disclosed CSR information content in all relevant media?

The paper is motivated by a comprehensive literature study of CSR disclosure research. The process gave a clear indication that total disclosure is used in or is relevant for most published studies of CSR reporting, either directly – as a measure of disclosure practice – or as a proxy for, e.g., CSR performance. Annual reports have been, and still are, the most used data source in CSR reporting research. Until the 1990s, it was often the only source as well, but is changing. However, research papers seldom refer to empirical data of representativeness to substantiate the choice of data sources. This might partly be due to the fact that research containing findings has obvious methodological weaknesses limiting their relevance. This is illustrated by Tilt's (2008) call for website studies. These methodological challenges are reviewed to improve the current research design.



In this paper, annual reports, separate CSR reports<sup>2</sup> and websites are used as a proxy for total disclosure, which is compared to annual report disclosure. A common weakness in previous research is that volume is often used as a proxy for information content in CSR reporting. If volume and content of disclosure are disconnected, the conclusions from these studies may be questionable.

This study contributes to previous research by showing the lack of consideration of empirical evidence in data source selection, and by providing both a more timely and methodologically improved advice on annual reports' representativeness of total disclosure than previous research. While there has been considerable attention towards reliability issues concerning content analysis (Milne and Adler, 1999), this paper contributes by addressing validity.

## **MEDIA USED FOR CSR DISCLOSURE**

The annual report is an important medium for CSR disclosure. Over the recent decades, it has become more comprehensive, in volume, information content etc. (Lessem, 1979, Tinker and Neimark, 1987, Tinker et al., 1991, Adams and Harte, 1998, Ljungdahl, 1999, Unerman, 2000, Deegan et al., 2002, Beattie et al., 2008, and Fallan and Fallan, 2009). However, companies are using several media for CSR disclosure (Zéghal and Ahmed, 1990, Unerman, 2000). Lessem (1979) found that American companies started issuing separate CSR reports in the 1970s. Worldwide, an increasing frequency in issuance of such reports has been apparent from the early 1990s until at least 2008 (Ljungdahl, 1999, ACCA, 2004, KPMG, 2002, Frost et al., 2005, KPMG, 2005, KPMG, 2008). Though, there are indications of reduced use in some countries at a relatively high reporting level – e.g., USA Central- and Northern Europe (KPMG, 2002, KPMG, 2005, Fallan and Fallan, 2009). Separate reports are quite common among the largest companies, but not generally. They are not even always issued on an annual basis. Therefore, the most important reporting innovation, media-wise, since the annual report, is probably the internet. Following the launch in 1991, the World Wide Web was estimated to have about 30 million users in 1995, 361 million in the year 2000, and 2.4 billion by year end 2010<sup>3</sup>. The number of websites grew from 130 in early 1993 to 320 million in 1998 (Patten and Crampton, 2003). Estimates suggest that it is currently a to-digit billion number<sup>4</sup>. Studies show that a large and growing proportion of large and listed (Western) companies are disclosing CSR information on the websites (Del Bosco, 2004, Jose and Lee, 2007, Del Bosco, 2011, Moroney et al., 2011).

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<sup>2</sup> The terminology 'separate CSR reports' or 'separate reports' is used here for reports specifically devoted to one or several issues concerning CSR, issued under various names such as community-, environmental-, sustainability-, HSE reports, etc.

<sup>3</sup> [www.internetworldstats.com/stats.htm](http://www.internetworldstats.com/stats.htm) (date: 13-8-2013)

<sup>4</sup> <http://www.worldwidewebsite.com> (date: 12-4-2012)

To sum up, companies use several media for CSR disclosure. According to KPMG (2011) only 10% of the 250 largest corporations in the world rely solely on the annual report. All the available communication channels, and especially the diffusion of the internet and separate reports, questions the validity of using the annual report alone as a proxy for total disclosure in CSR reporting research. Claims of insufficiency can be read in explanations for the choice of data sources in academic papers and heard in conference presentations. However, that does not in itself prove anything about the annual reports' representativeness of total disclosure from all media. The next section addresses the data source selection in CSR disclosure research, and empirical research on representativeness of data sources, as a basis for hypotheses development.

# LITERATURE REVIEW

A literature study is conducted to explore the selection of data sources in content analysis studies of CSR disclosure over time. Research databases and reference lists are used to identify articles. Some early period works were hard to obtain, resulting in some missing data. Articles addressing the current research question were deliberately sought, which might give a small bias in the results presented in Tables 1-3. Influential papers from journals are also included. All the papers are part of the CSR disclosure research population. The final sample consists of 116 papers, excluding missing data. 107 articles are collected from 38 journals. The rest are book chapters etc. Accounting Auditing and Accountability Journal (AAAJ) and Accounting, Organizations and Society (AOS) are represented with 20 and 13 articles, respectively.

Which data sources a researcher should select depends on the research question, the analysis and the desired degree of certainty with which conclusions are reported in each individual study. In studies looking at e.g. mandatory CSR reporting, the selection is confined to a few sources identified in, e.g. the Accounting Act, etc. However, the literature study indicates that a large proportion of studies use, or should ideally have used, a measure of total disclosure as variable. This is the perspective of this paper. This requires knowledge of how to capture total disclosure.

## Selected data sources in CSR reporting research

Table 1 indicates that the annual report has been and still is the data source of choice in CSR disclosure research. The first (or the only) number in each cell is the proportion of papers published in a given time period that uses each medium as data source. This result is supported by observations in many studies, though without backing of empirical findings (Wiseman, 1982). The main change in this period is that, while the annual report was frequently the single source until the 1990s, the use of websites and separate CSR reports, and especially the use of more than one data source, has

increased since 2000. The proportion of the times each medium was used in a time period where it was the only data source, is shown in brackets. Developments illustrated in Table 1 are supported by other data (Fifka, 2012, Fifka, 2013). The observed change in the use of data sources in research might be a response to the increased use of websites and separate reports as media in corporate reporting. This assumption is supported by claims in several papers (Aerts et al., 2008, Clarkson et al., 2011). It supports the view that focus on the methodological challenge of valid data source selection is highly relevant.

**Table 1:** *The selection of data sources in CSR reporting research*

Year	1975-1979	1980-1984	1985-1989	1990-1994	1995-1999	2000-2004	2005-2009	2010-2013	Whole period
No. of papers reviewed	12	9	8	14	18	19	25	11	116
Annual report <sup>5</sup>	100% (83%)	100% (78%)	100% (100%)	93% (69%)	100% (83%)	89% (65%)	88% (36%)	82% (67%)	93% (69%)
Separate report	0%	22% (0%)	0%	14% (0%)	17% (0%)	32% (0%)	52% (0%)	45% (0%)	27% (0%)
Web	0%	0%	0%	0%	6% (0%)	21% (50%)	36% (22%)	36% (0%)	16% (22%)
Advertisements	0%	0%	0%	7% (0%)	0%	0%	4%	0%	2% (0%)
Brochures	8% (0%)	0%	0%	14% (0%)	0%	0%	4%	0%	3% (0%)
Other	8%* (0%**)	11% (0%)	0%	21% (33%)	0%	16% (0%)	12%	9% (0%)	10% (8%)

\* 8% of the 12 reviewed papers published in this time period use "Other" as data source.

\*\* 0% of the 12 reviewed papers use "Other" as the only data source.

### Discussion or justification of data source selection

The literature study reveals whether or not papers explain why the chosen data sources are selected.

There are many potential reasons. Kuasirikun and Sherer (2004:635) chose the annual report due to its "credibility; usefulness to various stakeholders; regularity; accessibility and completeness in terms of the company's communication on social issues". Quite a few papers refer to the choice made by (the majority of) other researchers as an argument (Gray et al., 1995, Kuasirikun and Sherer, 2004).

Because the majority of studies were assumed to have used annual reports, the possibility of comparison with other studies turns up as a reason in itself (Deegan et al., 2002). Practical, pragmatic, or economically feasible considerations are also emphasized: e.g. that annual reports are available in English whereas separate reports where not consistently so (Beck et al., 2010), or that it is impossible to identify all media used for disclosure by each individual company in a sample, so it is easier to use just one data source (Gray et al., 1995). Another topic addressed in some papers is the audience of CSR disclosure in different media (Neu et al., 1998, De Villiers and Van Staden, 2011).

The upper result-row in Table 2 shows that it has become common to explain why data the source(s) is chosen. A quarter of the papers did so in the 1970s, while about 80% did after the millennial-change.

<sup>5</sup> "10-K reports", filed with the Security and Exchange Commission in the US, and equivalents in other countries, are included in the annual report numbers in this table.

**Table 2: The proportion of papers explaining their choice of data source(s)**

Time period	1975-1979	1980-1984	1985-1989	1990-1994	1995-1999	2000-2004	2005-2009	2010-2013	Whole period
No. of papers reviewed	12	9	8	14	18	19	25	11	116
It is explained why the data source is selected	25%*	78%	38%	50%	67%	84%	80%	82%	66%
Several media are discussed when data source selection is explained	17%**	33%	13%	43%	50%	79%	56%	73%	50%

\* 25% of the 12 reviewed papers published in this time period explain why the chosen data source(s) is (are) selected.

\*\* 17% of the reviewed papers discuss why this (these) data source(s) is (are) preferred over other relevant data sources, e.g. that the chosen source is representative of total disclosure, or that other sources are hard to obtain.

The bottom row of Table 2 shows whether or not the reasoning behind the choice of data sources consider several (also non-selected) media, e.g. compare characteristics, the extent of use, and/or consequences of including or excluding different media. Freedman and Jaggi (1982:169) is critical to the use of the annual report as the only data source because "total disclosures may not have been examined", and Niskala and Pretes (1995:459) argues that "[r]estricting a study to annual reports only may give an incomplete view of overall reporting". Such judgements are not equally common as the first results reported in Table 2, although there has been an increase in the level over the years.

In order to have value, data must be representative of the study's objective. Therefore, the representativeness of selected data sources relative to total disclosure is an issue that often should be relevant in Table 2. Such methodological considerations might include at least two types of arguments: selection of data source(s) can be based on beliefs – e.g. Freedman and Jaggi (1982) – and/or guided by empirical findings from research – e.g. Niskala and Pretes (1995). The literature study has tried to identify the papers that provide empirical findings on the representativeness of data sources compared to total disclosure. Table 3 reveals how common it is to use these findings in research decision-making. The first number in each cell is the proportion of papers published in that time period that is referring to and discussing the relevant recommendations in the listed paper. Surprisingly this number has not been above 37% in any time period. As from 2005, when diffusion of website disclosures has come far and Table 2 shows that researchers are well aware of the possible methodological challenge, less than 20% of the papers make use of guidance from empirical findings when they choose data source.

**Table 3: Citation of articles containing guidance on data source selection**

Time period →	No. of papers reviewed	1991-1994	1995-1999	2000-2004	2005-2009	2010-2013	Average
Papers containing guidance on data source selection ↓							

<b>Zeghal and Ahmed (1990)</b>	86***	8%* (23%**)	28% (50%)	16% (37%)	8% (20%)	9% (18%)	14% (30%)
<b>Williams and Pei (1999)</b>	55			0% (5%)	4% (24%)	0% (18%)	1% (16%)
<b>Unerman (2000)</b>	50			29% (43%)	8% (28%)	0% (18%)	12% (30%)
<b>Patten and Crampton (2003)</b>	41			0% (0%)	0% (16%)	0% (27%)	0% (14%)
<b>McMurtrie (2005)</b>	32				0% (0%)	9% (9%)	5% (5%)
<b>Tilt (2008)</b>	15				0% (0%)	0% (0%)	0% (0%)
<b>SUM****</b>	86	8% (23%)	28% (50%)	37% (53%)	16% (48%)	18% (55%)	21% (46%)

\* 8% of the reviewed papers in this period have cited Zeghal and Ahmed's (1990) advice concerning data source selection.

\*\* 23% of the reviewed paper in this period have cited Zeghal and Ahmed (1990), irrespective of whether the reference concerns data source selection. This is an illustration of the knowledge of Zeghal and Ahmed (1990).

\*\*\* 86 papers were reviewed in order to examine if they cite Zeghal and Ahmed (1990). These 86 are the reviewed papers that are published at least one year after Zeghal and Ahmed (1990).

\*\*\*\* The proportion of reviewed papers that cite at least one of the left column articles in this period. Each reviewed paper is counted maximum once per time period, regardless of how many of the left column articles it quoted

### Discussing the low use of empirical findings to guide data source selection

Why are the percentages so low? It is reasonable to assume that most CSR disclosure researchers know about at least one of the papers listed in Table 3. Firstly, because Table 3 indicates that the knowledge of the empirical findings is higher than the use – papers are also referring to other parts of the listed papers than the guidance relevant here. Numbers in brackets are the proportions of papers referring to each of the studies listed in Table 3, irrespective of whether or not they refer to the advice on data source selection. These numbers are in most cases much higher than the first number in the same cell. Secondly, because researchers do not refer to all studies they know about (every time), and thirdly, because some of the papers listed in Table 3, e.g. Unerman (2000), are well known in CSR reporting research. Additionally, influential papers point out the importance of the selection of medium for the validity of studies (Unerman, 2000, Campbell, 2004), and it is frequently discussed (Table 2), so the issue is probably not perceived as insignificant either. But if researchers know about the empirical findings on a significant matter, why not just refer to it – the easiest, most space-saving and powerful way to back the choice of data source(s)?

Two possible explanations are related to the advice of the existing findings. Researchers might perceive the findings to be mixed, so no clear advice appears. The results of some papers indicate that the use of one data source (the annual report) is sufficient [e.g. Niskanen and Nieminen (2001) and Tilt (2008)], while others might seem to promote the use of several sources [e.g. Zéghal and Ahmed (1990); Unerman (2000); Campbell et al. (2003); McMurtrie (2005); and De Villiers and Van Staden (2011)]<sup>6</sup>. Nevertheless, mixed findings should not keep researchers from referring to it. It

<sup>6</sup> These classifications (mainly stemming from the papers themselves) are disputable, because it depends on how representativeness of total disclosure is measured – as will be discussed below. This is also the reason why the guidance of seven papers is not indicated here.

is important to emphasize even a potential uncertainty (which actually might be an argument in favour of using several data sources), and some findings should be better than confining only to beliefs. Another explanation for the lack of references to existing findings might be that its advice does not suit researchers. The practical advantages of using only the annual report are large compared with using several or other media. Table 1 reveals that the annual report frequently has been the only data source in CSR reporting research, while most of the papers listed in Table 3 (have been interpreted by many to) suggest that several data sources should be used in order to cover total disclosure. Additionally, the literature study showed that only 33% of papers referring to the guidance in the three oldest studies (Zéghal and Ahmed, 1990, Williams and Pei, 1999, Unerman, 2000) –which most papers in the study had the chance to know – follow the advice of at least one of the studies they quote. Campbell et al. (2003:566) uses the annual report as the only data source for the main analysis, despite stating that the “[a]rguments against the selection of only the corporate report are, however, persuasive” because of a reference to the conclusion of Unerman (2000) that the annual report should not be considered a reliable proxy. A potential disparity between the advice from empirical findings and researchers’ wish to use a certain data source might explain why so few papers refer to the existing guidance. Still, this does not explain why there has been a change in direction of using several data sources in research. Additionally, it cannot explain why researchers wanting to use only the annual report do not even quote findings in favour of this.

The review performed to clarify the advice concerning selection of data sources, revealed what might be the most important reason why few papers refer to existing findings: The studies have potentially major weaknesses regarding the research design and (current) timeliness of data. There are also large variations in data, analyses and findings, and with that the advice for data source selection, between them. These weaknesses might cause researchers to perceive the empirical evidence as less relevant. A discussion of strengths and challenges in these papers is imperative to improve the research design of the current study. The 15 papers listed in Table 3 are presented in Appendix C.

### **Strengths and weaknesses in existing empirical findings**

All the 15 papers might provide useful input to data source selection, even though they are not equally relevant. This variation in relevance is partly due to the studies’ objective. Providing guidance on data source selection from the user-perspective is the objective of one paper only; a few papers provide data on the media selection from the reporting company-perspective; others have a different main objective, but answer more or less a similar research question on the way; while some provide interesting data in the process of addressing other questions. The papers are grouped according to this classification in Table 4. Papers in the three first categories should have an

adequate research design but some methodological weaknesses are revealed partly due to development in the state of the art of research at that time.

A basic challenge is the type of data that should be used to measure a data source's representativeness of total disclosure in all relevant media. All the 15 papers in Table 4 confirm that companies use several media to disclose CSR information. This means that a single medium, such as the annual report, constitutes just a part of the total *volume* of CSR disclosure. However, it seems intuitively unlikely that the volume of disclosure in itself an important aspect for *users* of disclosure. Research on use (and impact) of reporting suggests that volume is not important compared to quality and content of disclosure (Hasseldine et al., 2005, Brammer and Pavelin, 2006). This paper argues that *what* is said/reported (the information content of disclosure) is more relevant to users than how many times it is said or how many words, sentences, or pages that is used to say it (volume of disclosure). 10 of the papers in Table 4 use volume of disclosure, of which it is a main measure in five papers. In four of these it is the basis for supporting the need for several data sources in four (Unerman, 2000, Campbell et al., 2003, McMurtrie, 2005, De Villiers and Van Staden, 2011) and the opposite in one (García-Ayuso and Larrinaga, 2003). A claim in this paper is that those conclusions might be based on non-valid measurement. Volume of disclosure should not be used as a proxy for content of disclosure (which suggests that higher volume means a broader variety of content) either, due to the measures being disconnected and lower precision of analyses – as discussed below. When content of disclosure is the most relevant type of data, why not measure it directly?

Content of disclosure is a better measure than volume. However, how content is operationalized is also relevant. Two papers specify the content only as CSR disclosure (Unerman, 2000, Campbell et al., 2003), while six other specify which general CSR theme it is – e.g. human resources, environment or community (Zéghal and Ahmed, 1990, Clarke and Gibson-Sweet, 1999, Niskanen and Nieminen, 2001, García-Ayuso and Larrinaga, 2003, McMurtrie, 2005, De Villiers and Van Staden, 2011). CSR is a collective term with limited meaning in itself without further specification. Is it valuable for users to know that a company has disclosed something about CSR or even the environment, without knowing more about it? Probably not. At least three of these papers reveal at least whether the information is positive or negative, or monetary, quantitative or narrative (Zéghal and Ahmed, 1990, Niskanen and Nieminen, 2001, García-Ayuso and Larrinaga, 2003). There is a need for more details in order to make data relevant. Some of the 15 papers do this by using a set of content categories (and even subcategories) or other information characteristics as a deepening of each general CSR theme they study. In the same way as for volume of disclosure, the categorisation of information as only CSR disclosure or a general CSR theme (e.g. environment) is unlikely to provide

a valid measurement for representativeness of (information content) of data sources. Table 4 reveals the 15 papers containing empirical findings, classified according to both their objective and their type of data used to measure representativeness of data sources relative to total disclosure. Papers in the top left corner are most relevant for this study, based on these two criteria in isolation.

**Table 4:** Studies classified by their objective and measurement relevant for data source selection

Objective →  Measurement ↓	Papers whose objective is to provide advice/ empirical findings on data source selection in research (user's perspective)	Papers providing empirical evidence on media selection from the reporting company-perspective (and hence provide the same information)	Papers with a different main objective, that answer more or less a similar research question (from the reporting company-perspective) on the way	Papers providing interesting data in the process of answering other questions
Content categories, other information characteristics, and volume of disclosure		<ul style="list-style-type: none"> <li>Tilt (2008)</li> </ul>	<ul style="list-style-type: none"> <li>Patten and Crampton (2003)</li> <li>Williams and Pei (1999)</li> </ul>	<ul style="list-style-type: none"> <li>Frost (2007)</li> </ul>
Content categories and other information characteristics	<ul style="list-style-type: none"> <li><b>THIS STUDY</b></li> </ul>			<ul style="list-style-type: none"> <li>Moroney et al. (2011)</li> <li>Aerts et al. (2008)</li> </ul>
Content categories			<ul style="list-style-type: none"> <li>Branco and Rodrigues (2008)</li> </ul>	
General CSR themes, other information characteristics, and volume of disclosure		<ul style="list-style-type: none"> <li>Zéghal and Ahmed (1990)</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>	<ul style="list-style-type: none"> <li>García-Ayuso and Larrinaga (2003)</li> </ul>
General CSR themes and other information characteristics				<ul style="list-style-type: none"> <li>Niskanen and Nieminen (2001)</li> </ul>
General CSR themes and volume of disclosure		<ul style="list-style-type: none"> <li>De Villiers and Van Staden (2011)</li> </ul>	<ul style="list-style-type: none"> <li>McMurtrie (2005)</li> </ul>	
General CSR themes				<ul style="list-style-type: none"> <li>Clarke and Gibson-Sweet (1999)</li> </ul>
CSR, other information characteristics, and volume of disclosure			<ul style="list-style-type: none"> <li>Campbell et al. (2003)</li> </ul>	
CSR and volume of disclosure	<ul style="list-style-type: none"> <li>Unerman (2000)</li> </ul>			

The next methodological issue to be addressed is the low precision level of the chosen analyses. Many of these papers collect data separately for each data source on a company level, then



aggregate the data to sample level for each data source separately, so the results for the data sources can be compared on sample level (Clarke and Gibson-Sweet, 1999, Williams and Pei, 1999, Patten and Crampton, 2003, Branco and Rodrigues, 2008). The consequence is that the reader knows that e.g. 50% of the sample has disclosed a type of information in annual reports and ditto on the website, but cannot tell whether it is the same companies that are disclosing in both media while others do not disclose at all (both data sources are, individually, representative of total disclosure), or if each company is using only one data source (both data sources must be selected), or a mix (the representativeness of each data source must be compared to the requirement of that study). Such analyses have a low precision-level, and do hardly provide valid data for the current research question. The same is more or less the case with mean based statistics (De Villiers and Van Staden, 2011). Computed disclosure scores per company, made up of many types of content and other information characteristics, being analysed on a sample level is even less valid for evaluating representativeness (Aerts et al., 2008, Moroney et al., 2011). Frost (2007) has carried out a sample level comparison of totals (or averages) as described above, but has disclosure data for only one data source while controlling for the existence of another. Campbell et al. (2003) use different types of data for the two data sources, which complicate the analysis. Tilt (2008) does not present much of the results supporting her 1994-conclusion, so it is hard to tell what kind of analysis that is performed. It should be noted that the *opportunity* for within company comparisons is provided by five papers. They have either conducted company level analysis or presented data so the reader can do it (Zéghal and Ahmed, 1990, Unerman, 2000, Niskanen and Nieminen, 2001, Campbell et al., 2003, McMurtrie, 2005). The challenge is the lack of papers that satisfy all the requirements described in this section simultaneously.

A common feature of the five articles using company level comparisons is small sample sizes. Four of the studies include five companies or less. Then it is difficult to know whether the results are generally valid, even within a small population like an industry. (Some of them are not rich on detail and context like a case study either – on this issue). The fifth paper has a clever stratification of the 15 companies sample, so it seems likely that parts of two industries are well represented (Zéghal and Ahmed, 1990).

Another issue of concern is that the sampling criteria of at least seven of the 15 studies lead to underestimation of the representativeness of the information content of annual reports relative to total disclosure from all media. For two studies this is done by selecting only companies that disclose a lot of CSR information and have a CSR policy (McMurtrie, 2005, Tilt, 2008). The likelihood of disclosing unique information in several media is (statistically) higher for companies that disclose much CSR information than for those who hardly disclose anything. This effect is enhanced for

annual reports, since it is likely to be among the first media to be used for disclosure, due to regulations, reporting practice, its specific status etc. Moroney et al. (2011) is similar because they selected all companies that have audited or verified environmental reporting as a part of the sample, and do not separate the result between companies according to that characteristic. The same bias arises from selecting only companies that issue separate reports and do not disclose information in annual reports (Niskanen and Nieminen, 2001), with selection of companies with bad environmental performance and environmental crises (De Villiers and Van Staden, 2011), and by selecting companies that are most likely to have reporting requirements due to environmental regulations (Frost, 2007). Tilt (2008) uses a sampling criterion more directly related to data sources as well. By excluding companies that disclose information in less than two media, representativeness of any data source is underestimated. Other papers include only companies that have a website in their sample (Williams and Pei, 1999, Patten and Crampton, 2003, Branco and Rodrigues, 2008). Companies without a website are obviously less likely to have unique information content outside annual reports than those who do. According to Williams and Pei (1999) below 10% of the listed companies in those countries had a website at the time of their study. Hence, the potential underestimation of the representativeness of annual reports in this population is large. In Campbell et al. (2003) it took at least 2.5 years from the issuance of annual reports to the website study, meaning that a lot of new information reflecting a different reality might have appeared on the websites, and that differences are more likely to exist.

Seven of the 15 papers do not include website disclosures in their dataset (Zéghal and Ahmed, 1990, Clarke and Gibson-Sweet, 1999, Unerman, 2000, Niskanen and Nieminen, 2001, García-Ayuso and Larrinaga, 2003, Frost, 2007, Tilt, 2008). Even if that was not problematic in 1981 (Zéghal and Ahmed, 1990), it is imperative to capture total disclosure today. Tilt (2008) calls for studies on representativeness of data sources that includes website disclosures. The dataset should capture companies' mature use of websites the last decade.

The final issue to be addressed here is the current low timeliness of the data in most of the papers. This is, for most papers, due to the time they were published, and not a choice made by the researchers. Nevertheless, it affects the relevance of the empirical findings. There has been major changes in CSR reporting and the proportion of companies that disclose such information since the 1981/2 data of Zéghal and Ahmed (1990). It is still a relatively young and developing practice. Additionally, the use of media has changed with the diffusion of the internet (and separate reports). Only three of the 15 papers use data that is less than 10 years old (2003) (Branco and Rodrigues, 2008, De Villiers and Van Staden, 2011, Moroney et al., 2011). Since the studies with quite timely data have other weaknesses, more studies with current data are called for.

Historically, two papers are especially important for this research question. Unerman (2000) was the first to clearly emphasize the selection of data source(s) as a methodological issue for researchers to consider, as opposed to focusing on the company perspective concerning the choice of disclosure media (Zéghal and Ahmed, 1990, Tilt, 2008, De Villiers and Van Staden, 2011). It meant a new focus on validity of research, in addition to reliability (Milne and Adler, 1999). However, as reporting practice and research has developed, its current relevance (due to research design and timeliness of data) is limited. Zéghal and Ahmed (1990) was probably the first paper to provide empirical data to consider this issue. The type of data they collected is still relevant, but they did not utilize the data in their analysis, and of course the data are not timely anymore. According to Table 3, these are also the two most frequently used references to empirical findings in discussions concerning selection of data sources.

The review of the existing evidence in the 15 identified studies clearly reveals both the need to and how to improve research (design) on the representativeness of data sources. That is the objective of this paper.

## **HYPOTHESES**

Companies use multiple media to disclose CSR information. Researchers would benefit from knowing what disclosure media that is necessary to access to obtain all the disclosed information content (total disclosure). A cost-benefit approach suggests that it is easier and less costly if the content of a few media, or even a single medium such as the annual report, correspond to total disclosure.

Even if several media are used for reporting purposes, one medium would suffice as data source if it captures all disclosed information content. It would mean that volume of disclosure and information content is disconnected. Tilt (2008) supports this idea, while Zéghal and Ahmed (1990) do not. Since the previous section suggests a cautious use of those findings, it will be addressed empirically in this paper. However, what is interesting here is the reasoning. A basis for rejecting one of these views is statistical probability: With a large volume of disclosure outside the annual report, and the broad variety of possible types of information content to report, it would appear statistically likely that at least some of the information content is unique to sources other than the annual report. Other arguments for why companies possibly disclose different information in different media can also be derived from the papers listed in Appendix C, e.g. regulation (mandatory versus voluntary disclosure) (Patten and Crampton, 2003, Aerts et al., 2008); industry differences (Zéghal and Ahmed, 1990, Patten and Crampton, 2003, Branco and Rodrigues, 2008); and that different stakeholders use different media (Zéghal and Ahmed, 1990). Hence, the representativeness of the annual report

relative to total disclosed content is questioned. The last argument will be discussed next, while the rest are addressed through the subsequent general discussion and accompanying hypotheses to be tested.

Zéghal and Ahmed (1990:49/51) claim that companies deliberately disclose partly different information content in the three media examined because they are complementary sources of information with different target publics: The annual report is “directed primarily at the investment community”, “advertisements are aimed at a broader public”, while brochures are targeted at “specific interest groups”. However, such a simplified view of use(rs) are moderated by both researchers (Neu et al., 1998) and standard setters (IASB and FASB, 2006). There is not an unambiguous answer to the question of which media different stakeholders use to get public available information. The most likely answer is that stakeholders usually get information from a large number of media (Rowbottom and Lymer, 2009, Christensen, 2010, De Villiers and Van Staden, 2011, Fallan, 2013), even (indirectly) through communication with colleagues, friends and family, and (news-)media picking up on other media etc. Stakeholders are probably not aware of all sources themselves, or at least they do not deliberately choose all themselves. Then of course the reporting companies do not know which specific media to use to reach different groups either. (Information specifically targeted to a defined, limited audience is often private information (Solomon and Solomon, 2006), and out of scope of this paper.) Stakeholders get information everywhere. Reporting companies understand that, and disclose similar information in a variety of communication channels.

Luckily, it is easier to say something about what kind of information that is disclosed in different media. Since companies often will choose to disclose the same information content in several media, information content is probably disconnected from volume of disclosure. That is an important argument for the hypotheses below. Nevertheless, the hypotheses are also built on another line of reasoning. This is related to the rejection of a basic, underlying assumption for the statistical argument above: disclosures in different media are not independent observations. An objective of reporting is to provide information of important aspects of the company’s performance and status, risks and opportunities, products, the environment in which it operates etc. “To give a “true and fair view” or to “present fairly” a company’s financial position and results of operations implies that there is some “economic reality” to be reflected in the accounts” (Zeff, 2012:3). The underlying reality to be described is the same regardless of which communication media that is used. Even though corporate reporting often emphasizes certain (positive) aspects of reality and perhaps leaves others out (Niskanen and Nieminen, 2001, Larrinaga et al., 2002), companies rarely lie or make up stories in their reporting (Evans III et al., 2001). Additionally, the reporting of other companies is known, common reporting practices has developed in industries over time, and companies do in fact

often copy last year's reporting: the issues that are generally relevant in disclosure are known. Imitation of own and others reporting is leading to isomorphism (DiMaggio and Powell, 1983) concerning the use of media. Besides, the reporting process incurs costs, and it is cheaper to disclose the same information in several media than to produce tailor-made information for each. Based on this, it is likely that the information content of a company's disclosure in different media is quite similar within each year (and probably also between years).

The annual report is arguably the single data source whose information content is most likely to be representative of total CSR disclosure, if any are, both for mandatory and voluntary disclosures. Firstly, companies in many countries are required to disclose CSR information in documents incorporated in or closely related to the annual report. Secondly, it is natural to disclose voluntary information the same place as well. Thirdly, even information content that is otherwise voluntary are required and expected to be reported in the financial statements, the board of directors' report, and/or the management report if considered material to the company. Fourthly, one purpose of the annual report is to represent the previous year. With that comes naturally a perception of summary, relevant when comparing it with more instant media like press releases, websites/social media. Fifthly, it should also be forward looking, to capture e.g. risks and opportunities. Sixthly, annual reports are also commonly perceived to have a special status in reporting, both among reporters and users (Tilt, 1994, Unerman, 2000). An aura of importance, credibility, widespread use, clearly defined function and document boundaries etc. keeps up this status even as new media such as websites diffuse. The internet has actually made annual reports more accessible. All these characteristics of annual reports also suggest that its representativeness will increase as the reporting practice matures and assumes qualities of traditional reporting.

The general hypothesis (H) of the paper is that information content is disconnected from volume of disclosure:

*Approximately all disclosed information content in all media (TD = total disclosure) is present in the annual report (= AR).*

*H:  $AR \approx TD$*

The strong reasoning supporting the hypothesis suggests that what might potentially appear as mixed findings in previous research are due to the methodological weaknesses of former studies and the low timeliness of the data. Improved research design and more timely data will provide more valid results. A consequence is that several sub-hypotheses should be derived to make the results more robust.

It is necessary to go beneath a general CSR theme level and examine content of disclosure on lower category level to make the analysis meaningful. A robust analysis on CSR disclosure allows for comparison of more than one CSR theme, to consider whether results are indifferent of these specified themes. Some of the existing findings might suggest that companies use disclosure media differently for different CSR themes: e.g. that the annual report is relatively important for working environment/ human resources disclosure (WEHR) (Zéghal and Ahmed, 1990, Branco and Rodrigues, 2008), while environmental disclosure (ENV) is relatively more frequent outside the annual report (Zéghal and Ahmed, 1990, Clarke and Gibson-Sweet, 1999, Williams and Pei, 1999, Branco and Rodrigues, 2008). This is challenged by the above reasoning of the general hypothesis. Therefore, separate hypotheses are formed for these two themes (the selection of which is further described in the methodology section):

*Approximately all disclosed environmental and working environment/ human resources information content, respectively, in all media (TD) is present in the annual report (AR).*

$$H1_{ENV}: AR_{ENV} \approx TD_{ENV}$$

$$H1_{WEHR}: AR_{WEHR} \approx TD_{WEHR}$$

Another issue that might affect the use of disclosure medium, and, hence, the selection of data sources, is regulation. Regulations usually concern the content of annual reports. While all disclosure is voluntary on websites, advertisements, press releases etc., most information content is voluntary even in annual reports (Fallan and Fallan, 2009). It is not controversial to claim that the annual report is probably representative of total disclosure for content that is mandatory there and voluntary elsewhere. However, it appears to be believed that the annual report is not representative of total disclosure of information content that is voluntary even in the annual report. “In our view, disclosure that is unique to the web is more likely to be of a voluntary nature” (Aerts et al., 2008:644). Nevertheless, in this present paper it is claimed that the above argumentation for the general hypothesis holds both for mandatory and voluntary information. Information content is made mandatory through law or accounting standards because it is deemed important. The most important information content should be the first to be disclosed in any medium, irrespective of regulations. From this four hypotheses are derived:

Approximately all disclosed *mandatory and voluntary* environmental and working environment/ human resources information content, respectively, in all media (TD) is present also in the annual report (AR).

$$H2_{ENV}: AR_{ENV} \text{ (mandatory)} \approx TD_{ENV} \text{ (mandatory)}$$

$$H2_{WEHR}: AR_{WEHR} \text{ (mandatory)} \approx TD_{WEHR} \text{ (mandatory)}$$

$$H3_{ENV}: AR_{ENV} \text{ (voluntary)} \approx TD_{ENV} \text{ (voluntary)}$$

$$H3_{WEHR}: AR_{WEHR} \text{ (voluntary)} \approx TD_{WEHR} \text{ (voluntary)}$$

Industry differences exist in CSR reporting (Fifka, 2013), though research on this concerns especially the extent of disclosure and not the use of media. Among the findings reviewed in this paper, Tilt (2008) states that companies in environmental sensitive industries are more likely to issue separate reports, but does not experience industry differences for information content between media. Others do potentially experience such differences with varying strength (Zéghal and Ahmed, 1990, Patten and Crampton, 2003, Aerts et al., 2008, Branco and Rodrigues, 2008), though a methodological reservation must be made. The hypothesis here is that the basic argumentation for equality of use of media will hold. It is examined by selecting “extreme” industries.

Approximately all disclosed environmental and working environment/ human resources information content, respectively, in all media (TD) is present in the annual report (AR) *for both CSR sensitive and non-sensitive industries.*

$$H4_{ENV}: AR_{ENV} \text{ (sensitive industry)} \approx TD_{ENV} \text{ (sensitive industry)}$$

$$H4_{WEHR}: AR_{WEHR} \text{ (sensitive industry)} \approx TD_{WEHR} \text{ (sensitive industry)}$$

$$H5_{ENV}: AR_{ENV} \text{ (non-sensitive industry)} \approx TD_{ENV} \text{ (non-sensitive industry)}$$

$$H5_{WEHR}: AR_{WEHR} \text{ (non-sensitive industry)} \approx TD_{WEHR} \text{ (non-sensitive industry)}$$

A description of the empirical data and analyses is described next, in order to test these hypotheses and make valid measurements of annual reports’ representativeness of the content of total disclosure in all data sources.

## METHODOLOGICAL ISSUES

### Sample

Answering the hypotheses require data to have some specific characteristics. Two CSR themes must be selected (hypothesis 1), both must be subject to regulation so that both mandatory and voluntary information potentially can occur (hypotheses 2 and 3), and it must be possible to identify (at least) two industry strata (hypotheses 4 and 5).

Norwegian data is particularly relevant for this purpose. The Accounting Act includes reporting regulations of several CSR themes. The law requirements have been in force since 1989 and 1999, which means that reporting practice has had the chance to mature (Fallan and Fallan, 2009). Norway is world leading in internet use, measured as the “percentage of inhabitants using internet”<sup>7</sup>. This is important in this study because if annual reports are representative of total disclosure in Norway – a country where CSR disclosure has relatively long traditions and the use of multiple disclosure media is common – they are likely to be in countries with less use of internet as well. Websites are recognised as the other most important disclosure medium. The consequence is increased robustness for the current analysis, and hence increased probability for valid results.

Since some findings indicate that companies have an inclination to use disclosure media differently for the two CSR themes ENV and WEHR, and both are subject to reporting regulation in Norway, these seem to be good choices for the hypotheses, to increase the robustness of the analysis. By drawing the sample among firms listed on OSE, the law requirements are equal for all companies in the population. Considerations regarding stratification in two industries (hypotheses 4 and 5) might be different for ENV and WEHR disclosure. Therefore two datasets are used.

Dataset ENV (environmental disclosure) concerns the impact on the natural environment and related risks and opportunities of the company’s organizational processes; production processes; or products, in a life-cycle perspective. It is more or less impossible to make a credible continuous scale rating of environmental risk/ impact. However, the risk/impact is perceived to be closely related to industry. In order to examine whether environmental risk matter for the choice of disclosure media, two strata of perceived high and relatively low risk companies are compared (hypotheses 4 and 5). Dataset ENV consists of 63 companies. The 17 companies in “industry” 1 are rated by the Norwegian Climate and Pollution Agency as businesses having the (potentially) most serious environmental risk. Industry 2 consists of 46 randomly selected companies classified by OSE as financials (including equity certificates) and IT according to the Global Industry Classification Standard (GICS). These industries are perceived to have relatively low direct environmental risk (Jose and Lee, 2007).

Dataset WEHR (WEHR disclosure) concerns issues like the atmosphere at the workplace; gender equality; health and safety; sick leave; equal pay, number of employees etc. Different types of work might affect disclosure. Manufacturing or construction work is probably more likely to experience serious accidents and injuries than office work. Under the assumption that the degree of (non-) office jobs varies somewhat with industry, all 39 OSE companies GICS-classified as industrials and all 36 classified as financials (including equity certificates) were included as sensitive and non-

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<sup>7</sup> [www.internetworldstats.com/stats4.htm](http://www.internetworldstats.com/stats4.htm) (date: 13-08-2013)



sensitive industries (hypotheses 4 and 5) respectively. Dataset WEHR constitutes totally 75 companies.

### **Selection of media**

According to Krippendorff (1980) an essential stage in any content analysis study is deciding which documents are to be analysed. It is a large task to identify and retrieve all media containing CSR disclosure for the two datasets. Hand collection of content analysis data is extremely resource demanding as well. Together this is far beyond the limits of this study. It illustrates a reason why the objective of this paper is important. McMurtrie (2005:133) took the consequences:

*“The study was limited to investigating only two companies because as the project evolved it became evident that the volume of disclosure to be examined was large and required a considerable amount of time to be analysed properly.”*

Instead of a reduction of sample size, like in McMurtrie (2005), it is decided to limit the number of media to be examined per company. Inclusion of the most important disclosure media is assumed to be a good approximation of total disclosure. Especially since websites incorporate many sources like advertisements, product brochures and press releases, in addition to content published solely on the web. In dataset ENV, the aggregate of disclosure in annual reports, separate CSR reports and on websites is the proxy for total disclosure. In dataset WEHR, total disclosure is approximated by the content of annual reports and websites. Separate CSR reports are probably important for companies that issue them, but relatively few do. Hence, the law of large numbers makes it the medium to be dropped in dataset WEHR due to time and resource restraints. All the selected companies had their own website, and most companies had published the annual report there. For the rest of the companies the annual report was retrieved through the OSE website or by direct contact with the company. There were no missing data for the two samples.

### **Unit of analysis and operationalization of concepts**

In content analysis the meaning of the text is coded from phrase or sentence (Milne and Adler, 1999), and registered in content categories. Qualitative variables are converted into quantitative variables based on qualitative measurement. A large effort is exercised to develop an appropriate method of gathering these data. The pre-defined categorization of information content of environmental disclosure is based on two main principles (Fallan and Fallan, 2009):

- (1) The list of categories should be complete, i.e. all relevant types of information content should be included in one of the categories;

(2) The categories are mutually exclusive, i.e. one type of information content should only be included in one category and in no other.

The review of research clarified the need for detailed data on information content in order to improve validity. An adequately detailed list of relevant content categories is constructed for both dataset ENV (appendix A) and dataset WEHR (appendix B). The categorisations consider regulations, and are adequate irrespective of industry.

The categorization used in dataset ENV is similar to Fallan and Fallan (2009). It is an adaptation of Ljungdahl (1999), and is based on the thorough validity enhancing work of UNCTC (1991). It is later used in many studies. All the 13 content categories (appendix A) are voluntary disclosure on websites and in separate reports. In annual reports, categories 3, 4, and 13 are required by the Accounting Act, while the remaining categories are voluntary. A detailed description of the categories of dataset ENV is found in Fallan and Fallan (2009).

The content categories of dataset WEHR are developed by Andersen and Kirkeslett (2010)<sup>8</sup>, and a detailed description is found there. It was based on the logic of the reporting requirements in the Norwegian Accounting Act, the accompanying “Norwegian Accounting Standard 16 The board of directors’ report”, and the guidelines of the voluntary reporting standards Social Accountability International 2008 (SA 8000) and Global Reporting Initiative 2006. Validity is further enhanced through the use of a pilot phase to consider whether the categories seemed adequate. Of the 13 content categories (appendix B), categories 1-7 constitute mandatory disclosures in the annual report and voluntary on the web, while the categories 8-13 are voluntary both in annual reports and on websites.

Several measures were implemented to increase the reliability of data, including inter-rater reliability in dataset WEHR. It was decided to make the category variables dichotomous. For each category the value one is assigned if such content is disclosed<sup>9</sup> and zero if it is not. This leaves less room for subjectivity. For dataset ENV, two coders collected all data together (Stellander and Jørgensen, 2010), while for dataset WEHR, another pair registered data separately (Andersen and Kirkeslett, 2010). The four coders were MSc-students in accounting. Both teams used standardized registration schemes and category descriptions, an example pool of disclosures for each category, discussed and agreed on difficult cases, and training through separate pilot registrations with subsequent comparisons. Coders in dataset ENV trained with an experienced coder. One inter-rater

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<sup>8</sup> An adjustment of mandatory and voluntary categories is done in the current study.

<sup>9</sup> Irrespective of whether information is one sentence or a whole page, etc.

reliability challenge is less relevant in this paper. The analysis only requires that disclosures (in the data sources) within each company are equally registered, not between companies (though that is naturally sought as well). This is secured by having the same person registering all disclosure (in all media) for a company, and by finishing the company before starting on a new one. Another type of reliability is whether all disclosures in all media are discovered and registered. The data sources were printed out and read carefully to identify relevant disclosures. Additionally, electronic searches for key words were performed as a test of completeness.

The time of the website data collection is a potential threat to validity. The annual and separate reports for 2008 were published during the first six months of 2009. Websites for dataset ENV were examined in week two and three in 2010, while the corresponding period for dataset WEHR was February 8<sup>th</sup> -17<sup>th</sup> 2010. Ideally, websites should have been examined when annual reports were published in order for the media to reflect the same reality – an assumption that the hypothesis is based on. Companies have had websites for many years, and are mature users. Most of the content is usually constant over time, not updated from day to day. Few companies experience material CSR crises that would require new disclosure (De Villiers and Van Staden, 2011). Therefore, it is assumed that on average the seven to 13 months delay will not matter that much for which information content categories that are disclosed. Importantly, the consequence if new CSR information content is disclosed on the websites during the delay is that the amount of unique website content increases, and the representativeness of the annual report relative to total disclosure in this study is measured to be lower than it actually is. Hence, the results of the study can be trusted to be at least as strong as they seem.

## **Data analysis**

To get valid results, the disclosure in annual reports and total disclosure must be compared on a micro level – for each information content category for each company – before aggregating the results of all the comparisons to sample level for analysis. In each dataset, for each company and for each data source, the data collection has resulted in the value “1” for each of the 13 types of information content that is disclosed, and “0” for each type of information content that is not. The result is a 13 (content categories) x 63 (companies) matrix for dataset ENV for each data source, and a 13 x 75 matrix for each data source in dataset WEHR. Total disclosure is computed by merging the matrixes for each medium within a dataset in the following way: If, e.g., the top left pane in one or more of the single data source matrixes have the value “1”, then the top left pane in the total disclosure matrix gets the value “1”. If the top left pane in all single data source matrixes equals “0”, then the total disclosure matrix also gets value “0”. After computing the total disclosure matrix, it is

possible to compare each pane in the annual report matrix with the corresponding pane in the total disclosure matrix to see if the disclosure in the two matrixes is equal (value “1”) or different (“0”). When aggregating the comparison for each pane, the general result of e.g. the ENV dataset will be a value between zero and (13x63 = ) 819. If, e.g., 800 of the comparisons resulted in the value “1”, the annual report can be said to cover (800/819) 98% of total disclosure.

## RESULTS

The objective of this paper is to examine whether the annual report can be used as the only data source in CSR reporting research. The criterion for this, formulated in the general hypothesis, is that the annual report covers approximately all information content of total disclosure in all used media. In order to examine the general hypothesis, ten more specific hypotheses are derived and empirical results obtained, as summarised in Tables 5 and 6.

-----INSERT TABLE 5 and 6 ABOUT HERE -----

Hypothesis 1 shows that the annual report covers 96% of the environmental content and 99% of WEHR content of total disclosure for these samples respectively. According to hypotheses 2 and 3 these results are more or less independent of whether the content is mandatory or voluntary. The result for WEHR disclosure is also independent of the two industry strata, as seen from hypotheses 4 and 5. There is a modest variation between the industry strata for environmental disclosure, but even for the companies with high environmental risk the annual report covers 91% of the total disclosed content.

## DISCUSSION

How should these results be interpreted? The first issue to consider is what percentage of total disclosed content annual reports must cover in order for its representativeness to be perceived as high (and sufficient to be used as the only data source in CSR reporting research)? It depends on the research question, the analysis needed to answer it, and the degree of certainty needed for the wanted conclusion: it is an individual interpretation in each new study. Nevertheless, the “approximately 100%” criterion of this study is so tough that it will suit any study. It is probably much stricter than common requirements such as “an appropriate source of a company’s attitudes towards social reporting” or “totality of reporting intentions” used by e.g. Campbell et al. (2003:566). All the actual percentages in Tables 5 and 6 do approximate the 100% criterion. These results would

undoubtedly have been sufficient for almost all of the studies measuring total disclosure in the literature study described above.

Percentages in Tables 5 and 6 are very high, and there is little variation between or within subsamples. Nevertheless, a few comments should be made about the variation between high and low environmental risk companies, of which annual reports cover 91% and 98% of total disclosure, respectively. This difference might occur because companies from environmentally sensitive industries disclose more types of information content than companies from less sensitive industries, which is true both in this study and generally (Fifka, 2013). The stratum contains the 17 highest risk companies of the population. Then the statistical likelihood of some more unique information content outside the annual report is a bit higher. However, high risk companies are also more inclined to experience environmental events that affect the reality to be reflected in reporting. While there is a risk that the percentages in Tables 5 and 6 are underestimated<sup>10</sup> due to the time lag between the publishing of annual reports and data collection for websites, so they might reflect different realities, the likelihood of understatement is probably largest for the subsamples in hypotheses H4<sub>ENV</sub> and H4<sub>WEHR</sub>. Still, none of the above arguments explain why there is no corresponding industry effect concerning WEHR disclosure. There might be a difference in sensitivity of environmental and WEHR issues or disclosures. It is also possible that the current partition between industrial companies and financial institutions does not adequately capture industry sensitivity concerning WEHR issues. However, the 91% result means that the annual report is a valid proxy for total disclosed content of most studies.

The results of Tables 5 and 6 are valid at least when total disclosure is measured using the detailing level chosen in this study (13 content categories) or less. The choice of (these) 13 categories means getting information about the most important aspects of environmental and WEHR issues respectively, but it is still analysis on an overall level. It is a balance between sufficient detail to capture useful information and the ability to apply one set of categories to all companies across industries. Using more categories might also affect reliability and costs of data collection. The current detailing level would have been adequate for the analyses of most of the papers in the above literature study. It should be noticed that studies with a much higher number of content categories (e.g. 100), to enable more detailed analysis, might require more than one data source. This is partly because of the increased statistical probability of unique information in other media, but also because the format of the corporate annual report is to provide information of some importance and

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<sup>10</sup> Underestimated results mean that the general hypothesis have even stronger support.

on an aggregate level. The annual report is probably not an equally adequate tool for very detailed disclosure.

The results presented in Table 5 and Table 6 are interpreted as a very high proportion of total disclosed content is present in annual reports, for both CSR themes, for both mandatory and voluntary information content categories, and the different “industries”. This is in line with – and, hence, in support of – the general hypothesis, and has two main implications. Firstly, it means that the annual report is a valid proxy for information content of total disclosure, and can be used as the only data source in environmental and WEHR disclosure research. Secondly, the volume and information content of disclosure is disconnected, and volume of disclosure should not be used as a (single) proxy for information content. The relevance of volume of disclosure depends on the usefulness of the content it is measuring.

The first implication, the current result concerning data source selection, seems to be supported by at least two papers (Niskanen and Nieminen, 2001, Tilt, 2008). However, the results concerning data sources’ representativeness of total disclosed *content* of the 15 papers in Table 4 are so uncertain, due to the methodological issues discussed, that it is not reasonable to make interpretations here. What is clear for the majority of the 15 papers is that the annual report has to be one of the selected data sources (if not the only), due to observed unique content, e.g. monetary, quantitative, economic and negative information.

The second implication concerns which type of data to collect in order to measure total disclosed CSR content. While few papers [except e.g. Fallan and Fallan (2007)] have pinpointed this relationship earlier, the data of a large amount of studies clearly supports the current result that information content and volume of disclosure are disconnected (in different ways) (Hackston and Milne, 1996, Ljungdahl, 1999, Williams, 1999, Williams and Pei, 1999, Adams and Kuasirikun, 2000, Niskanen and Nieminen, 2001, Tilt, 2001, Patten and Crampton, 2003, Tilt, 2008, Fallan and Fallan, 2009, Moroney et al., 2011). Since this result opposes the implicit assumption of the measurement and analyses of e.g. Unerman (2000), Campbell et al. (2003), McMurtrie (2005) and De Villiers and Van Staden (2011), the relevance of the findings of these papers appears to be strongly challenged.

While many papers have looked at reliability issues concerning content analysis (Milne and Adler, 1999), this paper contributes by addressing validity. It is common to claim that the annual report is no longer adequate as the only data source in CSR reporting research, due to the diffusion of the internet and separate reports (Campbell et al., 2006, Clarkson et al., 2011). According to the literature study, such claims are mainly based on beliefs and not empirical findings – at least not recent research. No direct harm is done if several data sources are used in studies. It might add a tiny fraction of extra unique information content. However, indirectly it reduces sample sizes that are

already small due to the extremely resource demanding nature of hand collected content analysis data, and might complicate access to historic and longitudinal data. Decisions of such vital importance for the validity of research should be based on empirical findings. It is also imperative to address material weaknesses identified in existing guidance on data source selection, so researchers can make informed decisions. The results of the study – both for data source selection and which type of data to collect – have important implications for future research designs. Being pragmatic, researchers have to compare benefits and costs of adding more data sources. This findings enlightens researchers' methodological decisions: there is little validity to be gained by adding an extra data source, while large additional resources are needed to hand collected extra content analysis data. Adding data sources might even endanger the possibility of historic and longitudinal studies. Other users of CSR reporting would also benefit from knowing where to look for the information they seek.

The validity of the current study is presumably higher than for existing evidence due to more detailed data for information content, samples and analysis designed to that match the research question, and timely data. Still, limitations in the current study call for more research on issues like industry differences, representativeness of other media, potential systematic differences in representativeness between different types of information content (across media), and the consequences of using a much higher number of content categories or other information characteristics as suggested by Beck et al. (2010). Longitudinal studies could reveal whether the representativeness of annual reports is consistent over time, as the arguments behind the current hypothesis suggest. A general lack of CSR reporting research on unlisted, small and public sector companies should also be addressed regarding the use of media.

## **CONCLUSIONS**

The objective of this study was to examine whether the CSR information content of annual reports is representative of the total disclosure of CSR information content in all used disclosure media. This is important because it will provide guidance to users of information, especially researchers, where to find relevant information content easily and cost effectively. It is also important to update and improve guidance of previous research, because it has weaknesses that make it hard to trust findings of the representativeness of CSR content in different media. The research question is motivated by the literature study of the use of data sources in research. The first contribution of the study is the finding that the annual report has been and still is the most used data source in CSR reporting research, despite the guidance of most previous research that the annual report is not representative of total CSR disclosure. Secondly, it has become more common to use several data sources in this

research, but this has happened without consideration of empirical findings, as these are rarely referred to when explaining the choice of source. The third contribution is that a very high proportion of the totally disclosed CSR information content is present in annual reports, in line with – and hence in support of – the general hypothesis: Approximately all information content concerning environmental and working environment/human resources issues that corporations disclose in different media is also disclosed in annual reports.

The implications of these findings are that the annual report is a good proxy for total disclosure of information content, and can be used as a single data source in environmental and working environment/ human resources reporting research. Robustness tests show that these results are applicable for listed companies, irrespective of industry, and are valid both for mandatory and voluntary disclosure for each of the two CSR information content topics. Moreover, the results are valid for a level of detail consisting of at least 13 information content categories for each of the two CSR themes. Still, the choice of data source(s) should be considered individually, in connection with the research question, analysis and the desired level of certainty with which conclusions should be reported, for each study.

The fact that the annual report is representative of total disclosure of information content from all media also means that the volume of disclosure and the information content is disconnected: Volume of disclosure cannot be used as a proxy of information content and vice versa. It is also likely that the annual report, at the aggregate level of a general purpose report, can be perceived as a summary of CSR reporting. The diffusion of websites and separate reports has not (yet) rendered “the analysis of corporate annual reports, only, as a limited, and less meaningful, research instrument,” as predicted by Campbell et al. (2003:574) and Campbell et al. (2006:102). The same is true for the quote of Unerman (2000), given in the beginning of this paper. In sum, the annual report has been, and should still be, the data source of choice for research on total disclosure of CSR information content.

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## APPENDIX A

### *ENV information content categories*

No:	Category:	Regulation:
1	Environmental policy	Voluntary
2	Environmental objectives	Voluntary
3	Environmental impact – process	Mandatory
4	Environmental impact – products	Mandatory
5	Environmental organization	Voluntary
6	Environmental auditing	Voluntary
7	Environmental authorities	Voluntary
8	Environmental events	Voluntary
9	Environmental investments	Voluntary
10	Environmental costs/-revenues	Voluntary
11	Environmental liabilities	Voluntary
12	Definition of environmental concepts/accounting principles	Voluntary
13	No environmental impact	Mandatory

Source: Fallan and Fallan (2009)

## APPENDIX B

*WEHR information content categories*

No:	Category:	Regulation:
1	Sick leave	Mandatory
2	Gender equality	Mandatory
3	Accidents and injuries	Mandatory
4	Implemented measures	Mandatory
5	Planned measures	Mandatory
6	Employee remuneration	Mandatory
7	Number of employees / full-time equivalents	Mandatory
8	Policy for the working environment	Voluntary
9	Objectives for the working environment	Voluntary
10	Organization	Voluntary
11	Survey of the working environment	Voluntary
12	Information and communication	Voluntary
13	Employee remuneration	Voluntary

## APPENDIX C

Article	Topic	Size and stock exchange listing	Industry	Country	Other sampling criteria	No. of companies	No. of company years
Zéghal and Ahmed (1990)	CSR disclosure	The largest companies of two industries	Six banks and nine oil companies	Canada		15	30
	Years	Data sources	Type of data: volume of disclosure	Type of data: information content categories	Type of data: other attributes of information	Level of analysis (results and presented data)	
	1981-1982	1) Annual reports, 2) brochures, and 3) advertisements	Number of words	7 general content categories (environment, energy, fair business practices, human resources, community involvement, products, and other CSR disclosures), each comprising of 1 - 8 subcategories (26 in total).	Monetary, quantitative and narrative information	Data is treated as cross-sectional. Results are presented for each data source pertaining to each company. Only the seven general content categories are used in the analysis.	
	<p>The study shows that annual reports and brochures were widely used media for disclosure in the two industries. Although advertisements were used, in general, their usage was rather limited. This is shown both in the volume of disclosure, the number of companies using each media type, and how many content categories the disclosure of each company covers in each medium. According to Zéghal and Ahmed (1990:48) this “indicates that taking into consideration only the social information disclosure made through annual reports gives a somewhat distorted view of a firm’s activities in this respect.” It is also claimed that companies disclose different information content in the three media types. Zéghal and Ahmed (1990:50) indicate that this “may be interpreted as evidence of the complementary nature of the three media under study as sources of information on corporate social responsibility.” However, the content type that is disclosed, and the medium used, appears partly to vary with industry. Disclosures are almost entirely narrative in brochures and advertisements, irrespective of industry. In annual reports, a much higher proportion of the information was quantitative or monetary in both industries. The findings of Zéghal and Ahmed (1990) indicate that the selection of data source matters for CSR reporting research. Both volume and information content as measurement methods suggest that the annual report should not be used as the only medium in order to obtain a picture of total disclosure. Other information characteristics (monetary, quantitative, or narrative information) support the use of annual reports as at least one of the data sources. Unfortunately, their analysis does not consider all relevant aspects, even within the level of detail presented. Cross-tabulating the presented data, shows that all the six banks (100%) disclosed environmental issues and human resources issues respectively in annual reports at least, when the topic was disclosed in other media. Similarly, all nine petroleum companies (100%) provided human resources disclosure in the same manner, while eight out of nine companies (89%) did the same for environmental disclosure. Sadly, the authors only presented data at the general information content category level, and not for subcategories. However, this new data still questions the conclusion to some extent.</p>						

Article	Topic	Size and stock exchange listing	Industry	Country	Other sampling criteria	No. of companies	No. of company years
Clarke and Gibson-Sweet (1999)	Voluntary CSR disclosure	The Times 1997 Top 100 companies		UK		92	92
	Years	Data sources	Type of data: volume of disclosure	Type of data: information content categories	Type of data: other attributes of information	Level of analysis (results and presented data)	
	1995/6	1) Annual reports, and 2) separate CSR reports	NA	Two general information content categories (community involvement and environmental impact).	NA	Results are presented separately for each data source, each measurement method, and both general content categories at the industry level.	
	While 73% of the companies disclosed community involvement information in the annual report, only 11% did the same in separate reports. The corresponding adoption rates for environmental disclosures were 70% in the annual report and 46% in separate reports.						

Article	Topic	Size and stock exchange listing	Industry	Country	Other sampling criteria	No. of companies	No. of company years
Williams and Pei (1999)	CSR disclosure	Listed companies		Australia, Hong Kong, Malaysia and Singapore	Companies operating their own website	172	172
	Years	Data sources	Type of data: volume of disclosure	Type of data: information content categories	Type of data: other attributes of information	Level of analysis (results and presented data)	
	1996 = data source 1 and 2; 1997 = source 3	1) Annual reports, 2) separate CSR reports, and 3) websites	Number of sentences	5 general content categories (environment, energy, human resources and management, products and customers, and community), each divided into 7 to 10 subcategories (42 in total).	Monetary, quantitative and narrative information	Results are presented separately for data source 1, while source 2 and 3 are grouped together, and for each type of content analysis data, at the country (not company) level.	
	The volume of disclosure is at least as high on websites as in annual reports, and significantly higher for some general content categories in two of the countries. This is largely attributable to more narrative disclosure on the Internet. Disclosures are dominantly narrative, irrespective of content, media, or country. Still, in Australia (and perhaps Singapore) there is relatively more quantitative and monetary disclosure in annual reports than on the Internet for some general content categories. The adoption rate for each of the general content categories does not appear to differ between the two media within each country, except that "products and customers" is more frequently adopted on the Internet. Although average rates do not say much about company level results, Williams and Pei (1999:398) claim that "few companies made corporate social disclosures solely on their Web Sites." According to Williams and Pei (1999:409), there is not much difference in information content between the media at the subcategory level either, within each country: "The order of ranking of topics was virtually identical regardless of the form of media (annual report or Web Site) considered." The findings in this paper do not rule out the possibility that it is sufficient to use one medium (annual reports or websites) as data source for studies of information content. A more thorough analysis is needed.						

Article	Topic	Size and stock exchange listing	Industry	Country	Other sampling criteria	No. of companies	No. of company years
	CSR disclosure	One of the largest companies	One of the world's major energy and chemicals groups	UK		1	100
	Years	Data sources	Type of data: volume of disclosure	Type of data: information content categories	Type of data: other attributes of information	Level of analysis (results and presented data)	
Unerman (2000)	1898-1997	1) Annual reports; 2) other docs. in the reporting cycle; 3) regular docs. not apparently for third parties; 4) ad hoc docs.	Number of pages	One general content category (CSR disclosure)		Results are presented separately for each data source for each year, for the single measure (volume of disclosure) and the single company.	
<i>"The ... study does ... seek to establish whether CSR is present in a range of corporate reports other than annual reports. If it is not, then exclusive focus on annual reports by other studies might be justified. But if CSR is present in reasonable quantities in corporate reports other than annual reports, this might raise questions over the validity of future studies focusing exclusively on annual reports" (Unerman, 2000:671). Unerman (2000) analyses the total CSR reporting of one large company for a 100-year period. The number of pages containing CSR information is counted (without registering or analysing what type of information that is presented). The study yields two main findings. The first is that a large proportion of volume of CSR information is disclosed outside the annual report. It implies that, by examining only the annual report, there is a risk of underestimating the total volume of CSR disclosure. All studies listed in Table 4a-4c confirm this finding. The second main finding is that the annual report's proportion of total CSR disclosure fluctuates over time. The consequence is that studies measuring the relative change in total volume of disclosure over time, using only annual reports, might yield false results. Hence, Unerman (2000) suggests using several data sources.</i>							

Article	Topic	Size and stock exchange listing	Industry	Country	Other sampling criteria	No. of companies	No. of company years
Niskanen and Nieminen (2001)	Environmental disclosure	Companies listed on Helsinki Stock Exchange		Finland	Companies where environmental events have occurred (according to a newspaper), have a separate CSR report, and (relevant here) where negative events are not disclosed in the annual report.	2 (in the analysis relevant here)	2 (in the analysis relevant here)
	Years	Data sources	Type of data: volume of disclosure	Type of data: information content categories	Type of data: other attributes of information	Level of analysis (results and presented data)	
	1985-1996	1) Annual reports, and 2) separate environmental reports	NA	NA (in the analysis relevant here)	Negative information (in the analysis relevant here)	In the analysis relevant here, results are presented, separately for each data source, as cross-sectional data, at an individual company year level	
Separate environmental reports were not used to disclose information about actual negative environmental events when it was not disclosed in annual reports. Even though no conclusion should be drawn on such scarce data alone, there was no indication of unique information disclosure in separate reports. Niskanen and Nieminen (2001:35) state that "the objectivity of the reporting was not improved compared to the ordinary annual reports."							



Article	Topic	Size and stock exchange listing	Industry	Country	Other sampling criteria	No. of companies	No. of company years
Campbell et al. (2003)	CSR disclosure	Companies among the largest listed (FTSE 100)	Industries with differing perceived "sinfulness" (tobacco, brewing and retail)	UK		5	5 (websites); 115 (annual reports)
	Years	Data sources	Type of data: volume of disclosure	Type of data: information content categories	Type of data: other attributes of information	Level of analysis (results and presented data)	
	1975-1997 = Data source 1; 14 November 2000 = source 2	1) Annual reports, and 2) websites	Annual report study: number of words. Website study: ad hoc (pages, paragraphs, etc.), if registered	Annual report study: 3 general content categories (employee welfare, environment, and community). Website study: exploratory/ ad hoc, pre-defined categories not used.	Annual report study: NA. Website study: negative information (ad hoc).	Results presented separately for each company, each year, and for each data source. Volume pertaining to annual report content categories presented only as one total. Results for the two data sources not comparable.	
Campbell et al. (2003) have richer website data than this classification implies; however, the presented annual report analysis limits the readers' ability to compare the data sources. The volume of CSR disclosure indicates varying use of annual reports and websites. The company with consistently lowest annual report disclosure volume certainly had the greatest number of web-based disclosures, while the only company that did not disclose any information on the Internet had as large volume as the last three companies in annual reports. For the rest of the sample, the results were more ambiguous. Campbell et al. (2003:574) conclude: " <i>The rise of the Internet as a communication vehicle renders the analysis of corporate annual reports alone as a limited, and less meaningful, research instrument. This is not to say, of course, that previous studies that adopted an "annual report only" approach to data capture prior to the rise of the Internet are without value.</i> " Another interesting issue is whether or not the reference to the "pragmatic view that [a medium] can be accepted as an appropriate source of a company's attitudes towards social reporting" and "totality of reporting intentions" [italics added] used both by Campbell et al. (2003:566) and several other papers reflects a similar and an equally strong criterion for acceptance of a data source as representative of total disclosure, as is used in this paper (even if information content is considered, instead of Campbell et al.'s (2003) disclosure volume).							

Article	Topic	Size and stock exchange listing	Industry	Country	Other sampling criteria	No. of companies	No. of company years
García-Ayuso and Larrinaga (2003)	Environmental disclosure	Companies listed on the Madrid Stock Exchange	Industrial companies	Spain		Not disclosed for the analysis relevant here	116 (in the analysis relevant here)
	Years	Data sources	Type of data: volume of disclosure	Type of data: information content categories	Type of data: other attributes of information	Level of analysis (results and presented data)	
	1991-1995	1) Annual reports for the authorities, and 2) annual brochures for general meetings/ shareholders	Number of pages (lines), both in absolute terms and relative to the total number of lines in the report	One general content category is used (environmental disclosure)	Positive and negative information (however negative information was hardly found)	In the analysis relevant here, only cross-sectional results are presented; at a sample level for each data source, and only for the measure "volume of disclosure".	
The results oppose the second finding of Unerman (2000), who noted that the annual report's proportion of total CSR disclosure fluctuates over time, although García-Ayuso and Larrinaga (2003) examine only two rather similar data sources.							

Article	Topic	Size and stock exchange listing	Industry	Country	Other sampling criteria	No. of companies	No. of company years
Patten and Crampton (2003)	Environmental disclosure	Companies among the Fortune 500 largest companies	Companies listed as either chemical industry or electrical equipment industry	USA	Companies having an accessible corporate web page	62	62
	Years	Data sources	Type of data: volume of disclosure	Type of data: information content categories	Type of data: other attributes of information	Level of analysis (results and presented data)	
	1997/8 = data sources 1 and 2; 1998 = source 3	1) Annual reports, 2) separate CSR reports, and 3) websites	Number of sentences	21 content subcategories, 17 of which are positive/neutral disclosures (economic pollution abatement and other content), and 4 categories under the heading "negative disclosures".	Positive/neutral and negative information	The types of content analysis data are presented separately for data source 1 and as one for sources 2 and 3, on an industry (and partly on a total sample) level.	
	Measured by volume of disclosure, most of the reporting is found on websites (including separate reports etc.) and is almost entirely positive or neutral. Annual report disclosures have a more equal distribution between positive/neutral and negative number of sentences. Shifting the analysis to adoption rates of content categories and other attributes of information shows consistently that more companies disclose the subcategories related to negative information and economic information (defined as positive/neutral) in the annual report than on websites. For other positive/neutral subcategories, the picture is mixed. There are some industry variations in these results. Patten and Crampton (2003:51) state that "... the sample companies, on average, devoted significantly more space to environmental issues on their web pages than in their annual reports .... However, the concurrent finding that the increased space does not correspond to similar increases in the content of disclosure is interesting." The authors call for a more detailed analysis, including the effect of regulations, noting that the type of information content to be studied might matter for the choice of data source. Anyway, the data clearly shows that the annual report has to be, at least, one of the data sources that are used, since it contains much unique information.						

Article	Topic	Size and stock exchange listing	Industry	Country	Other sampling criteria	No. of companies	No. of company years
McMurtrie (2005)	CSR disclosure	Large companies	Companies that operate in sensitive industries—one industrial and one mining company	Australia	Companies that publish a large amount of CSR disclosures	2	2
	Years	Data sources	Type of data: volume of disclosure	Type of data: information content categories	Type of data: other attributes of information	Level of analysis (results and presented data)	
	Ca. 2001/2	1) Annual reports, 2) separate CSR reports, 3) websites, 4) press releases, and 5) other documents	Number of pages	6 general content categories (environment, energy, community, product, human resources management, and general).	NA	The number of pages of each general content category are presented separately for each data source for both companies	
	McMurtrie (2005:142) concludes that: "The examination of CSD [corporate social disclosure] other than that contained in the annual report has shown that, in these [two] cases, the annual report alone would not give a true picture of the CSD profile of the organizations." This is based on the volume of disclosure (websites and separate CSR reports constitute most of the total CSR disclosure in the two companies), as well as the diversity of, and changes in, main disclosed general information content categories in different media and between the companies. However, some patterns appear that are not commented on. For example, ranking the six general content categories in each company according to volume of disclosure results in very similar order, independent of media, in both companies (except for the topic "community" in the mining company). In addition to this within-company result, the ranking is also quite similar between the two companies within annual reports and websites (except "community" for the websites). Hence, the conclusion is not that clear-cut. Research based on more than two companies is needed.						

Article	Topic	Size and stock exchange listing	Industry	Country	Other sampling criteria	No. of companies	No. of company years
Frost (2007)	Environmental disclosure	Companies listed on the Australian Stock Exchange	Companies in environmentally sensitive industries that are most likely to be required to report on environmental performance	Australia		71	284
	Years	Data sources	Type of data: volume of disclosure	Type of data: information content categories	Type of data: other attributes of information	Level of analysis (results and presented data)	
	1996-1999 (or 1997-2000)	1) Annual reports, and 2) separate CSR reports. Only existence, not content, of separate reports is registered.	Number of words	3 content subcategories (regulations, compliance, and remedial action).	General, specific and negative information	Volume of disclosure presented separately for each year and (non)existence of separate reports. Each content category presented at the total sample level.	
Frost (2007) claims that the use of separate reports influences the level of environmental disclosure in annual reports. In reality, companies issuing a separate report disclose higher volume of information in annual reports, both before and after the introduction of disclosure regulation; however, the increase is higher for companies not having a separate report. Only annual reports are examined, but the existence of separate reports is controlled for. While the analysis is based on volume of disclosure, it assesses total, mandatory, voluntary and negative disclosure. The picture is the same for all these categories. Annual reports are required as, at least, one of the data sources, since many companies do not issue separate reports. The relevance of this paper for choice of data source is limited, as it does not have data on more than one medium.							

Article	Topic	Size and stock exchange listing	Industry	Country	Other sampling criteria	No. of companies	No. of company years
Aerts et al. (2008)	Environmental disclosure	Listed companies	Non-financial companies from eight industries (facing different environmental risks)	USA, Canada, France, Germany, Belgium and the Netherlands		892	892
	Years	Data sources	Type of data: volume of disclosure	Type of data: information content categories	Type of data: other attributes of information	Level of analysis (results and presented data)	
	2002	1) Annual reports, 2) separate CSR reports, and 3) websites	NA	6 content subcategories, each further divided into 3 to 10 sub-subcategories (38 in total).	Monetary, quantitative, specific and general information	Data source 3 presented separately, and sources 1 and 2 as one. Total disclosure scores at the general content and subcategory level analysed by industry, country and continent.	
"Disclosure scores" for environmental reporting are much higher for "paper" disclosures (annual reports and separate environmental reports combined) than for websites. This applies to the six information content subcategories independent of country and industry, albeit with possible exceptions for environmental management and sustainability. The disclosure score is computed by the use of both information content subcategories and other attributes of information. Comparing the two possible exceptions with the other content categories, Aerts et al. (2008) suggest that regulations might affect disclosure, leaving a more extensive discussion for further research. According to the authors, narrative disclosure completely dominates web-based disclosures, irrespective of country or industry grouping. Due to the way the results are presented, the reader cannot separate information content from other information characteristics. Unfortunately, the same is the case for the two media included in paper-based disclosure. The result shows that annual reports have to be included as data source. It is not clear whether it is sufficient as the only data source.							

Article	Topic	Size and stock exchange listing	Industry	Country	Other sampling criteria	No. of companies	No. of company years
Branco and Rodrigues (2008)	CSR disclosure	Companies listed on the Portuguese Stock Exchange		Portugal	Companies with an accessible website	49	49
	Years	Data sources	Type of data: volume of disclosure	Type of data: information content categories	Type of data: other attributes of information	Level of analysis (results and presented data)	
	2003 = data source 1 and 2; 2004 = source 3	1) Annual reports, 2) websites, and 3) press releases	NA	4 general content categories (environment, human resources, products and customers, and community involvement), each divided into 5 to 11 subcategories (30 in total).	NA	Content categories, at both general and subcategory level, are presented separately for data source 1 and are combined for sources 2 and 3, at both industry and total sample level.	
	There is a significantly greater proportion of companies disclosing human resources information content in annual reports than on websites, while there is no such difference for the three other CSR themes studied. The results for each subcategory under the four overall general content categories show the same picture even more clearly. There might be industry variations to these results. It might seem like several data sources are needed to capture total disclosure, in general, but for certain types of information one might suffice.						

Article	Topic	Size and stock exchange listing	Industry	Country	Other sampling criteria	No. of companies	No. of company years
Tilt (2008)	Environmental disclosure	Companies among the top 500 largest, and listed on the Australian Stock Exchange. 1999-sample supplemented by top 200 companies	Various industries, but 50% mining/ chemical industry companies in 1994 and the proportion rose in 1999	Australia	Companies with formal documented corporate environmental policy and disclosing environmental information both in annual reports and other media. 1999-sample supplemented by companies that had separate reports.	36	42-43
	Years	Data sources	Type of data: volume of disclosure	Type of data: information content categories	Type of data: other attributes of information	Level of analysis (results and presented data)	
	1994 = data sources 1, 3, 4, and 6; 1994 and 1999 = sources 2 and 5	1) Annual reports, 2) separate CSR reports, 3) brochures, 4) advertisements, 5) press releases, 6) other sources	Number of sentences for some media and number of pages for others; both in absolute terms and relative to all information disclosed (incl. non-environmental)	10 information content subcategories within the general theme environmental disclosure (although the data is presented only for separate reports).	1) Monetary, quantitative and narrative information; 2) general, specific and non-environmental information	Results presented for each data source and specified year separately, at the sample (rather than individual company) level.	
Tilt (2008) explores "whether non-annual report disclosures provide new information or reinforce existing disclosures in the annual report." This question was previously asked by Zéghal and Ahmed (1990), but is here limited to environmental disclosures. According to Tilt (2008:299/303) "It appears that no new information from that provided in the annual report was disclosed, and that even less detail was provided in every medium other than the separate environmental report" in the 1994 comparison. The data leading to this conclusion is not adequately reported, but the description and work by Tilt (2001) indicate that it is presumably based on information content subcategories (and perhaps other information attributes). The use of separate reports increased from 1994 to 1999, while the use of press items ceased. Tilt (2008:302) states: "The examination of press releases confirmed the suspicion that apart from the use of separate environmental reports and the annual report, little use is made of alternative [non-electronic] disclosure media." Regarding other information attributes, the 1994 disclosures were almost entirely narrative, while 1999 separate reports contained more quantitative information. The mean volume of disclosure varied significantly between different media, and annual reports constitute just a small part of the total disclosures. While Tilt (2008) does not find any industry differences, environmental sensitive companies were more likely to produce separate reports. In sum, it seemed sufficient to use annual reports as a single data source for studies of environmental content at the subcategory level in the mid 1990s. It is called for similar studies that include websites.							

Article	Topic	Size and stock exchange listing	Industry	Country	Other sampling criteria	No. of companies	No. of company years
De Villiers and Van Staden (2011)	Environmental disclosure	Standard and Poor's 500 and the largest 3000 US publicly traded firms		US	Companies with bad and not bad environmental performance, that have and have not had an environmental crises.	120	120
	Years	Data sources	Type of data: volume of disclosure	Type of data: information content categories	Type of data: other attributes of information	Level of analysis (results and presented data)	
	2005	1) Annual reports, and 2) websites	Number of sentences	One general category: environmental disclosure	NA	Results are presented for each data source at the sample (not individual company) level.	
	De Villiers and Van Staden (2011) conclude that voluntary environmental disclosure in annual reports and on websites is complementary. Disclosure in annual reports is relatively more used by companies having long-term bad environmental reputation, while websites are more used by companies experiencing a short-term environmental crisis. It is suggested that both data sources are required to obtain a complete picture of disclosure. However, the analysis relies only on volume of disclosure, not information content. While many control variables are used, the effect is not controlled for industry (within their four strata). To sum up, the advice have to be that both data sources are needed in studies.						

Article	Topic	Size and stock exchange listing	Industry	Country	Other sampling criteria	No. of companies	No. of company years
Moroney et al. (2011)	Environmental disclosure	Companies among the top 500 largest and listed on the Australian Securities Exchange		Australia	Companies with verified disclosure at least once in the period 2003-07, and a matched sample (by time, industry and size) of companies not having verified disclosure.	18-38	148
	Years	Data sources	Type of data: volume of disclosure	Type of data: information content categories	Type of data: other attributes of information	Level of analysis (results and presented data)	
	2003-2007 = data sources 1 and 2; 2008 = source 3	1) Annual reports; 2) separate CSR reports; and 3) websites	NA	7 content subcategories, each further divided into 3 to 10 sub-subcategories (44 in total).	Hard and soft disclosure items	Data sources presented together as one, except for a brief comment, where source 3 is separated, and 1 and 2 combined.	
	Moroney et al. (2011) do not present their detailed voluntary environmental disclosure (VED) data separately for each medium, but provide some insight as a digression at the end of the paper: "Environmental disclosures appearing on corporate websites were only included in the scoring of VED for 2007. Most of the information published on corporate websites had been reported in the 2007 annual and/or stand-alone reports. The average VED for 2007 was compared to previous years, and no significant difference was found ( $p > 0.10$ ), indicating that the inclusion of web disclosures in the main analysis did not affect the reported results" (Moroney et al., 2011:21). The authors note lack of unique information content on the websites compared to annual reports and separate reports combined. Unfortunately, the digression does not separate between the two latter media types.						

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# VOLUNTARISM VERSUS REGULATION: LESSONS FROM PUBLIC DISCLOSURE OF ENVIRONMENTAL PERFORMANCE INFORMATION IN NORWEGIAN COMPANIES<sup>1</sup>

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## ABSTRACT

**Purpose:** The purpose of this paper is to explore the development of environmental disclosure during periods of voluntarism and during periods with changed statutory requirements. More specific, the question is how volume and content variety of environmental disclosure in financial statements are immediately affected by statutory regulations.

**Design/methodology/approach:** In order to compare the effects of such regulations with the development in environmental disclosure during periods without any changes in statutory requirements, a longitudinal study is conducted to test seven specific hypotheses. A quasi-experiment with pre- and post-testing of disclosure volume and content variety is carried out to test the effects of the statutory changes.

**Findings:** The most important lesson from this study is the significance of the voluntary approach to improve the variety of environmental disclosure. The present study supports the claim of voluntarism that companies will meet the heterogeneous requirements of their stakeholders without any governmental regulations. No statutory regulations are needed to make the companies increase and adapt their environmental disclosure to the demand from their stakeholders and legitimate their existence towards society. The present study has revealed that the regulation approach has a significant, immediate effect on mandatory environmental disclosure only, and that companies do not fully comply with such statutory regulations.

**Research limitations/implications:** There is no universal notion of voluntarism. Different countries and societies have different legal requirements and political cultures regarding voluntarism. That is, voluntary reporting in Norway is affected by the national statutory requirements and may be underpinned by a certain set of societal responsibilities that may or may not exist elsewhere. Further research is needed to see whether these findings are readily generalized or whether they should only be interpreted in light of local considerations.

**Originality/value:** This is the first comprehensive study of the development of environmental disclosure in Norwegian companies. 822 financial statements and annual reports, during the period between 1987 and 2005, are analysed.

## INTRODUCTION

Environmental impacts from business activities are under severe scrutiny from society and, consequently, the stakeholders are demanding more and qualitatively better environmental

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information from the companies. The companies have responded differently to this increasing demand for environmental information (Adams *et al.*, 1998). In this situation there is an ongoing discussion in the literature on voluntary disclosures versus regulating environmental information.

The voluntary approach to environmental disclosure claims that companies will meet the requirements of their stakeholders without any governmental regulations (Maltby, 1997). According to stakeholder theory, the companies will, on a voluntary basis, respond to stakeholders' needs for environmental disclosure (Donaldson and Preston, 1995; Maltby, 1997). Companies prefer voluntarism, because environmental regulations are expected to raise costs (Porter and van der Linde, 1995a).

The purpose of this paper is to explore development of environmental disclosure during a period of pure voluntarism, during periods with changed statutory requirements, and during periods of unchanged regulation and voluntarism. More specifically, the question is how volume and content of environmental disclosure in financial statements are immediately affected by statutory regulations. Furthermore, in order to compare the immediate effects of such regulations with the development in environmental disclosure, during periods without any changes in statutory requirements, a longitudinal study is conducted. The purpose of the longitudinal study is to explore the arguments of regulation versus those of voluntarism.

The paper is organized in the following way. The next section elaborates on voluntary versus regulated mandatory disclosures in a Norwegian setting. Then the theoretical foundations for expected development in environmental disclosure are discussed and hypotheses are developed. The phenomenon of environmental disclosure is discussed, and the appropriate research method is clarified. Thereafter findings are reported, conclusions are drawn and, finally, some implications are indicated.

## **LEGISLATION OF ENVIRONMENTAL DISCLOSURE IN NORWAY**

Norway was the first country requiring all firms included by the Accounts Act (Regnskapsloven) to publish a clarification of whether they polluted the environment and to report executed and planned operations for appropriate environmental protection as from 1989. The Accounts Act and the Stock Company Act (Aksjeloven) had the similar regulations: «The annual report shall give an account of whether the business pollutes the external environment and a summary of appropriate actions, which are carried out or planned to counteract such pollution». However, there were no requirements for a uniform report. How much to report and what type of content to make were almost entirely up to the company. The most usual statement in annual reports from companies, having no serious environmental impact fulfilling the statutory requirements, was: «The firm does not pollute the external environment». Even though the annual report was under auditing control,

the environmental part of it was not. These limited regulations for environmental information should make it fairly easy and inexpensive for companies to fulfil the legal obligations. These mandatory requirements were modest. Actually, most environmental disclosure of information in annual reports should still be provided on a voluntary basis.

As from 1999 a new Accounts Act was implemented. The previous regulations were forwarded, but to some extent the requirements for environmental disclosure became more comprehensive in the new Accounts Act. If the impact was considered to be of significance, all firms had to disclose how the business affected the natural environment. The information should nevertheless be included in the annual report even if the firms had separate environmental reports or special environmental sections in their financial statements. However, in addition to the modest regulations from earlier the regulations in the new Accounts Act were extended to report environmental information on the entire product or service life cycle. The exact meaning of the new wording was not clear, therefore the Norwegian Accounting Standards Board made a preliminary standard, describing eight different conditions that are central to the external environment and, consequently, of importance to report (Norsk Regnskaps Stiftelse, 1999).

According to the Norwegian Government's white paper (Ot.prp. nr. 42, 1997-98), the purpose of the change in statutory regulation of environmental reporting is to affect positively the environmental performance and to meet with the information needs of shareholders, investors, lenders, employees, authorities and the general public. The annual report is an object for auditing, but the environmental disclosure is still not (Nyquist, 2003). Another white paper (Ot.prp. 75, 1997-98) states that there is no need for external auditing of environmental information in the financial statement.

These two statutory changes in regulations, from 1989 and 1999 respectively, permit an exploration of the effects of regulation versus voluntarism. A closer look at the development of environmental disclosure in annual reports before and after these years of changes, will give an opportunity to analyze some differences between the regulation approach and the voluntary approach.

## **VOLUNTARISM VERSUS REGULATION**

Legitimacy theory predicts that companies respond to pressure from society by providing voluntarily environmental information to legitimate their existence and to demonstrate society's need for their services (Adams *et al.*, 1998; Ljungdahl, 1999; Wilmhurst and Frost, 2000; Milne and Patten, 2002; O'Donovan, 2002). Gray *et al.* (1995) indicate that legitimacy and stakeholder theories have overlapping perspectives. Accounting researchers have suggested that corporate social responsibility (CSR) disclosures in annual reports improve legitimacy (Neu *et al.*, 1998). Self-reporting of

environmental information on a voluntary basis in the financial statements has turned out to be of great importance for legitimacy, since such disclosures are the primary information source for stakeholders like investors, creditors, employees, suppliers, customers, environmentalists and the government (Patten, 1992; Hutchins, 1994; Epstein and Freedman, 1994). Neu *et al.* (1998) have revealed that within the financial stakeholder grouping (i.e. investors and creditors), the concerns of shareholders are the primary influence on the level of disclosure. However, pressure from regulators and environmentalists through media coverage was associated with the level of environmental disclosure, although in opposing directions. Media coverage given to environmental fines from regulators was associated with increased levels of environmental disclosure, whilst environmentalist criticisms were associated with a decreased level of environmental disclosure. Another finding was that general societal attention and media coverage were positively associated with the level of environmental disclosures in the annual report (Neu *et al.*, 1998). This finding indicates that, although annual reports communications are directed primarily to the financial stakeholder grouping, the concerns of the general public also influence disclosure levels.

Some studies reveal that legitimacy theory may be an explanation of environmental disclosure of volume in some cases, but not in others (Campbell *et al.*, 2003; Campbell, 2004). Voluntary environmental disclosure in annual reports can even be viewed as an innovation. Consequently, the extensive research on adoption of innovations has turned out to be a fruitful supplement to legitimacy theory in order to explain why companies vary in their ability and willingness to adopt environmental disclosure (Fallan and Fallan, 2007). According to the advocates of voluntarism, the companies will ensure that their environmental disclosures and performances are acceptable, and thereby provide information appropriate for the stakeholders (Wilmhurst and Frost, 2000).

Those who support regulated environmental information claim that at least a minimum of information is ensured by these regulations. The stakeholder approach implies that environmental disclosure will evolve in response to their requirements. This is not necessarily the case because the assumption that stakeholders will have similar information requirements may be wrong (Maltby, 1997; Neu *et al.*, 1998). For example, it is unlikely that investors will have the same information requirements as the environmentalists. Voluntary reports are also found to be incomplete, and they are not related to the firms' actual environmental performance. Both Deegan and Rankin (1996) and Niskanen and Nieminen (2001) revealed that positive information seemed to dominate the reports.

Voluntary disclosure makes the likelihood of opportunistic behaviour greater than under regulated information requirements. However, even mandatory environmental disclosures cannot stop strategic use of voluntary CSR (Larrinaga *et al.*, 2002; Mobus, 2005; Criado-Jiménez *et al.*, 2007), and only a minority of companies comply fully with the statutory regulations (Adams *et al.*, 1995).

Companies may disclose environmental information according to their own self-interest, when future earnings and potential cash flows are negatively affected (Walden and Schwartz, 1997). The reports are more likely to appear as a specific event and the content will vary more widely when regulations are lacking. Environmental disclosure is mostly a legitimacy device and not an accountability mechanism, and according to Patten (2005) more legislation is not necessarily required to improve accountability, but rather better review and enforcement are needed. The argument is supported by Larrinaga *et al.* (2002), who have concluded that the regulation of environmental reporting would not lead companies to report on bad news.

Those who argue against regulations claim that firms in countries with regulations face considerable costs and therefore diminished competitiveness (Jaffe *et al.*, 1995; Porter and van der Linde, 1995a). Nyquist (2003) has given a brief survey of this literature, and she emphasized other studies which state that regulations in this field stimulate businesses to achieve higher efficiency, develop technological improvements and bring forth a higher corporate awareness (Porter and van der Linde, 1995b). Tietenberg (1998) claims that information strategies of environmental disclosure can probably motivate polluters to reduce emissions, even in the absence of statutory requirements. He concludes on the basis of his empirical findings that disclosure strategies can ultimately motivate polluters to reduce emissions even in the absence of more traditional regulatory controls.

The motivation for statutory requirements is that such regulations will limit adverse environmental impacts. However, there is no consensus as to how regulations affect business. Elkington *et al.* (1998) claim markets work most efficiently and effectively when there is adequate information. Consequently, the volume and content of environmental disclosure are important to secure the supply of such information. What regime is the best provider of adequate information? The answer to that question is closely connected to the environmental information provided in a regime of regulations compared with a regime of voluntarism.

If regulations should provide better environmental information than compared with voluntarism, the relative growth in volume and information content have to be significantly higher than in the year before the regulations are introduced. If not, the impact of regulations is disputable. Consequently, we hypothesize support for the regulation approach in the Norwegian setting having statutory changes in 1989 and in 1999 in this way:

H<sub>1</sub>: The relative annual growth of environmental disclosure of *volume* in financial statements compared with the previous year is positively affected by the introduction of legislation requiring all companies to report on the environmental impact of their activities (A) from 1989 and by the extended regulations (B) from 1999 also requiring all companies to report on the impact of products' life cycle.

H<sub>2</sub>: The relative annual growth of environmental disclosure of *information content* in financial statements compared with the previous year is positively affected by the introduction of legislation requiring all companies to report on the environmental impact of their activities (A) from 1989 and by the extended regulations (B) from 1999 also requiring all companies to report on the impact of products' life cycle.

It has already been pointed out according to stakeholder theory, firms due to ethical reasons will respond to interest groups' demand for environmental information. Consequently, regulations will be unnecessary (Donaldson and Preston, 1995; Maltby, 1997). Legitimacy theory explains the willingness to disclose environmental information independent of regulations because firms want to legitimate their existence in society. Based on stakeholder theory and legitimacy theory, respectively, we hypothesize growth in environmental disclosure to meet with the increasing demand for such information from stakeholders or to legitimate their existence to match the increasing focus on environmental issues. As mentioned above, mandatory environmental disclosure cannot stop strategic use of voluntary CSR (Larrinaga *et al.*, 2002; Mobus, 2005; Criado-Jiménez *et al.*, 2007). Hence, we hypothesize that voluntary information content will constitute the most considerable part of the total environmental disclosure also during regimes of mandatory information requirements:

H<sub>3</sub>: Voluntary information categories will constitute the most considerable part of the total environmental disclosure content also during periods with statutory regulations of mandatory information content.

Furthermore, previous research also indicates that companies do not fully comply with statutory regulations of environmental disclosure (Adams *et al.*, 1995; Walden and Schwartz, 1997). This is hypothesized below.

H<sub>4</sub>: Companies will not comply fully with the statutory regulations of environmental disclosure information content.

According to the Norwegian statutory regulations, the mandatory environmental disclosure should always be included in the annual report. This legal obligation for companies exists irrespective of whether they are publishing separate environmental reports or special sections in their financial statement. The aspect of costs is emphasized in the debate on voluntarism versus regulations (Jaffe *et al.*, 1995; Porter and van der Linde, 1995a). During the years to come these regulations will

increase the likelihood of substituting environmental disclosure volume in annual reports for separate reports and special sections.

H<sub>5</sub>: The legal obligations to publish mandatory environmental disclosure in annual reports will over the years be related to substitution of environmental disclosure volume in annual reports for separate reports and special sections.

## **RESEARCH METHOD**

### **Research design and sample**

We have carried out this study as a quasi-experiment (Cook and Campbell, 1979) with pre-testing and post-testing of a sample of companies' environmental disclosures before and after the statutory regulations in 1989 and 1999. This quasi-experiment is designed to answer the research questions related to the first two hypotheses. The stimulus in these quasi-experiments is the changes in statutory regulations as from 1989 and 1999.

In order to provide a longitudinal review of environmental disclosure, to explore years before and long after regulations are implemented, a long period was selected. The development of environmental disclosure in 1987-88, 1990-98, and 2000-5 is not influenced by statutory regulation changes, and, hence, might be seen as a result of voluntary disclosure. However, the considerable work gathering data on volume and informational content has limited the period to what was practically feasible. The longitudinal analysis of a period of 19 years, from 1987 to 2005, included 822 annual reports and is conducted to answer the questions of voluntary development in environmental disclosure information.

The companies were selected among those listed on Oslo Stock Exchange (OSE). The public interest in these companies is greater than randomly selected firms among all companies which are obliged to submit annual accounts. They are bigger and thereby better suited to adopt new trends in disclosure. All OSE companies are required to make the same financial statements and annual reports. Unfortunately, neither OSE nor the National Register of Accounts has a common data base of annual reports, which also include notes and environmental supplements during the whole period of 19 years. However, there is a compulsory submission of annual reports to The National Library. Reports that could not be collected from other sources were collected from the library in hard-copy, since no microfilm was available.

Only some companies are listed on the stock exchange during the entire period, and, hence, the number of companies can vary from one year to another. Mergers and acquisitions and demergers and spin-offs during the 19 years have affected the sample of companies. Originally a stratified sample was randomly selected from two groups of companies at OSE. One group of

companies consists of those ranked by the Norwegian Pollution Control Authority to run businesses having «serious environmental impact», and the other group did not. This sample is randomly supplemented to keep the proportion of companies from each group constant. The total sample varies from a minimum number of 34 companies in one year and up to 60 companies. Mean number over the period is 46,1 (SD = 8,4).

### **Operationalization of concepts**

The literature reflects a debate on aspects of data in voluntary disclosure. There are different ways of measuring volume and information content of environmental disclosure. Campbell (2004) refers to two main issues. First, the unit of analysis and, second, what medium should be selected.

First, the debate on the unit of analysis concerns the most effective way of measuring the reporting of volume and information content. The meaning is first coded from phrase or sentence (Milne and Adler, 1999), and if the content is classified as environmental, then the coded disclosure is counted. The most commonly employed counting measures of *volume* are word count (e.g. Wilmhurst and Frost, 2000), sentence count (e.g. Deegan *et al.*, 2000) and page proportion count (e.g. Gray *et al.*, 1995). When choosing the disclosure of volume in the present study page proportion count is selected.

When it comes to *information content* of environmental disclosure, this should be based on a qualitative measurement. However, we have decided to convert the content variable into a quantitative measurement. The content is much more interesting than volume alone to describe the development of voluntary and mandatory environmental disclosure over years. Hence, the measurement of content is very important and a great effort is exercised to develop an appropriate method of gathering these data.

The second area of discussion in the literature is which media to use as a basis for data collection. According to Campbell (2004), the majority of previous studies have used the financial statement, including the annual report, as the basis of analysis for several reasons. The annual report is produced regularly, a substantial editorial input is used to develop it, and it is widely read (Deegan and Rankin, 1996; Grey *et al.*, 1995). However, the totality of a company's environmental communications towards the public should include other media used, e.g. environmental supplement to the annual report, separate environmental reports, internet web pages, stock exchange announcements and so on. Adams and Frost (2006) have examined the use of internet web pages to inform stakeholders about social and environmental performance, and so far, this potential is not fully developed. As for a considerable part of the longitudinal period studied here, none of these media were a feature of the reporting alternatives. Consequently, we have used the financial

statement, including the annual report, and we have also collected data for separate environmental supplement and section to the annual report.

The categorization of information content of environmental disclosure is based on three main principles. (1) The list of categories should be complete, i.e. all possible and relevant environmental information should be included in one of the categories. (2) The categories are mutually exclusive, i.e. one type of information could only be included in one separate category and in no other. (3) The categories should either be mandatory or voluntary according to the statutory requirements.

The categorization is mainly based on United Nations Commission on Transnational Corporations about environmental disclosure in annual reports (UNCTC, 1991) and on a doctoral thesis about environmental disclosure in Swedish companies (Ljungdahl, 1999). We have added two more categories, and the present study includes 13 mutual exclusive categories for grouping information content of environmental disclosure (see Table 1). Fallan (2007) has detailed examples of how to classify according to these categories.

The measurement and the gathering of information are closely connected. The grouping of very heterogeneous types of information into 13 categories is a demanding task where grey areas very well may occur. Hence, the reliability could be threatened. Therefore we have decided to make the category variables dichotomous. If the environmental disclosure includes one type of information that belongs to a specific category, the value 1 is assigned, whether the type of information is one single sentence or a whole page. When using a nominal scale, much information is lost. However, the reliability will increase. Hence, the content variable will indicate the number of categories reported by the company. The total content variable can take on values up to 13. The content variable indicates the variety of a company's environmental reporting, and it can be divided into mandatory and voluntary categories respectively.

In the pure voluntary period 1987-88, there were nothing but voluntary information categories. As from 1989, there is a period of regulation and voluntarism, where the companies had statutory obligation either to report mandatory category no. 13, «No environmental impact», or mandatory category no. 3, «Environmental impact - process» (see Table 1). All the other information categories could be adopted on a purely voluntary basis. Companies that fully comply with the legal obligations should report one of these mandatory categories. As from 1999, the statutory obligations also included category no. 4, «Environmental impact - products». The legal obligations for companies are to report on either category no. 13 or no. 3 and in addition category no. 4. Actually, there were two mandatory categories to be reported by companies that fully comply with the statutory requirements in the period 1999-2005. The remaining 11 information categories could be voluntarily adopted.



**Table 1*****Environmental disclosure categories. Definitions/description.***

<b>No.:</b>	<b>Category:</b>	<b>Definition/description:</b>
<b>1</b>	<b>Environmental policy</b>	Includes supereminent objectives and strategies. A minimum requirement is that priority of the environmental focus is expressed or an intention to follow an environmental program, e.g. The International Chamber of Commerce (ICC) Environmental Program, the Charter of World Business Council for Sustainable Development or a national environmental responsibility program. A statement saying that the company has an environmental policy is not sufficient to be included in this category.
<b>2</b>	<b>Environmental objectives</b>	To be included here it is required that the company reports specific and measurable goals derived from their environmental policy. For example an objective to decrease a specific discharge level of a substance in a definite period.
<b>3</b>	<b>Environmental impact - process</b>	Includes information about environmental impact from production processes as regards status and environmental improvements. Status includes: e.g. technical environmental accounts of pollution, waste and energy consumption; production methods; waste processing, and environmental risk. Environmental improvements includes: e.g. production process, and pollution.
<b>4</b>	<b>Environmental impact - products</b>	Like the above category 3; includes impact from products only.
<b>5</b>	<b>Environmental organization</b>	Includes information of how the company has organised their environmental work: e.g. responsibility, division of work, emergency preparedness to meet environmental requirements and disasters, development of environmental expertise, implementing of ISO 14001, the implementation of EMAS standards of environmental management and auditing. Specific auditing is excluded. See the below category 6.
<b>6</b>	<b>Environmental auditing</b>	Includes information about planned and completed environmental auditing acts (internal and external), reporting of auditing results and the company's follow-up work.
<b>7</b>	<b>Environmental authorities</b>	Includes information about present and future environmental constraints, green certificates, existing disputes, results of closed disputes, results of applications processing of discharge permits and so on.
<b>8</b>	<b>Environmental events</b>	Includes information about specific events that have caused environmental impacts; e.g. excess of discharge permit, serious environmental disasters.
<b>9</b>	<b>Environmental investments</b>	Includes economic information about completed investments to reduce the company's environmental impacts. Planned investments are excluded and belong to category 11 (environmental liabilities) below.
<b>10</b>	<b>Environmental costs</b>	Includes economic information about the environmental costs of the year. This is the change in environmental liabilities in accordance with accrual accounting.

		Environmental income and cost reduction are viewed as negative environmental costs. Information about future costs are classified in category 11 below.
<b>11</b>	<b>Environmental liabilities</b>	Includes information about future costs. Best estimate based on all available information should be adopted for contingent liabilities.
<b>12</b>	<b>Definition of environmental concepts/accounting principles</b>	Includes information about definition and clarification of environmental concepts. The category includes: e.g. clarifications, accounting principles, accounting rules, procedures relating to measurement, valuation and disclosure because of lacking accounting standards in this area.
<b>13</b>	<b>No environmental impact</b>	From 1989 Norwegian companies have to report whether the enterprise pollutes the environment in the financial statement. There is no standard for this disclosure, but a common statement in the annual report is: «The company does not pollute the external environment.»

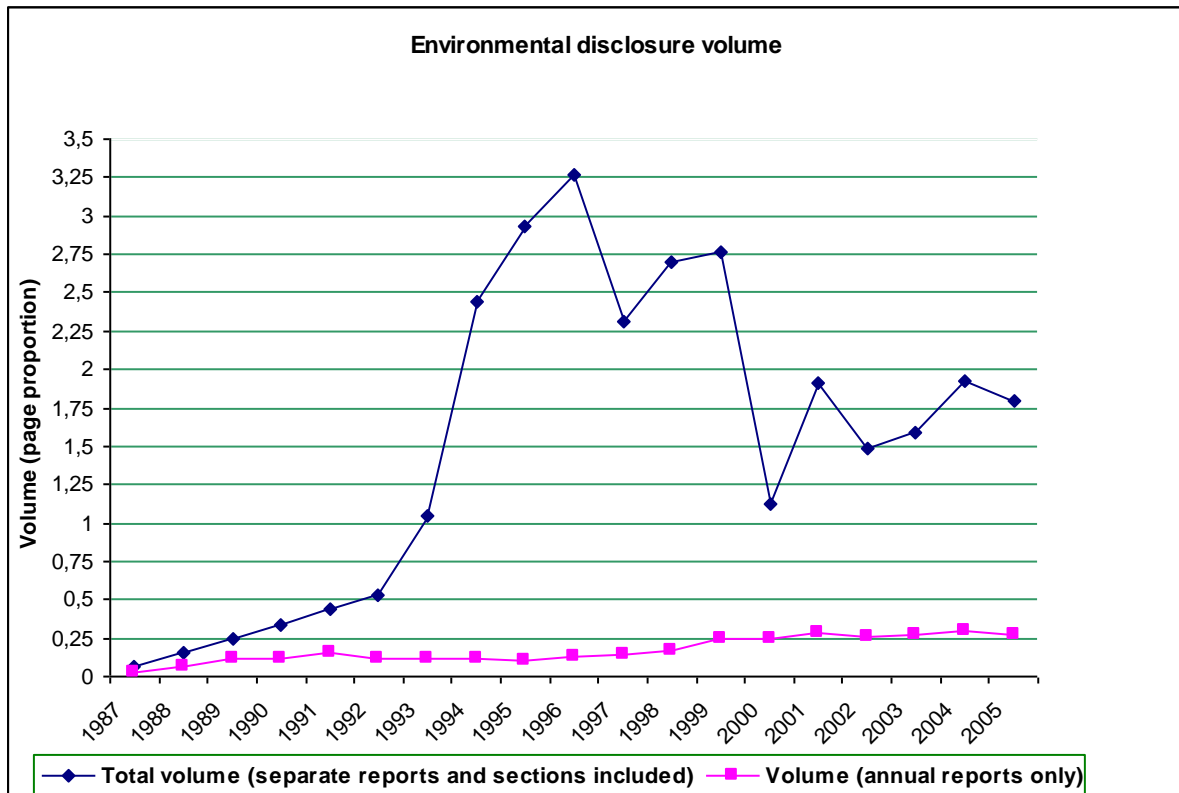
Source: Fallan (2007)

## FINDINGS

Over the course of the 19 years of the study, the mean total volume of environmental disclosure, i.e. separate voluntary reports included, was low until a considerable increase was observed in the early 1990s. The volume reached a peak having over 3 pages on average in 1996, and decreased more or less until the early 2000s. The last five years of the period the total volume has reached stability of slightly under 2 pages on average (Figure 1).

On the other hand, the mean volume of environmental disclosure in annual reports only, i.e. separate voluntary reports excluded, increases up to 1991 and decreases more or less until 1995. From 1995 the disclosure volume increased up to 2001. During the 2000s, the volume seems to have reached stability slightly below 0.3 pages. The increase in disclosure volume in annual reports begins at the same time as we observed a decreasing total volume due to a decrease in separate environmental reports. Figure 1 indicates partly substitution of annual report disclosure for separate environmental reports ( $H_5$ ). No credible test is carried out to confirm whether this is a significant development. However, Figure 1 seems to indicate that the legal obligation to publish mandatory environmental disclosure in the annual report over time reveals less use of voluntary separate environmental reports. We need to scrutinize this development over a longer period being able to conclude whether this is a permanent trend.

**Figure 1**



Part A of the first hypothesis ( $H_{1A}$ ), which predicts that the annual growth of environmental disclosure of volume in financial statements is positively affected by the introduction of legislation requiring all companies to report the environmental impacts of their activities as from 1989 compared with the previous year, is not supported (Table 2). There is no significant change in the relative increase in total disclosure volume from the year before the regulations were implemented. On the other hand, there is only support for an expected relative increase in mandatory disclosure volume in annual reports in 1989 (Table 2).

**Table 2**

*Changes in volume of environmental reporting between years*

Hypothesis	Differences between years	Volume change - total (Mean volume, annual reports and separate environmental reports included)		Volume change – annual reports (Mean volume, only annual reports included)	
		t-value	p	t-value	p
$H_{1A}$	1988 – 1987 vs. 1989 - 1988	-0,52	.61	-3,10	.00
	1989 – 1988 vs. 1990 - 1989	0,47	.64	2,36	.02
$H_{1B}$	1998 – 1997 vs. 1999 - 1998	0,12	.90	-2,11	.04
	1999 – 1998 vs. 2000 - 1999	1,53	.13	1,06	.30

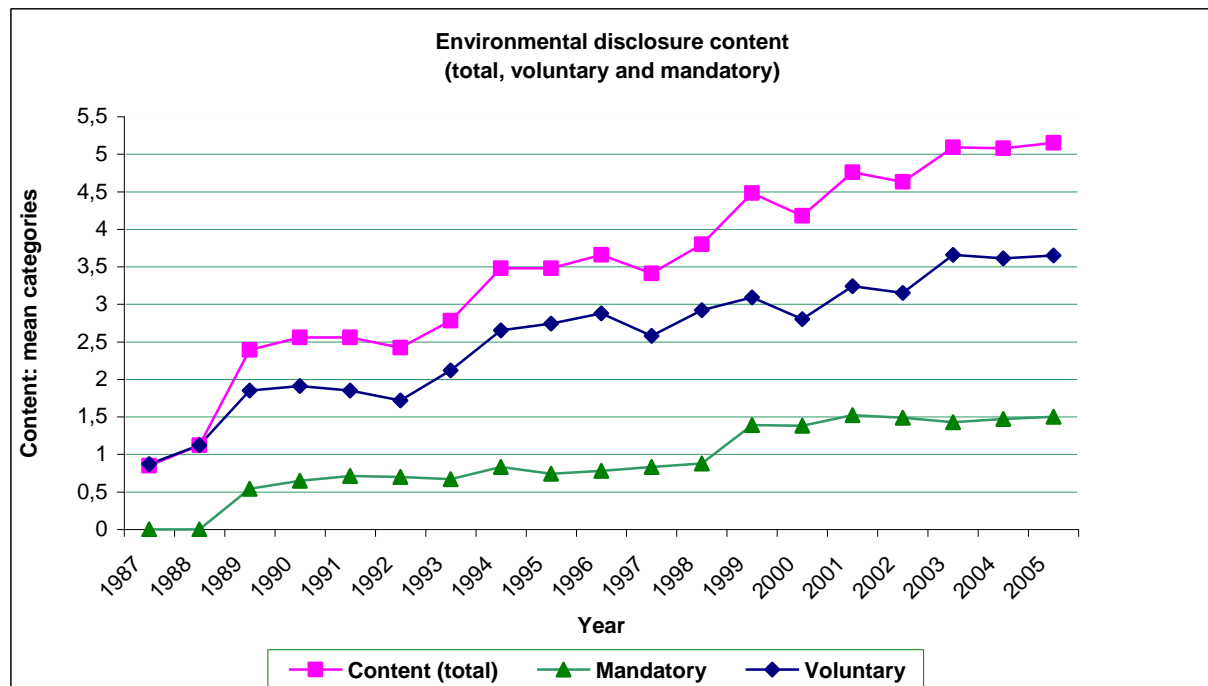
p = 2-tailed significance level

As from 1999, the new Accounts Act, which had more comprehensive requirements for environmental disclosure, was implemented. Part B of the first hypothesis ( $H_{1B}$ ), predicting growth in disclosure volume in 1999 compared with the previous year, was neither supported, when it comes to total volume change. The slight growth in total disclosure volume is not significant. Only expected growth in mandatory disclosure volume in annual reports is supported (Table 2).

Neither the total disclosure volume in 1989 nor the total volume in 1999 has turned out to be significantly affected by these legal regulations compared with the previous years. However, the total disclosure volume used to test the hypotheses ( $H_{1A}$  and  $H_{1B}$ ) in Table 2 included separate environmental reports and sections. The change in statutory regulations according to the Accounts Act requires the companies to provide the environmental information in the annual report, even if the company had separate environmental reports or special environmental sections in their financial statements. We have already revealed a possible substitution effect, according to the last hypothesis ( $H_5$ ), but a closer inquiry into this development is needed.

Hence, we have tested for changes of disclosure volume in the annual report, i.e. where separate environmental reports or sections are excluded. These volume changes are also presented in Figure 1 and Table 2. This measurement of volume should be directly influenced by the regulations in 1989 and in 1999. If the regulations affect volume significantly, the growth in these years should be higher than in the previous years. Table 2 reveals a significantly higher growth in environmental volume in the annual report in 1989 than in 1988. The growth in volume is also significantly higher in 1989 than in the following year. When the next regulation was implemented in 1999, Table 2 reveals that the growth in disclosure volume in annual reports, i.e. voluntary separate environmental reports excluded, is significantly higher than in the previous year. Consequently, both hypotheses ( $H_{1A}$  and  $H_{1B}$ ) are supported, only when it comes to expected changes in mandatory disclosure volume in annual reports.

**Figure 2**



The total information content of environmental disclosure consists of voluntary and mandatory information categories, and the total information has developed from an average of one category reported up to an average over 5 categories in the course of the 19 years period (Figure 2). The voluntary information was one category in average at the beginning of the period and has increased to a level slightly below 4 categories in 2005. Before 1989 there were no statutory obligations to report. A close look at Figure 2 reveals support for the hypothesis ( $H_3$ ) that the voluntary information categories constitute the most considerable part of the total environmental disclosure content during all years of statutory regulations and voluntarism, i.e. from 1989 to 2005.

From 1989 to 1998 the mandatory information should have been one category, if all companies fully complied and two categories in the entire period from 1999 to 2005. Actually, the mandatory information content in Figure 2 is slightly under one category, even at the end of the first period, and it does not reach more than an average of 1.5 categories at the end of the second period. This development of mandatory disclosure content in Figure 2 supports hypothesis ( $H_4$ ), which says that companies will not fully comply with statutory regulations of environmental disclosure.

**Table 3*****Changes in information content of environmental reporting between years (total, mandatory, voluntary)***

Hypothesis	Differences between years	Information content change – total (Mean number of categories, all included)		Information content change – mandatory (Mean number of mandatory categories)		Information content change – voluntary (Mean number of voluntary categories)	
		t-value	p	t-value	p	t-value	p
H <sub>2A</sub>	1988 – 1987 vs. 1989 - 1988	-3,99	.00	-6,81	.00	-2,30	.03
	1989 – 1988 vs. 1990 - 1989	3,25	.00	3,75	.00	2,35	.03
H <sub>2B</sub>	1998 – 1997 vs. 1999 - 1998	-1,35	.18	-3,26	.00	-0,12	.91
	1999 – 1998 vs. 2000 - 1999	2,12	.04	2,55	.02	0,91	.37

P = 2-tailed significance level

When it comes to part A and part B of the second hypothesis of how information content is affected by changes in statutory regulations (H<sub>2A</sub> and H<sub>2B</sub>), the results are included in Table 3. Part A of the second hypothesis (H<sub>2A</sub>) is strongly supported, i.e. the total information content is positively affected in 1989, compared with the previous year. This increase in the mean number of categories reported is also significantly higher than in the following year for both mandatory and voluntary information. Hence, the total information content is significantly affected.

Part B of the second hypothesis (H<sub>2B</sub>) is supported only when it comes to changes in mandatory information content affected by the statutory changes in 1999. There is a significant growth in mandatory information content in 1999 compared with the previous year. This is not the case for voluntary information content, and, consequently, the growth in total information content is not significant either.

As already pointed out, the voluntary disclosure of information content was significantly affected by the regulation in 1989. However, the growing voluntary information content developed further in the 1990s and in the early 2000s, even though there were no changes in statutory regulations (Figure 2). Actually, the new statutory regulation in 1999 did not immediately affect voluntary disclosure of information content compared with the foregoing years and the years to come.

## DISCUSSION

The purpose of this longitudinal study was to explore some differences between regulation of environmental disclosure and voluntary disclosure. We have put forward five hypotheses on the basis of these arguments. By testing these hypotheses, the study has revealed some results, which can improve our knowledge on the question of regulation versus voluntarism.

There is no support for regulations to affect disclosure of volume in financial statement when annual reports and volume of separate environmental reports and special environmental sections are included. However, the regulations in 1989 and 1999 required environmental information to be included in the annual report, even though the firm had separate environmental reports or special sections added to their financial statement. From the mid 1990s we observe a substitution of environmental disclosure of volume in annual reports for environmental disclosure of volume in separate reports and sections. Looking at environmental disclosure of volume in the annual reports exclusively, there is a significant increase from the previous year for the statutory regulation in 1989 as well as in 1999. The regulations had a significant and positive effect on the environmental disclosure of volume in annual reports only, as intended. However, the total volume of environmental disclosure in financial statements has decreased. The growth in mandatory disclosure volume in annual reports has not been sufficient to balance the reduced voluntary volume in separate environmental reports and sections.

There is a possibility that these modest regulations might legitimate firms to decrease their volume of voluntary environmental disclosure published in separate reports and sections. The firms might discover that their voluntary reporting so far had been more extensive than the modest legal requirements as from 1989. Consequently, modest regulations might legitimate the companies to decrease voluntary environmental disclosure volume.

The environmental information value depends not only on volume. The content is most important. The content variety of environmental disclosure measured by the growth of average number of information categories reported in the financial statement is significantly higher in 1989 than in the previous year and the year to follow. The regulations from 1989 only required the companies to report either whether the business pollutes the external environment (category no. 13), or if so, to make a summary of appropriate actions, which are carried out or planned to counteract such pollution (category no. 3). However, unlike the missing link between these regulations and a relative change in total volume, these modest statutory requirements had a positive effect on the content of environmental disclosure. Both mandatory and voluntary information content were affected. Consequently, the first introduction of statutory requirements in 1989 had an immediate effect on information content. The development of richer voluntary information content continued during the 1990s, irrespective of further legal changes. This growth indicates that voluntary information content is more likely triggered by pressure, legitimacy and stakeholders' need for environmental information rather than legal requirements. This supports the findings by Neu *et al.* (1998) and that voluntary reporting develops according to legitimacy and stakeholder theories.

The new Accounts Act implemented in 1999 had more comprehensive environmental disclosure requirements than the regulations from 1989. However, the relative increase in total environmental content did not differ significantly from the previous year. The increase in mandatory information content is significantly affected, but the regulation approach did not have the expected effect on the total environmental disclosure, because voluntary information content was not significantly affected. Actually, the growth of voluntary environmental disclosure content during the periods 1990 – 1998 and 2000 – 2005, where no statutory changes were implemented, favours a voluntary approach, where the driving forces are other than legal changes.

As expected, the regulation approach significantly affected mandatory disclosure information content. However, the present study has revealed that companies do not fully comply with the mandatory requirements of environmental information content and, hence, our results support the findings by Larrinaga *et al.* (2002). Since the environmental part of the annual report is not under auditing control, more legislation requirements are not necessarily required to improve compliance, but rather better review and enforcement are needed. Patten (2005) reached a similar conclusion to improve accountability of environmental disclosure. Furthermore, this study has revealed an adverse effect of the regulation approach. Compulsory obligations to publish mandatory environmental information in annual reports instead of separate voluntary reports, might have affected the total volume of environmental disclosure. This decrease in total disclosure volume might probably be a cost effective way for the companies adapting to the regulations. On the other hand, the total information content has increased, most of all, due to the development of voluntary information content during these years. Even in the period of decreased volume of environmental disclosure from 1996, the information content has increased. This reveals a development of more concentrated and varying environmental disclosure in annual reports from the mid 1990s.

The voluntary environmental information variety has almost quadrupled during these 19 years. This might be the companies' voluntary response to pressure from society, need to legitimate their existence or meet with the stakeholders' needs. Evidently, a regime of voluntarism is easily combined with a regulatory regime to provide adequate information for their stakeholders (Wilmhurst and Frost, 2000).

Actually, stakeholders are not a homogeneous group and counts customers, shareholders, employees, suppliers, competitors, local community groups, environmental pressure groups, government etc. The environmental information requirements of some stakeholders matter more for a company than those of others. Neu *et al.* (1998) have revealed that within the financial stakeholder grouping, the concerns of shareholders are the primary influence on the level of disclosure. Under a voluntary regime a company evidently will be eager to fulfil the requirements of those stakeholders that matter most to the company (Wilmhurst and Frost, 2000). The annual reports communications



are directed primarily towards the financial stakeholders. The increase in disclosure volume from these annual reports might be a voluntary response from companies and not only affected by statutory requirements in 1989 and 1999. The growth in voluntary content of environmental disclosure in periods of no changes in statutory requirements can be viewed as a flexible way to comply with the stakeholders' needs.

## **CONCLUSIONS AND IMPLICATIONS**

The present study has revealed that the limited scope of the regulation approach has a significant effect on mandatory environmental disclosure volume and content in annual reports only. However, even years after the introduction of the statutory regulations, the results from the present study reveal lacking compliance among companies. Based on our findings, there should have been one mandatory content category in all the years from 1989 and two categories in the period from 1999. This is not the case. Regulations without close review, auditing control and enforcement will not motivate full compliance. This is one of the lessons from the present study.

However, the most important lesson from this study is the significance of the voluntary approach to improve the variety of environmental disclosure to comply with heterogeneous needs of the stakeholders. According to Maltby (1997), the supporters of voluntarism need to prove that their approach empowers stakeholders. The present study gives support to the voluntary approach. The growth of voluntary information content did not stop after the first statutory regulation in 1989. During the entire period the voluntary environmental information content quadrupled from slightly less than 1 up to nearly 4 information categories on average (Figure 2). This study supports the claim from supporters of the voluntary approach (Donaldson and Preston, 1995) that companies will meet the heterogeneous requirements of their stakeholders without any governmental regulations.

The development of environmental disclosure, after the latest change in statutory regulation in 1999 and during the 2000s, reveals the same picture as in the previous period, i.e. a decrease of the total volume, a small increase in annual report volume and increased information content variety. During the entire period, we observe the total environmental disclosure to be more concentrated by decreased disclosure volume and increased content variety. The statutory regulations requiring mandatory reporting in annual reports probably trigger a process, where companies on a voluntary basis, are adapting to the legal requirements by substituting environmental disclosure in annual reports for separate reports and special sections. The growth in environmental information content variety is mostly due to the development of voluntary reporting. This development might be interpreted as a cost effective adaptation of the environmental disclosure. Even if the information volume is decreased, the information value is increased due to more heterogeneous information content. Consequently, this study argues in favour of the voluntary approach picturing more

concentrated and content intensive environmental disclosure during a period of no statutory regulation changes.

Strategic use of voluntary environmental disclosure is no part of the present study. However, we know from Larrinaga *et al.* (2002), Mobus (2005) and Criado-Jiménez *et al.* (2007) that legal regulations and mandatory environmental disclosure cannot stop strategic use of voluntary disclosure. Positive information seems to dominate voluntary environmental reporting (Deegan and Rankin, 1996; Niskanen and Nieminen, 2001). Actually, voluntary disclosure content develops independent of statutory requirements and this information constitutes the majority part of the companies' environmental disclosure. Hence, this comprehensive voluntary reporting underlines the need for auditing, review and enforcement to improve accountability rather than more regulations.

The regulation approach has an immediate effect on mandatory disclosure. The last lesson from this study is that statutory regulation only justifies implementation, to ensure a minimum standard of environmental disclosure that all companies should provide. No statutory regulations are needed to make the companies increase and adapt their environmental disclosure to the demand of their stakeholders and legitimate their existence towards society. Hence, the Government should primarily give priority only to statutory requirements of environmental information categories neglected by the companies.

However, there is no universal notion of voluntarism and, therefore, different countries and societies have different political cultures regarding voluntarism. According to Norwegian statutory requirements, all the thirteen information categories are voluntary in 1987 – 1988, eleven of the thirteen categories are voluntary in 1989 – 1999, and, finally, ten of the thirteen environmental disclosure categories are voluntary in 1999 – 2005. Environmental reporting in Norway is affected by these statutory requirements, and it may be underpinned by a certain set of societal responsibilities that may or may not exist elsewhere. Further research is needed to analyze whether these findings are readily generalized or only should be interpreted in light of local considerations.

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# EXPLAINING ADOPTION RATES OF INFORMATION CONTENT OF ENVIRONMENTAL DISCLOSURE: AN EXPLORATION OF INNOVATION ADOPTION THEORY

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## ABSTRACT

**Purpose:** Corporate management decides what types of environmental information content to disclose (adopt). It is explored whether internal context – decision-makers' perception of characteristics of the information content – might predict the variation in adoption rates of different types of content, and whether innovation adoption theory might represent important factors of this decision making process.

**Design/methodology/approach:** Actual adoption rates of 13 information content categories are computed using content analysis of annual reports for 62 listed companies. Each content category is seen as an innovation the company decides to adopt or not. Interviews with management in several companies illustrate the decision process of disclosure, and help predict adoption rates. Predicted and actual adoption rates are compared.

**Findings:** Adoption rates vary considerably between the 13 types of content. The absolute level of adoption rates are affected by company size and environmental risk. However, which of the content categories that have either relatively high or low adoption rates are consistent among the subsamples, regardless of those corporate characteristics. This consistent variation in adoption rates seems to be predicted well by innovation adoption theory and its focus on five attributes of the information itself (compatibility, trialability, complexity, observability and relative advantage).

**Research limitations/implications:** The theoretical framework allows for different or changing internal and general context, and should be applicable to other settings, even though the particular predictions for adoption rates in this paper may not.

**Originality/value:** The level of analysis is changed from company, the dominant level in previous research, to individual content categories. Perceived attributes of the information content itself (internal context) and innovation adoption theory are used for the first time, and are fruitful tools, to predict (or explain) consistent variations in adoption rates between different types of content. This provides new insight into the driving forces of supply of disclosure.

**Keywords:** Environmental disclosure, innovation adoption theory, information characteristics, adoption rate, internal context, CSR reporting

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## INTRODUCTION

Before the 1970s/80s relatively few companies in western countries systematically disclosed environmental information in their annual reports. Currently, however, voluntary disclosure of environmental information is common practice (Lessem, 1979; Fallan and Fallan, 2009). This development indicates that a reporting innovation has taken place.

Similarly, research on environmental reporting has also developed during the same period. A voluminous body of literature addresses questions such as the extent of reporting; the quality and quantity of reporting; the completeness and comprehensiveness of reporting; and mandatory versus voluntary reporting (Adams, 2002:224). In addition to these issues, it would appear obvious that the actual information content disclosed should matter to users, and therefore, researchers. Adoption rates (the proportion of companies that disclose information) vary significantly among various kinds of environmental content (Tilt, 2008; Beck et al., 2010; Guidry and Patten, 2010). It is crucial for stakeholders and regulators to understand what kinds of information content are frequently and infrequently disclosed in corporate reporting, and why the adoption rates differ. If corporate reporting does not provide the needed information, knowledge of the reasons for this will help stakeholders and regulators take appropriate action in order to secure future supply. Alternatively, users will realize that expectations (and use) have to be adjusted or concentrate on other sources of information.

The motivation for the study of environmental information content is comprised of three factors. Firstly, few papers analyse the different types of information content companies actually disclose. Even fewer explain why adoption rates vary. The few existing studies relate adoption rates of individual content categories to variables such as country and industry (Roberts, 1991); industry and disclosure medium (Patten and Crampton, 2003); time (Ljungdahl, 1999); country and time (Beck et al., 2010); and several corporate characteristics and general contextual factors (Brammer and Pavelin, 2008). This paper provides evidence about which types of content are frequently and infrequently adopted, and why this happens.

Secondly, Adams (2002) states that while research has primarily been concerned with the impact of corporate characteristics (e.g. industry, size and profitability) or general contextual factors (e.g. country, legal requirements, media pressure, economic cycles, culture and time), these factors alone cannot fully explain corporate social responsibility (CSR) reporting practice. Based on interviews with representatives for British and German companies, Adams (2002:246) includes internal contextual factors in the explanation model, in addition to corporate characteristics and general contextual factors. Internal context is split into two components: internal processes; and

views and attitudes of key corporate players concerning decisions of reporting. “Internal processes” consist of e.g. the composition of the board and committees, structure and corporate governance, involvement of stakeholders and consultants etc. “Attitudes” include attitudes towards perceived costs and benefits of reporting; views on reporting bad news, regulations, and verification; and the impact of corporate culture on disclosure. These internal factors seem to be relevant for considering what types of information content are frequently and infrequently reported. This is supported by other studies (Lee and Hutchison, 2005; McMurtrie, 2005). However, the model has some limitations (Adams, 2002:245-246):

*“The power of the various variables to influence the reporting also appears to differ across countries, industries and companies, and this model suffers from the same failings as the contingency models of management accounting in not being able to predict which will be the most important under different circumstances.”*

This challenge should be addressed by research on internal factors. However, limited research has been done on managerial attitudes (Fifka, 2013). Adams (2002) could only identify two papers that analyse internal “processes” (Cowen et al., 1987; Campbell, 2000). Said et al. (2009) discovers that government ownership and (non-executive directors sitting on) audit committees affect CSR reporting, based on data from annual reports. Ljungdahl (1999) uses interview data to explore the second part of the internal context: managers’ attitudes towards several external and internal explanatory factors. A study by O'Dwyer (2002) suggests that managers do not understand why their company discloses CSR information, at least as a tool of legitimization. None of these studies explain adoption rates of individual content categories. Adams (2002) calls for additional research into internal contextual factors. This paper addresses these challenges by changing the level of analysis from the company to the information content: The reporting companies’ attitudes towards disclosing different kinds of environmental content are influenced by the attributes of the information content itself.

Thirdly, Adams (2002) points out that the common application of legitimacy theory, stakeholder theory, and political economy respectively can only partially explain why and how companies report CSR information. Adams (2002:245) puts it this way:

*“The theories have limited explanatory power and there is no conclusive evidence in support of any of them. Although one must be careful in generalizing from such small sample work, this study does allow some tentative conclusions to be reached with regard to other internal contextual variables which have an influence on social reporting and which are worthy of further research.”*

This is true also for the topic of this paper. These frequently used theories are not well suited for predictions about adoption rates for a large variety of individual information content categories. Looking at each type of environmental content as an innovation provides a new theoretical perspective. Innovation adoption theory (Rogers, 2003) is a part of the widely used innovation theory. Even though this theory is used in financial, management and tax accounting research, its adequacy has not been explored in relation to environmental disclosure. The theory extends the understanding of why adoption rates of information content vary by identifying important elements of decision models of decision makers. The theory explains disclosures based on the reporting companies' attitudes towards different attributes of information content. One purpose of this paper is to explore whether innovation adoption theory may account for the variation in adoption rates for different content of environmental disclosure. The proposed framework is a flexible tool. The use in this paper is partly context-based, so different settings might offer different predictions. Additionally, the framework allows integration of elements of other theories, such as legitimacy and agency theory.

The study sets out to answer two main research questions. What are the adoption rates for different types of environmental information content, and why do the rates differ? More precisely, the purpose of the second question is to indicate whether or not perceived attributes of the information content might account for differences in adoption rates: Can innovation adoption theory help predict whether adoption rates will be high or low? However, a main finding in the literature is that disclosure on an aggregate level is positively related to the corporate characteristics environmental risk (industry) and company size (Fifka, 2013). If this is true, the adoption rates of large or high environmental risk companies will be higher on average than for other companies. In order to explore whether attributes of information content affect adoption rates, it is necessary to control for those two variables. The second research question is then answered by ranking the adoption rates of different information content categories. Such a study has not been performed previously. The challenges described in connection with the three motivations for the paper above are addressed in the process of answering the two research questions.

In the following sections, innovation adoption theory is presented and methodological issues addressed. These two sections are prerequisites for the subsequent prediction of the adoption rates, calculation of actual adoption rates and comparison of predicted and actual rates. Five attributes of information are used to consider the likelihood of adoption of 13 information content categories. Because this framework is new to CSR and environmental disclosure research, a thorough discussion is needed. This is partly placed in appendices B-F.



## INNOVATION ADOPTION THEORY

According to Walker (1988:170), “demand and supply of financial reporting should be seen as choice behaviour”. Adoption (of e.g. environmental disclosure) is one type of decision-making (Rogers, 1962). To predict or explain disclosure it is therefore necessary to study what aspects individuals (or groups) consider in the decision process. Adams (2002) points out that the views and attitudes of the management of reporting companies (internal context), management’s perception of advantages and disadvantages of reporting, influence decisions about CSR disclosure. For example, in buying or investment decisions, this assessment is likely to include price, economic and social benefits, difficulty of use etc. These perceptions of costs and benefits are attributes of the reported information (and the reporting process) itself, but strangely enough, are hardly addressed in CSR reporting research. To study this issue, a new theoretical framework is introduced: innovation adoption theory (Rogers, 2003).

Innovation adoption theory and diffusion theory are parts of the widely used innovation theory. Rogers’ *Diffusion of innovations*<sup>2</sup> has been the second most cited book in the social sciences (Singhal, 2005). “No other field of behaviour science research represents more effort by more scholars in more disciplines in more nations” (Rogers, 2003:xviii). Rogers (2003) estimated the number of innovation theory studies to be 5,200. Some of the disciplines in which innovation theory is used are closely related to environmental reporting: management accounting (Ax and Bjørnenak, 2005; Olsen, 2012), tax planning (Fallan et al., 1995) and financial (and tax) accounting (Copeland and Shank, 1971; Comiskey and Groves, 1972; Hussein, 1981; Bao and Bao, 1989). Nevertheless, the theory is hardly ever used to explain environmental disclosure. Fallan (2007 and 2013b) and Fallan and Fallan (2007) have made some initial explorations. Ljungdahl (1999) mentions that environmental disclosure can be seen as an innovation, but does not make use of the theory. This is the first study in English to systematically use innovation adoption theory to predict or explain adoption of environmental disclosure.

According to Rogers (1995:11), “An innovation is an idea, practice, or object that is perceived as new by an individual or other unit of adoption.” The idea does not have to be objectively new; it is sufficient for it to seem new to the individual. Newness in an innovation may be expressed in terms of knowledge, persuasion, or decision to adopt. A person or an organization may have known about an innovation for some time without having developed either a favourable or unfavourable attitude towards it or having decided to adopt or reject it (Rogers, 1995). Significant changes in the context in which it is used might make also affect perceived newness. Shephard (1967:470) emphasizes that:

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<sup>2</sup> The book addresses both diffusion and adoption of innovations. Diffusion is the cumulative effect of individual adoption decisions (Rogers, 1983).

*“When an organization learns to do something it did not know how to do before, and then proceeds to do it in a sustained way, a process of innovation has occurred”* (or correspondingly if it stops doing something it did do).

Accounting changes can be perceived as innovations (Shank and Copeland, 1973; Hicks Jr., 1978; Harrison and McKinnon, 1986). Similarly, environmental disclosure – and each type of information content individually – fulfil these requirements. They can be seen as innovations of reporting, each having specific characteristics that may explain how easily they are adopted, other things being equal.

Some strong generalities have emerged from a large number of studies<sup>3</sup> of innovations (Rogers, 2003). The adopter’s perception of five identified attributes of an innovation affects the rate of adoption. For example, research on adoption has shown that the higher the perceived relative advantage of an innovation, other things being equal, the more likely it is that the innovation will be adopted and the more quickly this will happen. The identified attributes are perceived compatibility (+), complexity (–), trialability (+), observability (+) and relative advantage (+) (signs in parentheses indicate the direction of the relationships) (Rogers, 2003). Rogers (1962) identified 39 characteristics in previous research, which are subsumed in these five general attributes. According to Rogers (1983), the five attributes are somewhat empirically interrelated, but conceptually distinct. The objective was generality and succinctness: to find comprehensive characteristics that are as mutually exclusive and universally relevant as possible. Several studies will be used below to clarify the content of these constructs. The two most important are a validated measure instrument developed with use of previous research, empirical data from judges, field tests and a survey, and tested with factor (and discriminant) analysis (Moore and Benbasat, 1991), and a meta-study based on 105 studies (Tornatzky and Klein, 1982). Rogers (2003) states that the five attributes explain between 49 and 87 % of the variance in the rate of adoption of innovations!<sup>4</sup> Another comprehensive review of studies on diffusion and adoption of innovations “essentially confirms the validity and utility of Rogers’s original formulations” (Rothman, 1974:419). Still, Rogers (1983) emphasizes that not all (types of) innovations are equivalent in this respect. Adams (2002) focuses on the views and attitudes of managers. Similarly, innovation adoption theory considers management’s perception of the five attributes, not objective measures. Rogers (1983:211) also refers to psychological research, claiming that: “If men perceive situations as real, they are real in their consequences.”

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<sup>3</sup> Rogers (1962:5) reviewed 506 diffusion studies to develop the model in “Diffusion of Innovations”, while Shank and Copeland (1973:495) claim that Rogers “cites evidence from more than 180 empirical studies in support of [innovation adoption theory]”.

<sup>4</sup> The evidence for these numbers is presented in Rogers and Shoemaker (1971) and Rogers (1983). It seems to be scarcer than 180 studies.

In this paper Rogers’ five attributes of innovations are used to analyse the adoption rates of different information content categories:

Content category → Perceived attributes of information content → Likelihood of adoption

**RESEARCH METHOD**

The first research question requires identification of actual rates of adoption for different types of environmental information content. This is achieved through content analysis of annual reports.

The second research question concerns the reason for variation in adoption rates and whether innovation adoption theory is a fruitful framework for predicting (or explaining) adoption rates. This is addressed by comparing predicted (expected) and actual rates for corresponding types of content. Predictions are made by theorisation of Rogers’ five attributes of innovation adoption on different types of environmental information content. This process is assisted by interviews with managers of reporting companies, previous research on environmental disclosure and other theories.

The two types (sources) of data collected – interviews (used to assist prediction of adoption rates) and content analysis of annual reports (used to identify actual adoption rates) – are not integrated, and will be described separately below.

**Interviews**

Semi-structured interviews with chief accounting and/or environmental officers (CAO) from companies listed on Oslo Stock Exchange (OSE) were conducted in the autumn of 2011 (Table 1). An interview guide was developed, based primarily on the innovation adoption theory framework. Before each interview minor adjustments were made in the guide to adapt to industry or company. The CAOs clarify the process of deciding the disclosure of environmental information content in annual reports, and reveal perceptions of attributes of information content. Companies are selected from different industries – according to their Global Industry Classification Standard (GICS) classification – to allow answers to be influenced by heterogeneity of operations, products and environmental impacts. The interviews were recorded and transcribed. Quotes are translated to English by the author(s).

**Table 1:** *Interviews with managers*

		No. of people	Length in
Company	Sector	interviewed	minutes

C1	Consumer staples	1	87
C2	Consumer staples	1	44
C3	Energy	2	58
C4	Industry	2	174
C5	Financials	1	84
<b>SUM</b>		<b>7</b>	<b>447</b>

## Content analysis of annual reports

### Sample

Cross-sectional data for environmental content are collected from annual reports for 2008. At the end of 2008 there were 203 Norwegian companies and equity certificates (hereafter companies) listed on OSE. The total sample consists of 62 companies. Two pairs of subsamples are based on environmental risk and size. The first pair includes the 17 listed companies classified by the Climate and Pollution Agency (KLIF) as having the highest environmental risk, and 45 companies selected from two GICS sectors assumed to have minor environmental risk, namely finance (including equity certificates) and information technology. The last pair consists of the 31 largest and 31 smallest companies in the sample, measured by number of employees<sup>5</sup>. Number of employees was obtained from annual reports.

Norwegian data is used partly because of similarity to other western countries and partly because environmental reporting regulations has existed since 1989. The latter would imply a possibility of internalisation, and illustrates management's discretion in decisions regarding disclosure. In Norway the decisions regarding whether or not, how much, what type of content and in what form to disclose environmental information fall almost entirely to the company (Fallan and Fallan, 2009) – or at least company management seems to have this perception. The first reason for this is that disclosure of most types of information content is voluntary. Secondly, existing regulations are minimum requirements, so excess information on these types of content can be perceived as predominantly voluntary as well. Thirdly, there is no (and has never been) direct enforcement of the regulation from the government. In reality, the same seems to apply for auditors (Melting and Tungen, 2012). The enforcement of environmental disclosure regulations differs from

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<sup>5</sup> In the literature company size is usually measured with data for market value (Plumlee et al., 2010), number of employees, sales/turnover or total assets [examples of the three latter displayed in Ljungdahl (1999:89)]. Turnover and total assets are not considered because accounting measures are not comparable between financial institutions and other companies. The results of the study were not significantly affected by the choice of employees or market value as proxy.

the enforcement of reporting requirements of the financial statements. A relatively large proportion of companies in Norway do not comply with regulations of environmental (and related) disclosure (Fallan and Fallan, 2009; Vormedal and Ruud, 2009; Melting and Tungen, 2012). This result is found in many countries (Adams et al., 1995; Larrinaga et al., 2002; Day and Woodward, 2004; Criado-Jiménez et al., 2008), indicating that the Norwegian context is common.

### **Selected data source**

The annual report is selected as the only source of data for this study. It has a genuine status, is a clearly defined document, and is an important medium for environmental disclosure. Companies use other media such as separate reports and corporate web sites as well, and evidence of previous research appears to be mixed as to the annual reports' representativeness of total disclosure (Unerman, 2000; Frost, 2007; Tilt, 2008; De Villiers and Van Staden, 2011). However, in the present study it is the representativeness of information *content* for the selected data source(s) that matters, not e.g. volume of disclosure. According to the review of research and empirical evidence in Fallan (2013c), the annual report is an adequate proxy for total disclosure regarding information content (which is disconnected from volume of disclosure).

### **Operationalizing environmental information content**

Content analysis is here seen as the classification of information content in predefined, mutually exclusive content categories. It is used to identify, separate and describe environmental information content. The categorization of disclosures is based on two main principles. The list of categories is complete, i.e. all possible and relevant types of environmental content is included in one of the categories. The categories are also mutually exclusive, i.e. each type of information is included in only one category.

What kind of information content is sought? Firstly, the categorisation should be sufficiently detailed to indicate the (non-)existence of useful financial and non-financial information – both according to resource allocation and stewardship objectives of financial accounting (Gjesdal, 1981) and externalities – reflecting the broader boundaries central to the nature of environmental disclosure. Secondly, the categorisation should be sufficiently aggregated to suit the differing characteristics of various industries or environmental risks and impacts. With such a trade-off, identification of the most important kinds of information content of corporate environmental disclosure is not trivial. This was the objective of a comprehensive work on multinational corporations (UNCTC, 1991). Ljungdahl (1999) used their results to develop content categories for a longitudinal study of Swedish, listed companies. Thirdly, the categorisation must separate mandatory and voluntary disclosure. The current categorisation is similar to Fallan and Fallan (2009) – a mild

adaptation of Ljungdahl (1999), primarily to fit regulations in the Norwegian Accounting Act. The 13 information content categories are listed in Table 2, and further described in Appendix A. Fallan (2007) provides detailed guidance on how to classify according to these categories. This categorisation is used in many studies, and is shown to be adequate for measuring the content of the environmental disclosure practice (Fallan and Fallan, 2009; Hofsmo and Johansen, 2012). The categorisation is chosen because of the specificity, cross-industry and regulatory fit, and the thorough, validity enhancing development process described above.

Measurement and collection of data are closely connected. Assigning heterogeneous types of information content to 13 categories is demanding, and ambiguity might occasionally appear. The process involves several threats to reliability. Several measures are taken to improve different types of reliability. Completeness of identification of relevant disclosures was addressed by reading annual reports carefully and electronic searches for key words. The category variables are made dichotomous to improve consistency of coding: If the environmental disclosure includes one type of information which belongs to a specific category, the value 1 is assigned (and zero otherwise) regardless of the volume of disclosure etc. Both coding and category definition reliability is enhanced by applying a thoroughly tested categorisation with existing category descriptions (Appendix A) and lists of examples of disclosures for each category (Ljungdahl, 1999; Fallan, 2007). The example lists were updated when difficult cases appeared. The coders were trained by the author, who has extensive experience on content analysis. Firstly by registering companies from different industries together, and secondly by registering separately to compare the results. The data is collected by two master students in accounting (Stellander and Jørgensen, 2010). Inter-coder reliability (Milne and Adler, 1999) is of limited relevance because the coders registered the data jointly. After going through all the reports, the registrations were controlled by coding all companies once more. This reduces the risk that coding changes over time.

On company level, the content variable will reveal whether a content category is adopted or not. On sample level, adoption rates reveal the proportion of companies that have disclosed information belonging in each content category. Adoption is measured as actual implementation, not the decision whether or not to adopt. Computation is based on the primary data source (annual reports). Then challenges of self-reported adoption rates (e.g. surveys) (Adams et al., 1999) is avoided.

**Table 2:** *Environmental information content categories*

No.:	Category:	Regulation:

1	Environmental policy	Voluntary
2	Environmental objectives	Voluntary
3	Environmental impact – process	Mandatory
4	Environmental impact – product	Mandatory
5	Environmental organization	Voluntary
6	Environmental auditing	Voluntary
7	Environmental authorities	Voluntary
8	Environmental events	Voluntary
9	Environmental investments	Voluntary
10	Environmental costs/-revenues	Voluntary
11	Environmental liabilities	Voluntary
12	Definition of environmental concepts/accounting principles	Voluntary
13	No environmental impact	Mandatory

Source: Fallan and Fallan (2009)

## PREDICTION OF ADOPTION RATES FOR ENVIRONMENTAL CONTENT CATEGORIES

Supply of corporate environmental reporting is affected by both supply- and demand-side factors. This study focuses on the supply-side by exploring the perceived attributes of the information content itself, *viewed from the perspective of the reporting company*. Predictions should ideally be made for one innovation in one organization at one point in time. However, regardless of individual variations, some important features of environmental disclosure content are likely to have a broader applicability and might allow some general tendencies to be indicated. The predictions below are not based on e.g. a survey measuring the attitudes of decision-makers, but based on what is likely to be common ground, established by innovation adoption theory, the conducted interviews, previous research and other theories.

The 13 content categories are evaluated in light of Rogers' five attributes – perceived compatibility, trialability, complexity, observability and relative advantage – to identify whether

some categories are more easily adopted than others. Both absolute and relative differences between the 13 types of content might lead to variation in adoption rates: Some issues might promote adoption of some information content categories and hamper adoption of others (absolute differences), while other factors affect the adoption of content categories in the same direction, but to different degrees (relative differences). Of all aspects that could be addressed in connection with each attribute below, the discussion will concentrate on some important factors perceived to make adoption rates differ between information content categories. In Norway both corporate management and board of directors make environmental disclosure decisions on behalf of the company. They are referred to as “the adopter”.

## Compatibility

Compatibility is the degree to which an innovation is perceived to be consistent with existing values, beliefs, past experiences, ideas, and needs of potential adopters (Rogers, 2003). Similarly, Tornatzky and Klein (1982) link “this broad definition” to values and norms of potential adopters or congruence with their existing practices. Moore and Benbasat (1991) identify an aspect of particular importance to environmental disclosure: voluntariness of use (the degree to which the innovation is perceived as being voluntary to use), due to expectations, requirements etc. Compatibility will decrease the risk for a potential adopter. An idea that is perceived as fully compatible with the values, norms, and social interests of society has a higher probability of being adopted than ideas that are incompatible.

Definitions of legitimacy show that it is closely related to compatibility:

*“A generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed systems of norms, values, beliefs, and definitions”*  
(Suchman, 1995:574).

Aldrich and Ruef (2006:186) divide legitimacy into cognitive and socio-political legitimacy. Cognitive legitimacy refers to the degree of acceptance in a social network, where the highest form would mean that something is so familiar or common to expect or use that it is taken for granted. Socio-political legitimacy refers to the acceptance by key stakeholders as appropriate and right. It consists of two components: Moral legitimacy involves “conformity with cultural norms and values” – assessments of right and wrong; and regulatory legitimacy concerns “conformity with governmental rules and regulations”. For Aldrich and Ruef (2006), legitimacy is intertwined with strategies facilitating it. Environmental disclosure is both an innovation that in itself might be compatible with society’s values<sup>6</sup> and a strategic tool companies use to secure compatibility.

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<sup>6</sup> Companies should inform society about the effect on the environment of their operations and products.



A discussion of compatibility issues affecting adoption of environmental content categories is provided in Appendix B, addressing reporting and environmental regulations. It indicates that perceived compatibility, due to both regulatory and moral acceptance of norms, values, ideas or practices of society, enhances adoption of categories (1) “Policy”, (2) “Objectives”, (3) “Impact – process”, (4) “Impact – product”, (5) “Organisation”, (7) “Authorities”, (8) “Events” and (13) “No impact”.

## **Trialability**

Trialability is the degree to which an innovation may be experimented with on a limited basis (Rogers, 2003). Innovations that can easily be tried on the instalment plan are generally adopted more rapidly than those that are harder to experiment with. Perceived trialability is positively related to adoption of innovations (Rogers, 2003). This construct contains several elements. *Divisibility* is “the extent to which an innovation can be tried on a small scale prior to adoption” (Tornatzky and Klein, 1982:37). Even though “[a]ccounting innovations are often quite divisible in this sense” (Copeland and Shank, 1971:198), the degree might vary.

What is the additional content of trialability? Rogers and Shoemaker (1971:155) focus on “the notion of a psychological trial”, e.g. the perceived need for one’s own trial might be affected by the possibility of learning from other organisations’ trials of an innovation. The validated measure of Moore and Benbasat (1991) extends the list with items such as opportunities to try the innovation, knowledge of where one can do so, availability-, ability-, how much effort it takes-, and help in doing so. The two items indicated as most important are partly related to time, effort or resources. Time and effort are also indicated in Browning and Sørnes’ (2008) exemplification of trialability. Regardless of whether something new is difficult to do or learn (which regards the attribute “complexity”), experimentation might require time, planning and effort – which affects perceived trialability. According to Rothman (1974) (geographical) accessibility will affect availability of an innovation for trial as well.

A discussion of how divisibility and other aspects affect perceived trialability and adoption of content categories is found in Appendix C. All in all, relatively high perceived trialability promotes adoption of categories (1) “Policy”, (5) “Organisation” and (13) “No impact”, while a relative lack of trialability hinders adoption of (2) “Objectives”, (6) “Auditing”, (7) “Authorities”, (8) “Events”, (9) “Investments”, (10) “Costs/revenues”, (11) “Liabilities” and (12) “Definition of concepts and accounting principles”.

## Complexity

Complexity is the degree to which the adopter perceives an innovation to be relatively difficult to understand and use for the adopting unit (Rogers, 2003). Browning and Sørnes (2008:53) extend “understand and use” to “comprehend, implement and use”, and Tornatzky and Klein (1982) include implementation as well. According to Rogers (2003:257), “any new idea may be classified on the complexity-simplicity continuum”. Some innovations are clear in their meaning to the adopter while others are not. Rothman (1974) illustrates this with the notion of diffusibility. The validated measure of Moore and Benbasat (1991) identifies several items: requires mental effort, interaction with the innovation is clear and understandable, easy to learn to operate, believed easy or cumbersome to use overall, often frustrating to use etc. The perceived complexity of an innovation is negatively related to adoption.

For reporting innovations, the complexity attribute might regard both the implementation (preparation) and adopters’ own use of the reporting. Only the first is addressed here. Considerations concerning the latter are similar to perceived complexity of other stakeholders’ use of the disclosures, and these are therefore discussed together in connection with the attribute “relative advantage”.

Perceived low complexity supports adoption of categories (1) “Policy”, (5) “Organisation” and (13) “No impact”, and perceived high complexity hampers adoption of (2) “Objectives”, (6) “Auditing”, (9) “Investments”, (10) “Costs/revenues”, (11) “Liabilities” and (12) “Definition of concepts and accounting principles”. A detailed description of the arguments supporting these predictions is left for Appendix D.

## Observability

Observability is the degree to which the results of an innovation are visible to others (Rogers, 2003). Tornatzky and Klein (1982) find that some studies separate observability and communicativeness (the degree to which aspects of an innovation may be conveyed to others), but concludes that the concepts are very similar. According to the validated measure of Moore and Benbasat (1991:210), “Observability as originally defined by Rogers seemed to be tapping two distinctly different constructs, Result Demonstrability and Visibility.” Result demonstrability regards “the tangibility of the results of using an innovation” (Moore and Benbasat, 1991:203). Adoption is enhanced if the advantages of using an innovation are visible (easily observed, communicated or measured), and hindered if benefits or consequences of use are not apparent or difficult to explain. Visibility involves the idea of the innovation (as opposed to its results) being visible. It is based on research on human behaviour:

*“When objects are presented to the individual on repeated occasions, the mere exposure is capable of making the individual's attitude toward these objects more positive” (Zajonc and Markus, 1982:125).*

Visibility means that environmental content that the adopter has seen (been exposed to) frequently is more likely to be adopted than content that is unfamiliar. The development of the attitudes in question seems to be an unconscious process. A consequence is that adoption of the most common corporate environmental reporting practices is enhanced. The resulting imitation is similar to e.g. institutional theory and imitation of perceived successful company practices (DiMaggio and Powell, 1983). However, visibility does not require that disclosure be seen as a factor in the success of other companies; it is enough that it be present. A special case of this argument is that companies will disclose the same information as in previous years – hence, will imitate themselves – since this is the information most visible and familiar to them. Perceived observability, both result demonstrability and visibility, is positively related to rates of adoption.

The argumentation behind the predictions based on perceived observability is enclosed in Appendix E. Perceived high observability promotes adoption of categories (1) “Policy”, (3) “Impact – process”, (4) “Impact – product”, (5) “Organisation”, (7) “Authorities” and (13) “No impact”.

## **Relative advantage**

Relative advantage is the degree to which an innovation is perceived as being better than the idea it supersedes (Rogers and Shoemaker, 1971:138). Rothman (1974) adds that the perceived advantages are compared to other potential innovations as well as present practice. Empirically, relative advantage is found to be an important explanatory variable, because it “is often the content of the network messages about an innovation” (Rogers, 1983:217). Consideration of advantages, costs and other disadvantages of the innovation, and seeking information to reduce uncertainty in the cost-benefit analysis, are core features of innovation adoption decisions. Shank and Copeland (1973) interpret the attribute to be perceived economic advantages, rather than the four sociological variables listed above. However, it is clear from the literature that non-economic factors are relevant too.

*“Relative advantage is a ratio of the expected benefits and costs of adoption of an innovation. Subdimensions of relative advantage include economic profitability, low initial cost, a decrease in discomfort, social prestige, a saving of time and effort, and immediacy of reward” Rogers (2003:233).*

According to Tornatzky and Klein (1982) and Moore and Benbasat (1991) the most important elements of relative advantage *on an organisational level* are costs, profitability, image and other factors. Moore and Benbasat (1991:195) do not study costs and profitability at the individual level

adopting unit (employees), but clarify that these “are issues most likely addressed at the organization level when the decision is taken to make [an innovation] available [to the employees]”. These four factors structure the presentation below.

Many types of costs are mentioned in the literature. Rogers (1962), Rogers (2003) and Tornatzky and Klein (1982) cover, at the least, cost, economic cost, initial cost, continuing cost and cost of production. Tritschler (1970) studies financial and tax accounting innovations, and addresses compliance costs for meeting the objective of the innovation: both fixed start-up costs, incremental on-going costs, and costs related to revocable innovations and potentially later rounds of start-up costs. Even sunk cost (e.g. of former system development), which is theoretically irrelevant to (investment) decisions, might be *perceived* as relevant by adopters (Tritschler, 1970). This is supported by empirical studies such as that of Fallan (2013), which shows that M.Sc. students in business administration make systematic errors (especially concerning sunk cost) in economic decision-making situations. Mental processes cannot be described only by normative theory of rationality alone. Costs should usually be considered in light of related benefits. In reality an isolated perception of costs is also relevant. This is not only due to of breach of assumptions of rationality. A reason that is especially relevant for environmental reporting is the uncertain occurrence and possibly distant timing of beneficial consequences, so it is difficult to perceive its benefits. Rogers (2003) relates this particularly to preventive innovations that lower the probability of unwanted future events. Additionally, e.g. stewardship incentive mechanisms (Gjesdal, 1981) imply that it is natural to consider indirect costs of reporting as well as direct costs. The costs of an innovation are assumed to be negatively related to adoption and implementation (Tornatzky and Klein, 1982).

Profitability “is the level of profit to be gained from adopting the innovation” (Tornatzky and Klein, 1982:37), or “the difference between economic returns resulting from adoption of an innovation and the innovation’s economic cost” (Rogers, 1962:136). Profit can be seen and measured by accounting and economic concepts, e.g. changes in a firm’s market value. The meta-study of Tornatzky and Klein (1982) identified items such as rate of cost recovery, payoff and riskiness. In contrast to costs, profitability is per definition a cost-benefit analysis. Costs and revenues, cash flows in and out etc. often affect each other, which makes it logical to study them together. In such a process, reduction of risk is important. Perceived profitability is positively related to adoption (Tornatzky and Klein, 1982).

Image is “the degree to which use of an innovation is perceived to enhance one’s image or status” (Moore and Benbasat, 1991:195). They confirm that image is similar to the notion of “social approval” in Tornatzky and Klein (1982). It is a non-financial aspect of reward, and a product of

interaction of the innovation and the adopting unit. The validated instrument of Moore and Benbasat (1991) identifies key items, such as “prestige”, “use improves my image”, “seen as valuable by others”, “high profile” and “status symbol”, while Tornatzky and Klein (1982) add “scientific status”. Reputation is also a connected item. Rogers (1983) claims that social status is an important motivation for most individuals. Perceived image is positively related to adoption (Tornatzky and Klein, 1982, Moore and Benbasat, 1991).

“Other aspects of relative advantage” is the last sub-dimension. Tornatzky and Klein (1982) refer to relative advantage as a garbage pail in which characteristics that do not fit elsewhere are dumped. What perceived relative advantages remain after separating the three factors above? Rogers (2003) mentions (dis)comfort, time and effort saved, and the certainty and immediacy of beneficial consequences. Moore and Benbasat (1991) identify items like improved performance, effectiveness, control, productivity and speed-, quality- and ease of work. Tornatzky and Klein (1982) list e.g. social benefits, mechanical attraction, hazards removed, reduced labour requirements and regularity of reward. Some of these items might affect costs, profitability and image, but are treated separately because they can be seen as advantages in themselves as well. Companies do not only have an inward view when considering adoption of innovations. Their perception of their own and stakeholder’s demand for environmental disclosure might be considered. Perception of risks and opportunities are closely tied to external stakeholders:

“The existing literature demonstrates that these costs and benefits are associated with pressure from external agents such as legislators, regulators, community and environmental lobby groups, consumers and socially responsible investors” (Brammer and Pavelin, 2008:122).

However, because benefits (especially profit or revenue) and disadvantages associated with meeting or disregarding perceived demand are uncertain, this topic is addressed here. There is a positive relationship between perceived relative advantage and rate of adoption (Rogers, 2003).

The four dimensions of relative advantage are explored in Appendix F. Perceived high relative advantage will enhance adoption of categories (1) “Policy”, (3) “Impact – process”, (4) “Impact – product”, (5) “Organisation”, (6) “Auditing”, (7) “Authorities”, (12) “Definition of concepts and accounting principles” and (13) “No impact”, and hampers adoption of (9) “Investments”, (10) “Costs/revenues” and (11) “Liabilities”.

# COMPARISON OF PREDICTED AND ACTUAL ADOPTION RATES

## Predicted rates of adoption

The last column in Table 3 summarizes the predictions for each of the five attributes to form expectations about whether the adoption rates of the 13 environmental content categories are relatively high or low. Perceptions of each attribute for each content category might indicate whether adoption is promoted (+) or hindered (–), but does not provide information about the strength of relationships. Since more than one attribute is relevant for each category, there might be attributes simultaneously promoting and hindering adoption. In order to predict the influence on adoption, it is assumed that the importance of each attribute is equal both within and between content categories. The number of positive signs compared to the number of negative ones will determine the dominating direction (relatively high or low adoption rate) for each content category. Table 3 shows that six content categories are likely to have high adoption rates, and six others are likely to have low rates. Category (8) “Events” is not decided.

**Table 3:** Predicted adoption rates for the 13 content categories

No	Category	Perceived compatibility	Perceived trialability	Perceived complexity	Perceived observability	Perceived relative advantage	Expected rate of adoption
1	Environmental policy	+	+	+	+	+	++++ High
2	Environmental objectives	+	–	–	+/-	+/-	+ – – Low
3	Environmental impact – process	+	+/-	+/-	+	+	+++ High
4	Environmental impact – product	+	+/-	+/-	+	+	+++ High
5	Environmental organization	+	+	+	+	+	++++ High
6	Environmental auditing		–	–	+/-	+	– – + Low
7	Environmental authorities	+	–	+/-	+	+	+ – ++ High
8	Environmental events	+	–	+/-	+/-	+/-	+ – Not decided
9	Environmental investments		–	–	+/-	–	– – – Low
10	Environmental costs/ revenues		–	–	+/-	–	– – – Low
11	Environmental liabilities		–	–	+/-	–	– – – Low
12	Definition of environmental concepts/ accounting principles		–	–	+/-	+	– – + Low
13	No environmental impact	+	+	+	+	+	++++ High

### Actual rates of adoption

The third column in Table 4 contains the actual adoption rates in annual reports for the total sample of companies. About 60 % of the companies have adopted the categories (1) “Policy” and (3) “Impact – process”, while only 2-3% have adopted (9) “Investments” and (10) “Costs/revenues”. The fourth

column of Table 4 shows that six categories are found to have relatively high adoption rates, and six others have relatively low rates. Category (8) “Events” is marked “Not decided” because its adoption rate is not significantly different from neither the “high” nor the “low” group.

**Table 4:** *Actual adoption rates and comparison of predicted and actual adoption rates*

No.	Category	Actual adoption rates – total sample	High or low actual adoption rates <sup>7</sup>	Correspondence between predicted and actual adoption rates
1	Environmental policy	.581	High	Yes
2	Environmental objectives	.097	Low	Yes
3	Environmental impact – process	.629	High	Yes
4	Environmental impact – product	.274	High	Yes
5	Environmental organization	.339	High	Yes
6	Environmental auditing	.097	Low	Yes
7	Environmental authorities	.323	High	Yes
8	Environmental events	.161	Not decided	Not decided
9	Environmental investments	.032	Low	Yes
10	Environmental costs/ revenues	.016	Low	Yes
11	Environmental liabilities	.145	Low	Yes
12	Definition of environmental concepts/ accounting principles	.129	Low	Yes
13	No environmental impact	.323	High	Yes

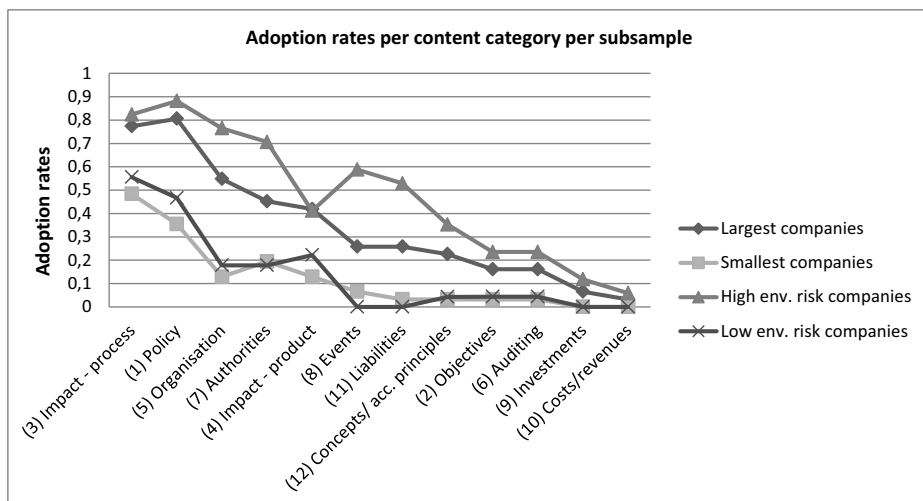
Adoption rates for the subsamples separating the largest and smallest companies and companies of relatively high and low environmental risk are illustrated in Figure 1. (The sequence of the categories is determined by the level of the adoption rates in the total sample, from the highest to the lowest.<sup>8</sup>)

<sup>7</sup>The grouping of content categories in relatively high and low adoption rates in Table 4 is based on Duncan’s multiple range test for comparison of means. The statistics are available from the author(s) on requests.

<sup>8</sup>Category (13) is excluded for the same reason as stated in Table 5.



**Figure 1: Actual adoption rates per information content category per subsample**



## Comparison of predicted and actual adoption rates

The last column of Table 4 reveals that the predicted adoption rates of the total sample are in line with the actual rates of adoption, except for category (8) “Events” that is not decided.

## Robustness

The literature shows that the corporate characteristics size and environmental risk (industry) are among the most important variables explaining the general extent of CSR and environmental disclosure (Fifka, 2013). Analyses of adoption rates should control for these factors. In correspondence with prior research, the largest companies have significantly higher adoption rates than the smallest ( $t = 4.08$ ;  $p < .01$ ), and companies having relatively high environmental risk have significantly higher adoption rates than those with lower risk ( $t = 5.40$ ;  $p < .001$ ). In Figure 1 this is seen by two graphs being consistently higher than the others for all categories. Size and environmental risk affect the *absolute level* of adoption rates.

However, it is more important in this paper whether these corporate characteristics affect how adoption rates vary between content categories. Spearman’s rank correlation test is used to examine this. The content categories of each (sub)sample are ranked from 1–13, from the highest to the lowest adoption rate. Spearman’s test coefficient ( $\rho$ ) shows how similar the ranking is between samples. The value 1 indicates a perfect positive correlation, meaning that each content category has the same rank in both samples, whereas -1 would be a perfect negative relationship. Table 5 reveals

that all pairs of samples compared have a strong, positive and statistically significant correlation. E.g. the correlation between the largest and smallest companies ( $\rho = .81$ ;  $p < .01$ ), and between high and low environmental risk companies ( $\rho = .69$ ;  $p < .05$ ). An interpretation is that a category that is among the most adopted in one subsample is most likely also among the most adopted categories in the other subsamples.

**Table 5:** Spearman's rank order correlation ( $\rho$ ) between rates of adoption

Rho	Total sample	Largest companies	Smallest companies	High risk companies	Low risk companies
<b>Total sample</b>	1.00				
<b>Largest companies</b>	.94 <sup>***</sup>	1.00			
<b>Smallest companies</b>	.95 <sup>***</sup>	.81 <sup>***</sup>	1.00		
<b>High risk companies</b>	.82 <sup>***</sup>	.95 <sup>***</sup>	.65 <sup>*</sup>	1.00	
<b>Low risk companies</b>	.83 <sup>***</sup>	.70 <sup>**</sup>	.89 <sup>***</sup>	.69 <sup>*9</sup>	1.00

Sign. (two tailed): \* =  $p < .05$ ; \*\* =  $p < .01$ ; \*\*\* =  $p < .001$

## DISCUSSION

The first research question concerns (variation in) actual adoption rates, and whether some environmental content categories are more easily adopted than others. Table 4 shows that adoption rates in annual reports for the total sample of companies vary considerably between the 13 categories: Some types of information content are disclosed by many companies, while others are hardly disclosed. According to Figure 1 this is true also for subsamples containing the largest and smallest and relatively high and low environmental risk companies.

The second research question regards reasons for variation in adoption rates. The high correlations of Table 5 reveals that even though the level of the adoption rates is consistently higher

<sup>9</sup> Category 13 is created to separate companies based on similar characteristics as high and low environmental risk. The category is therefore irrelevant and excluded in this calculation.

for all categories<sup>10</sup> among large and high environmental risk companies, it is virtually the same content categories that are having the highest and lowest adoption rates within all four subsamples. The absolute level of the adoption rate is higher for e.g. category (3) and (10) in large and high environmental risk companies than in the other subsamples, but still category (3) [category (10)] is nevertheless among the most [least] adopted categories in all subsamples. In three of four subsamples the classification in high and low adoption rates is identical to that of the total sample in Table 4, and for high environmental risk companies there only minor deviations. These corresponding high and low adoption rates across subsamples are seen in Figure 1 as the graph for each subsample is (almost) consistently falling from left to right – where content categories are ordered from the highest to the lowest adoption rates of the total sample. While the corporate characteristics size and environmental risk (industry) apparently might contribute in predicting (or explaining) the absolute level of adoption rates, it is necessary also to look beyond such factors to predict (or explain) variation in adoption rates between content categories. This is an important new finding of this paper, and in line with the reasoning of Adams (2002).

Adams (2002) suggests that focus on internal attitudes will improve our understanding of environmental reporting, since neither corporate characteristics and general context nor the theories from which they are derived can fully explain the reporting practice. This is even more conspicuous for analysis of adoption of individual content categories than for the topics listed by Adams (2002:224). When a person or a company is making a (significant) buying-decision, it is natural to consider the price, ease of use, if use is socially acceptable, extent and certainty of benefits of use etc. – perceived costs and benefits of the object to be bought. The idea that management's perception of characteristics of the information content is subject to consideration in adoption decisions regarding environmental disclosure is intuitively reasonable. Still, this is not systematically explored in research. Innovation adoption theory, which focuses on perceived attributes of the innovation itself (here: information content of disclosure), seems to be a fruitful tool to structure analyses of perceived costs and benefits of adoption decisions. This is also supported by the match between predictions of adoption rates based on this framework and actual adoption rates for 12 content categories, as seen in the last column of Table 4. The focus on the characteristics of the innovation and the use of innovation adoption theory are other important new features of this paper.

The five attributes of innovations are supposed to reflect the decision making process. This means e.g. that the effect of elements like regulations or costs might be different for different

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<sup>10</sup> Except category 13, which is natural given its function.

attributes. What attributes are important to predict or explain high or low actual adoption rates of content in environmental disclosure? Table 3 shows that the six content categories with the highest rates of adoption are all characterized by a high degree of perceived compatibility. They are perceived to be consistent with the existing values, experiences, and needs of the company through moral and regulatory legitimacy. A high degree of perceived trialability seems to be pertinent for at least three of the content categories that are most frequently adopted. Trialability is related to whether it is possible to provide information on a limited basis to find out how it works. One highly adopted category has a low degree of trialability, but are still among the frequently adopted because this disadvantage is more than outweighed by high degrees of perceived compatibility, observability and relative advantage. Three of the six categories are perceived to have a low degree of complexity and, hence, to be simple to prepare. The other categories with high adoption rates seem to be perceived as neutral on the complexity – simplicity continuum. Six content categories have a high degree of observability, and these are the six most adopted. Observability is about the visibility of the innovation and how easy it is to communicate its results to others. Finally, all the six information content categories with the highest rate of adoption are perceived to have a high degree of relative advantage. The relative advantage of disclosing these kinds of information content is perceived as having higher net benefits for the company than no adoption at all.

The six information content categories with the lowest rates of adoption are all characterized by perceived low degree of trialability and high degree of complexity. They were also the only categories to have high complexity. Even though one of the categories has high perceived compatibility and two others high perceived relative advantage, this cannot make up for perceived low trialability and high complexity. This might indicate that companies report what is convenient and easy. The categories with the lowest adoption rates are perceived to be neutral on observability. The adoption rates of three categories are hampered by perceived low degrees of trialability and relative advantage and high degree of complexity at the same time. The perceived high compatibility of the remaining, undecided category is balanced by low trialability.

Perceptions of Rogers' five attributes are not fixed universally. Corporate characteristics, general- and internal context are likely to interact and affect decisions, as Adams (2002:246) illustrates. The predictions made in this paper are based on general perceptions of the setting of listed Norwegian companies in 2009 (when reporting for 2008 is done). Different periods of time, countries, culture, economic cycles, (enforcement of) regulations etc. will affect how these attributes are perceived, and therefore lead to innovation adoption theory making different predictions. A related aspect is that other theories are used within the innovation adoption theory framework to derive expectations about adoption rates in this paper. The framework allows integration of other

theories because it is (perceptions of issues relevant to) the management adoption decision that is the centre of attention – the five attributes are selected because they are supposed to reflect important elements of the human decision making process. Adams' (2002) claims that no theory (or approach like corporate characteristics, general- and internal context) alone can explain CSR and environmental disclosure. Innovation adoption theory is a supplement to other theories. Additionally, it might become a more general framework that allows integration of several approaches and theories. This paper considers only attributes of the innovation itself. Rogers' (2003) innovation adoption theory framework includes features like corporate characteristics (e.g. attributes of the adopter), change agents, communication channels etc. as well. Contextual factors are as important in other innovation adoption theory models (Tornatzky and Fleischer, 1990:153). To further examine the adequacy of this framework it should be called for studies of other contexts, e.g. longitudinal and cross-country settings.

Nevertheless, the theoretical framework of this paper allows for contextual considerations, and its relevance should not be limited to the current setting that was used for illustrational purposes. This paper is meant as an initial exploration of the usefulness of innovation adoption theory, and the relevance of attributes of the innovation itself in adoption decisions. As such, an important aspect of this paper is to motivate further studies. This involves making validated measures of relevant attributes for environmental disclosure adoption decisions, studies of management perceptions of these attributes and weights of the attributes (even though decision models differ there is probably some common ground). Use of even richer data, e.g. separating quantitative, specific and general information, or positive and negative information for each content category, should further ease and improve predictions from the theoretical framework. New studies should also be aware of criticisms of innovation (adoption and diffusion) theory research (Brummet, 1971, Nash, 1971, Rogers, 2003).

## **CONCLUSIONS**

This paper contributes to CSR and environmental disclosure research in multiple ways. Firstly, by addressing a new research question: why adoption rates vary between different types of information content. Secondly, to answer the question the paper looks beyond corporate characteristics and general contextual factors, and focuses on perceptions of attributes of the information content itself – internal context that is an important part of the decision making process. Thirdly, by applying a new theoretical framework – innovation adoption theory – to identify relevant attributes and structure the analysis.

The paper provides evidence revealing that size and environmental risk (industry) are not sufficient or even good predictors of variations in adoption rates between content categories. However, both the reasoning and the results strongly indicate that perceived attributes of the innovation itself are relevant, and innovation adoption theory seems to be a fruitful supplement to previous theorisation.

As an initial exploration, this paper does not set out to make contributions to innovation adoption theory other than applying it on a new topic. The use of the framework does however fill a gap concerning decision making and internal context in current theorising in CSR and environmental disclosure research. There are potentially important implications of a better understanding of the drivers of disclosed content. Stakeholders, both users and reporting regulators, will better understand what information content they can expect in the current context, what factors that are of significance in the adoption decision making process, and how to change or affect the perception of some of these measures – regulations, enforcement, improved reporting guidance, demand pressure etc. – in order to change their importance as inputs in the adoption decision making process. Research would benefit from further focus on perceived costs and benefits of disclosure. This draws on theories and research from several fields like accounting, economics, sociology and psychology. Innovation adoption theory might be an adequate framework to incorporate several of these, as it focuses on determinants of decision making. The large number of issues discussed in this paper, in connection with the five attributes, illustrates the complexity of predicting or explaining adoption decisions.

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## APPENDIX A

### Environmental information content categories

No.:	Category:	Definition/description:
1	<b>Environmental policy</b>	Super-eminent objectives and strategies. A minimum requirement is that priority of the environmental focus is expressed or an intention to follow an environmental program, e.g. The International Chamber of Commerce (ICC) Environmental Program, the Charter of World Business Council for Sustainable Development, UN's Global Compact or a national environmental responsibility program. A statement saying that the company has an environmental policy is not sufficient to be included in this category.
2	<b>Environmental objectives</b>	Specific, measurable (and controllable) goals derived from their environmental policy. For example an objective to decrease a specific discharge level of a substance in a definite period, or to implement an environmental programme, reporting standard or get certified within a specific time-frame.
3	<b>Environmental impact – process</b>	Environmental impact from production processes as regards status and environmental improvements. Status includes: e.g. technical environmental accounts of pollution, waste and energy consumption; production methods; waste processing, and environmental risk. Environmental improvements include: e.g. cleaner production process, reduced pollution, and reduced use of inputs.
4	<b>Environmental impact – product</b>	As with the above category 3, this includes impacts from products in a life-cycle perceptive (instead of process). Implemented environmental co-labelling of products is registered here.
5	<b>Environmental organization</b>	Information of how the company has organized their environmental work: e.g. responsibility, division of work, emergency preparedness to meet environmental requirements and disasters, development of environmental expertise, implementation of environmental management standards (e.g. ISO 14001, EMAS, Miljøfyrtårn) etc. Specific auditing is registered in category 6. Plans for future implementation of environmental standards are registered in category 2.
6	<b>Environmental auditing</b>	Planned and completed environmental auditing acts (internal and external), methodology, auditing standards, degree of assurance, reporting of auditing results and the company's follow-up work. Both environmental audits and audits of environmental disclosures are relevant.
7	<b>Environmental authorities</b>	Present and future environmental constraints, laws and regulations, incentives, green certificates, existing disputes, results of closed disputes, results of applications processing of discharge permits and so on. Both national authorities and international agreements are relevant.

8	<b>Environmental events</b>	Specific events that have caused environmental impacts; e.g. excess of discharge permit, serious environmental disasters.
9	<b>Environmental investments</b>	Economic (monetary) information about completed investments to reduce the company's environmental impacts, comply with discharge permits etc. Reported, planned investments are excluded and belong to category 11 below.
10	<b>Environmental costs / revenues</b>	Economic (monetary) information about the environmental costs and revenues of the year, e.g. fines, pollution abatement work. Information about future costs is classified in category 11 below.
11	<b>Environmental liabilities</b>	Economic (monetary) information about future costs, e.g. responsibility for decommission and removal of oil installations in the North Sea after use. Best estimate based on all available information should be adopted for contingent liabilities.
12	<b>Definition of environmental concepts / accounting principles</b>	Definition and clarification of environmental concepts. The category includes: e.g. clarifications, accounting principles, accounting rules, procedures relating to measurement, valuation and disclosure. Important because of the lack of accounting standards in this area.
13	<b>No environmental impact</b>	"The company does not pollute the external environment." / "The company has no environmental impact."

Source: Fallan and Fallan (2009)

## APPENDIX B

### Exploring dimensions of compatibility

Rogers' (2003) concept of compatibility is connected to Suchman's (1995) definition of legitimacy. Cognitive, moral and regulatory legitimacy (Aldrich and Ruef, 2006) are used to discuss compatibility of disclosure.

### Reporting regulations

Management's perception of cognitive, moral and regulatory compatibility issues of reporting regulation are considered in this paragraph. Firstly, compliance with reporting requirements provides *regulatory legitimacy*. Governmental "approval" implies importance of these types of information content. Perceived compatibility with social norms enhances the adoption rate of content categories disclosure of which is mandatory. The Norwegian Accounting Act requires disclosure of categories (3) and (4). The Accounting Act represents framework legislation and further clarifications are left for accounting standards. According to Norwegian Accounting Standard 16 – Director's report (NRS 16) companies that fulfil certain requirements in the Antipollution Law are allowed to report category (13) instead of categories (3) or (4). NRS 16 reflects generally accepted accounting principles: information that "must" or "should" be reported in the Director's report. The three "must" content categories (referred above) elaborate the minimum mandatory requirements, while the "should" categories [(1), (2), (7), and (8)] are strongly recommended, but voluntary.

Secondly, adoption of the same information content categories is also affected by perceived *moral legitimacy*. Even for content categories that formally are mandated for disclosure, companies might in reality perceive themselves to have a certain degree of discretion whether or not to adopt, as described earlier. (Regulation is just one of several aspects considered in adoption decisions.) Nevertheless, norms and values in most developed countries favour protecting the environment. The reporting regulations are likely to indicate information content that is important to society. It seems intuitively reasonable that knowledge about environmental impact, events, efforts, discharge permits, specified goals of improvement and goal achievement concerning operations and products – examples of regulated information content – should be in line with values of society. Regardless of whether or not companies feel bound by requirements in laws and standards, they are likely to disclose this information because it is perceived to be the right thing to do, and is perceived to be compatible with moral legitimacy.

Cognitive legitimacy is the third aspect of compatibility to consider. Neither the attitudes towards reporting requirements discussed earlier nor the interviews conducted indicate that the information content required in regulations are institutionalised or well known. The CAO in company C4 says that “I know about the Accounting Act, but I do not know about [NRS 16]”, while the CAO of company C1 states:

*“I do not know that there are specific requirements [in the Accounting Act and NSR 16], only that we have to say something about [the environment] in the annual report. But I am not familiar with more specific requirements. I think that this is something to be solved.”*

Such disclosure is not taken for granted, and still cannot be associated with compatibility of society's norms through a high form of cognitive legitimacy – as opposed to moral and regulatory legitimacy. Of course, cognitive legitimacy might become internalized in expectations and behaviour in the future.

Companies listed on OSE are required to publish an annual statement on corporate governance. Distribution of environmental responsibility should be a natural part of this statement. Listed companies are subject to relatively high public interest and ditto expectations of behaviour and transparency. The adoption of content category (5) is likely to be supported by a mix of perceived moral and regulatory compatibility.

## **Environmental regulations**

Environmental regulations regarding companies' operations and products identify particular important issues as well. The Antipollution Law (and other related laws) regulates pollution in order to protect humans, animals and the natural environment. The continued operations of polluting companies depend on obtaining and complying with pollution licences issued by environmental authorities like KLIF. Information about the terms of and (non-)compliance with these licences is vital for compatibility with norms and values of society (based on cognitive, moral and regulatory legitimacy). Environmental regulations do not require public corporate environmental disclosure, but the importance makes a moral acceptance conditional on disclosure – which is seen as the right thing to do. Additionally, such disclosure can be used as a corporate strategy to ensure the need for compatibility with the values of the society through informing stakeholders about the situation

(Suchman, 1995; Aldrich and Ruef, 2006). Compatibility with the values of society would enhance adoption of categories (7) and (8).

## APPENDIX C

### *Exploring dimensions of trialability*

All information categories may be classified on the difficult–easy continuum of trialability.

#### **Divisibility**

The present division of aggregate environmental disclosure into 13 content categories illustrates the divisibility of disclosure. Most of the 13 categories – the innovations of this study – might be perceived as easy to subdivide into smaller pieces because examples or project/department aggregates are alternatives to completeness of disclosure. Still, there are exceptions. Objectives (category 2) and discharge permits (category 7) are mainly set and evaluated on the basis of some level of aggregation (e.g. project, department, organization or time), rather than on single transactions. This leads to less divisibility and makes adoption of these categories less likely than others, even if management chooses to look at one of several objectives or discharge permits.

#### **Other aspects of trialability**

It is quite easy for the management to experiment with disclosure of general policy statements such as “Our company wants to operate in a way that does not seriously harm the natural environment”. Such general rhetoric and non-specific narratives often have no controllable correct or wrong answers: regardless of the degree of real environmental commitment, management can (develop and) decide the (reporting of the) policy themselves, directly imitate other companies (Abrahamson, 1991), etc., with no risk and little effort (e.g. retrieving facts or data). It is particularly easy to experiment with categories like (1), (5), and (13), and therefore adoption of these is supported by a perceived high degree of trialability.

Other information content categories are not like this, as can be illustrated using company C2. In order to obtain specific and quantitative environmental data about impacts, events and efforts regarding their food products and operations, C2 must retrieve information both from different parts of own organization and backwards in the supply chain – regardless of whether this concerns aggregated figures or single batches. It is relatively easy to obtain the data, but it requires a large amount of time, planning and work. C2 has hence developed an online database system in which different departments and companies register information. The same is true for monetary, economic information, including external effects. These types of environmental reporting relates to data that is gathered in accounting systems, recognized, classified, measured, calculated or estimated, recorded, verified and then disclosed (Schaltegger and Burrit, 2000:272). Regardless of whether organization aggregate numbers or single transactions are in question, and whether it is easy or difficult to obtain the figures, management depends on a system to record, organize and/or estimate the numbers. The process takes time and effort, which reduces the opportunities or the ease to experiment with such information content. It reduces the perceived trialability. The examples indicate that economic-, other

quantitative-, and company specific environmental data is likely to require more time and effort to facilitate experimentation on disclosure than general rhetoric etc. The data are specific for each company and period, and difficult to imitate from the reporting of others and without commitment to environmental programmes (Hasseldine et al., 2005). The psychological trial is then limited as well. Monetary and economic information content regards categories (6) and (9) to (12). Other quantitative content is also relevant in categories (2), (3), (4), (7) and (8), and specific environmental content applies additionally to category (5). The categories (6) and (12) should be emphasized as having particularly low trialability. Audits (6) cannot be tried before the information content that is going to be audited is tried. For (12), this is due to the fact that its effect can only be evaluated by subsequent trial of other content categories.

Accessibility might be affected by the frequency and regularity of events. Serious environmental incidents are likely to be rare, which hampers adoption of e.g. category (8). Some of the information content described above as less trialable might already exist as a bi-product of reporting requirements in discharge permits etc. in some companies. The existence of systems to collect the information might make it easier to experiment with content categories (3) to (8).

## **APPENDIX D**

### **Exploring dimensions of complexity**

Implementation is the process of reporting. The difficulty of preparing disclosures differs between different types of information content. As indicated under “trialability”, the information needed to disclose general rhetoric is not the same as for monetary, other quantitative or even non-quantitative specific content. However, the challenges of the reporting process connected with the latter types of content are not only related to time and physical effort (trialability), but also mental effort (complexity). Complexity focuses on how technically difficult the reporting is. While some of the stages of the reporting process – as described by Schaltegger and Burrit (2000) – might be complex in traditional (financial) accounting, several features make it significantly more difficult in environmental disclosure. It is hard to define the content of concepts like environmental costs, investments and liabilities, both in theory and practice. Is it an environmental investment if a company invests in a machine that causes improved environmental performance and a positive net present value of cash flows (irrespective of environmental issues)? The Norwegian Accounting Standards Board gave up development of an accounting standard for economic environmental disclosure due to such difficulties. Ljungdahl (1999) discusses these issues. Environmental issues are closely connected to external effects. While financial accounting concentrates only on the company, consideration of external effects is embedded in the objectives of environmental disclosure. This opens up a new world of definition and estimation challenges. E.g. the measurement unit of financial accounting is money, whereas for the natural environment there are many relevant parameters that are hard to compare and makes it harder to determine adequate detailing and aggregation levels. The CAO in company C3 illustrates estimation challenges:

*“To calculate economic consequences of environmental impacts is a demanding task. So far I think no one has succeeded in developing a practical way to provide such information outside the academic research community.”*

In addition to these different boundary setting issues, complexity is also affected by the immaturity of this reporting craft, compared to e.g. financial accounting. There are less research, standards and other guidance, education and experts etc. to assist such reporting. NRS 16 even states: “Reporting on environmental conditions are still in a phase of development and companies are requested to develop new methods to arrange such information”. The CAO of company C5 illustrates how high complexity of quantitative environmental information hampers adoption:

*“When no one asks for it, and there are no mandatory requirements, we have to make an assessment. Providing such information is so demanding that we do not give priority to it just now.”*

Based on this, the relatively low perceived complexity of implementation will enhance the adoption of information content categories linked to general, narrative information [categories (1), (5) and (13)]. The adoption of categories associated with monetary, other quantitative and non-quantitative specific environmental information content is hampered by relatively high perceived complexity (the 10 remaining categories). It should be emphasized that clarification and control of the described challenges is the objective of category (12) and (6) respectively, which make these particularly complex.

Like trialability, the existence of information as a bi-product of other information sources might lead to a perceived lower complexity for categories (3) to (8), even though the boundary setting might differ and mental challenges remains significant.

## **APPENDIX E**

### **Exploring dimensions of observability**

Moore and Benbasat’s (1991) validated measurement divided the construct into result demonstrability and visibility.

#### **Result demonstrability**

The Accounting Act and NRS 16 require disclosure of content categories (3), (4) and (13) in the Board of Directors’ report. Board members have to sign the document and are formally accountable for fulfilling the regulation. The forced selection perspective (Abrahamson, 1991) should affect their actions. It is easy to communicate that reporting is a legal requirement, which will enhance the adoption of these categories. However, perceived importance of the regulation is probably affected by reality as well as formality. Perceived lack of enforcement and consequences of non-compliance might reduce this result demonstrability effect.

KLIF determines, authorizes and controls discharge levels for high environmental risk companies. Compliance with discharge permits is vital for companies’ continued operations. Major environmental



accidents etc. might have extensive consequences for companies regardless of environmental regulations. When environmental risk is closely linked to economic or operation risk, the value of environmental disclosure is more easily explained to primary stakeholders. Relatively high perceived result demonstrability increases the adoption of content category (7) and (8).

Information that is e.g. specific to company and period is harder to disclose than general rhetoric without actual commitment to environmental programmes (Toms, 2002). Similarly, Brammer and Pavelin (2008) state that high-quality disclosure, such as external verified, quantitative and company-specific information is more costly than low-quality information such as general non-quantitative narratives. Quality-signalling theory is used to argue that characteristics of reporting signal companies' environmental commitment and performance, and ultimately environmental reputation (Hasseldine et al., 2005). This would suggest that it is easier to credibly communicate certain effects of environmental disclosure – which in turn might secure legitimacy or create a green competitive advantage – with high-quality, relatively costly reporting, which signals a real commitment, than with low-quality, relatively cheap reporting that could easily be copied from the company next door. A credible reporting signal will support result demonstrability and enhance adoption of categories (2) to (4) and (6) to (12), and vice versa for (1).

Environmental certification of the organisation, co-labelling of products and membership in environmental programmes are other ways to signal environmental accountability and performance. Even if stakeholders do not know the company well, they might know the meaning of these symbols and labels. The CAO of company C4 emphasizes this:

*“In what way should you communicate and prove that the company has environmental protection responsibility? It is useless only to state that you are responsible, and therefore we may find a system. And here these certification affairs emerged. That is our intention.”*

In order to improve reputation these efforts must be known. Reporting is a tool to increase knowledge. Association with familiar environmental certifications, labels and programmes eases result demonstrability and enhances adoption of content categories (1), (4), and (5).

## **Visibility**

A voluminous body of literature seems to suggest that environmental reporting practice has certain specific dominant characteristics. Firstly, disclosure contains mainly positive or neutral information, while negative information is relatively rarely disclosed (Deegan and Gordon, 1996; Niskanen and Nieminen, 2001; Patten and Crampton, 2003; Frost, 2007; Islam and Deegan, 2010). Categories (1) and (13) are purely associated with positive information, and category (5) consists of positive and neutral information. Visibility appears likely to support the adoption of these types of disclosure. According to Ljungdahl (1999) category (8) is characterised mainly by negative information, which will hamper adoption.

Another trait is that narrative disclosures are more common than monetary or quantitative information (Williams and Pei, 1999; Llén et al., 2007; Beck et al., 2010; Del Bosco, 2011). There are also

studies indicating that general rhetoric is (or at least have been) relatively more commonly disclosed than specific information (De Villiers and Van Staden, 2006; Frost, 2007; Brammer and Pavelin, 2008), though this finding is more ambiguous. This will typically increase adoption of categories (1), (5) and (13), and hinder adoption of the remaining categories.

## APPENDIX F

### Exploring dimensions of relative advantage

The content of this construct is derived from Tornatzky and Klein (1982), Moore and Benbasat (1991) and Rogers (2003), and includes four types of relative advantage: costs, profitability, image and other factors.

#### Costs

Brammer and Pavelin (2008) state that high-quality information – external verification, quantitative, and company specific information – is more costly than low-quality information such as general rhetoric. High-quality “disclosure is costly” due to both direct and indirect costs (Brammer and Pavelin, 2008:122). Direct costs include “measuring, verifying, collating and publishing environmental information” (Brammer and Pavelin, 2008:122) – a short version of the processes described in the quote from Schaltegger and Burrit (2000:272) above. The CAO of C2 illustrates efforts needed to provide specific, mainly quantitative information:

*“It is more resource demanding, you need more time because you have to go through several sources to get the information you need, you cannot just get it from a computer program, you are dependent on others. We have used one year to develop a system that will get this on track, with information on both company and group level. We have worked with external partners to get information directly from them as well, making it easier to retrieve information. This concerns e.g. energy consumption, fossil fuels, emissions, waste, raw materials, transport etc. so that CO<sub>2</sub> emissions are calculated automatically, and we do not have to do it ourselves.”*

In contrast, general information does not require such efforts in C2, as made evident while talking about environmental polices: *“We always have access to general information, it is a part of running our business.”* According to Adams’ interviewees of (2002:237), “the cost of producing the HSE report [is] estimated at between around [EUR 200 000] and [EUR 600 000]”. Costs of reporting (weighted against benefits) might influence companies’ behaviour and content of reporting, as the judgment of company C2 reveals:

*“For the time being we have decided not to verify the information. You must continuously consider how much to spend, because it is quite costly to have several audits carried out. We must keep a level that is decent, necessary, and which we can defend.”*

Indirect costs of disclosure are caused by, e.g., “the loss of strategic discretion associated with making public commitments to verifiable future actions and/or performance” (Brammer and Pavelin, 2008:122). This is in line with the stewardship incentive mechanism, where the knowledge that reporting is to be done – with subsequent possibility of being made accountable for actions or performance – in itself causes behaviour to change (Gjesdal, 1981). Indirect costs of CSR reporting are perceived as relevant by the British companies in

Adams (2002:237)<sup>11</sup>. The companies are concerned with increased pressure to meet targets, criticism when targets are not met, and stakeholder cynicism regarding corporate motives for reporting.

The higher “the extent and precision of quantification [and specificity of narratives], and the degree of commitment to future actions and/or environmental performance”, the higher the direct and indirect costs of disclosure (Brammer and Pavelin, 2008:126). High-quality disclosure imposes a greater burden regarding information gathering, analysis and verification, and reduces flexibility of corporate strategy. Low-quality disclosures are cheap because they are easily copied from other companies (no more data is needed), and involve less extensive commitments (Toms, 2002).

Perceived direct costs will promote adoption of categories (1), (5) and (13), and possibly hinder adoption of the remaining categories. Perceived indirect costs hamper adoption of categories (2) – (12), while it supports adoption of (1) and (13). However, information as a by-product (e.g. from reporting required in discharge permits) might make disclosure seem cheaper, especially concerning direct costs. This is relevant for (3) to (8).

### **Profitability**

According to economic theory, profitability or (changes in) firm value is affected by future cash flows (nominator) and cost of capital (denominator) (Plumlee et al., 2010; Clarkson et al., 2011a). Environmental disclosure might influence both (Margolis et al., 2009; Ioannou and Serafeim, 2011). Information economics assumes that decision makers are rational (maximize e.g. profit), exhibit a degree of risk aversion, and make full and correct use of all available information. They prefer more information (reporting) to less, because it reduces uncertainty (Walker, 1988). Findings in Adams (2002) indicate that reporting might cause better understanding for corporate operations and products externally and internally, and reduce political, operational and economic risk. (Guidry and Patten, 2010:42) agree: “Disclosure could lead to future cash flow benefits for the firm by reducing the likelihood of future adverse social and political actions.” Theoretically, reduced risk reduces risk premiums and lower interest on debt (Menz, 2010), which will improve net cash flows (nominator) and lower the required rate of return or cost of capital (denominator). Then profitability or firm value is improved. How is this relevant for prediction of adoption rates? Certain types of information might be more relevant than others in estimating the net present value of future cash flows. Demand for reporting to serve resource allocation decisions is derived from information economics (Gjesdal, 1981). Characteristics of information that is useful for resource allocation decisions have been sought identified (Snaveley, 1967; IASB and FASB, 2010). Reporting should be e.g. complete, consistent, free from error, neutral, quantitative, relevant (predictive and confirmative), reliable, and verifiable. Most of these criteria require monetary, other quantitative<sup>12</sup> or non-quantitative specific information, as opposed to general rhetoric. The empirical evidence of Guidry and Patten (2010) seem to support such a view. Some studies suggest that qualitative characteristics of environmental disclosure – e.g. hard, soft, positive and negative information – might affect profitability

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<sup>11</sup> This was not the case with the German companies, possibly because more involvement with stakeholders leads to more mutual understanding.

<sup>12</sup> External effects and measurement units relevant to environmental disclosure might necessitate a re-interpretation of such information criteria for financial reporting. However, basic principles are similar.

(broadly defined), though results are still vague and inconsistent (Margolis et al., 2009; Plumlee et al., 2010; Clarkson et al., 2011b; Ioannou and Serafeim, 2011). Perceived risk reducing effects of reporting might enhance adoption of categories (2) to (13), and reduce adoption of (1).

Incentives to disclose information is another approach to the concept of profitability. The public sector in Norway has to include environmental requirements as part of the conditions of tender in public procurement. There are requirements for companies in order to participate in the competition, and/or for products in order to win. Many, especially large, private sector companies are following suit. Environmental certification of organisations, operations and products is a common solution to the challenge of proving compliance, as illustrated by the CAO of C2:

*"We certify our suppliers. We might also demand external certification depending on what they are going to produce for us, and whether it will be input in goods resold to customers which have demands for us again. However, all companies [in this industry] must have a certification approved by [a government agency]."*

Documentation (or self-declaration) of compliance has to be disclosed in tender (and later contract) documents. However, public disclosure might affect assessments of companies' ability to win contracts. The CAO of company C4 expresses it as follows:

*"We understand that the certificate [ISO 14001] is important for us because the customers demand it. We have to keep the certificate, and we wish DNV [Det Norske Veritas] to issue the certificate because DNV shines so bright. People have great respect for DNV, whether they deserve it or not. If we can refer to a certificate issued by DNV, it is a doorway to the market."*

Disclosure of compliance might affect firm value. Membership and compliance with guidelines or action programmes (e.g. UN Global Compact) is also used as a similar "external certification of approval". Perceived revenue and profitability effects can support adoption of category (1), (4) and (5).

## **Image**

The companies in Adams (2002) perceives that CSR reporting benefits corporate image. It seems reasonable to assume that people or organisations would generally like to be considered to be good environmental stewards, or at least as not causing serious harm to the environment. Disclosure of positive environmental information about the company's operations and products might be perceived to be less risky for image, reputation or social approval than negative information. While the attitude among the interviewees in Adams (2002) towards reporting of bad news is ambiguous, none of the companies reported much bad news – which is probably the acid test. Islam and Deegan (2010) report that that the more negative media coverage an industry experiences on specific CSR issues, the more positive information these companies report on related issues. The result is backed by legitimacy theory. The CAO in company C4 expressed a need to balance a perceived consistent bias towards negative press in news media with positive disclosures:

*"I primarily believe that this is about news agencies making more money publishing negative news. It's probably this simple. Perhaps you remember [project X]. The newspapers wrote about [it] every day because of its negative*

*impact on the environment. No one wrote anything about the success we felt about [project Y]. When they lost interest in [project X] at last, they started to publish a little about [project Y], but mainly on negative issues. Even though everything was developed according to schedule, there were no environmental impacts, nothing went wrong, and there was an excellent environmental follow-up programme, no one wrote anything about it. In my opinion the challenge concerning environmental issues is the imbalance in coverage. It is the negative issues that are inflated and published."*

Environmental reporting includes mainly positive information (Niskanen and Nieminen, 2001; Frost, 2007), and even mandatory requirements do not make companies report negative information (Larrinaga et al., 2002). According to Ljungdahl (1999), category (8) consists of mainly negative information. Category (1) and (13) contain only positive information, and (5) has only positive and neutral disclosures. Other categories may include a mix of positive, neutral, and negative information and cannot be allocated to a precise position on the positive–negative scale.

Environmental certification of organisations (e.g. ISO 14001), co-labelling of products (e.g. the flower – the EU Eco-label), self-initiated commitment to environmental guidelines (e.g. UN Global Compact), and even participation in reporting initiatives (e.g. Carbon Disclosure Project and Global Reporting Initiative [GRI]) signal an external approval of corporate actions and performance, and are commonly used to improve image. In order for image to be improved, however, it has to be communicated, and then category (1), (4), (5) and (12) of environmental disclosure are relevant tools.

### **Other aspects of relative advantage**

A first aspect of demand regards how difficult (complex or easy) it is to understand and use different types of disclosed information content. Adopters' perception of complexity of use concerns both their own and other stakeholders' demand for reporting. "Since financial statements are not usually thought of as consumption goods, asking for the reason they are in demand is not trivial" (Gjesdal, 1981:208). Gjesdal (1981) identifies two types of demand for reporting: resource allocation decision making and stewardship (accountability). The information content categories that might be related to resource allocation decision usefulness are discussed in connection with "profitability". A core basis of environmental disclosure is a corporate responsibility that goes beyond profitability – external effects. This is closely related to the stewardship concept. Stewardship demand is derived from agency theory and asymmetric information between company and stakeholders. As delegation of tasks increases, the stewardship concept develops from custodial tasks and control to include evaluation of managerial effectiveness (Birnberg, 1980; Zeff, 2012). The latter requires both prospective and retrospective information (PAAInE, 2007; Eierle and Schultze, forthcoming), and information requirements are therefore linked to those of resource allocation decision usefulness (Snively, 1967; Zeff, 2012). The historical objectives of stewardship (custodial and pure control perspectives) are best served by hard information – reporting that leaves little room for dispute or disagreement (Ijiri, 1971; Ijiri, 1975). Understandability is not only related to complexity of use in innovation adoption theory, it is also a qualitative characteristic of useful accounting information (GASB, 1987, IASB and FASB, 2010). Snively (1967) claims that understandability is relevant for both resource allocation and stewardship purposes, and that it is dependent on quantifiability, consistency

with user concepts, comparability and simplicity. According to this, reporting companies and their stakeholders are likely to perceive monetary, other quantitative and non-quantitative specific information disclosures to have low complexity of use – high understandability, ease of use and high usefulness, while general narrative information as high complexity of use. The CAO of company C2 illustrates how this kind of information might improve internal environmental control of a company, which is also related to improved performance/quality of work:

*“We have chosen to build a report that contains a lot of detailed information, to make it a text book for our employees. We have spent quite some time including information so that it can be used for upgrading skills internally, and for others that may read it. There are many things are put together, quite complex, but it goes behind the headlines. ... The employees are definitely the most important target group for our reporting.”*

Adoption of categories (2) to (13) is promoted and category (1) is hampered. It should nevertheless be emphasized that categories (6) and (12) are fundamental premises for (ease of) use. The former provides reliability through a defined level of security for correct information, while the latter describes the choices made to the challenges of preparation of reporting (discussed in connection with “complexity”) so it is possible to interpret the content of reporting.

The reporting company can demand (use) disclosure for strategic purposes as well, e.g. to secure legitimacy or brand the company as green to gain competitive advantage. Still, it is hard to infer anything from this about what types of information are easy or difficult to use. The adopter’s use of the reporting is a special case of demand, since the user and supplier are in this instance the same. Then complexity of use might seem less apparent than for other stakeholders because knowledge – available information and expertise – exceeds the disclosed information. Still, there are many difficulties remaining, and the discussion below is deemed relevant for both the adopter’s and other stakeholders demand.

A second aspect of demand is that cost-benefit considerations would suggest that when reporting companies perceive no demand for information that is costly to produce, it will not be frequently supplied. The interviewees from the five companies C1–C5 claimed (varying but) widespread and continuous communication with stakeholders about their reporting. Specific demand is not seen extensively. There was no perceived demand for either economic or audited environmental information. Research on use(rs) of CSR and environmental disclosure is still relatively scarce, but several studies have found generally low demand (Campbell and Slack, 2011; Fallan, 2013a). Cost-benefit analysis hinders adoption of costly content such as categories (6) to (12).

A third aspect of demand regards regulation. Reporting in accordance with regulations does not only have to be due to compatibility or observability issues. A cost-benefit consideration might identify other perceived financial and non-financial benefits as well, as suggested in the list of items above – e.g. being an attractive employer. This would promote adoption of categories (3), (4) and (13).

It seems appropriate to remark on voluntary reporting standards, e.g. GRI. In Norway these are still not broadly used, and are therefore only briefly mentioned as an argument in predicting adoption rates. The CAO in company C3 comments on why diffusion of such standards is still limited:

*“Norway is so thoroughly controlled that the need for special reporting in accordance with GRI is not present in the same degree as in some other countries.”*





# EXPLORATION OF RESOURCE ALLOCATION DECISION-MAKING DEMAND AND STEWARDSHIP DEMAND FOR ENVIRONMENTAL DISCLOSURE

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## ABSTRACT

**Purpose:** The purpose is, from various stakeholder perspectives, to explore three types of demand for environmental disclosure: resource allocation decision-making, stewardship decision-making, and stewardship incentives demand.

**Design/methodology/approach:** The data consists of 23 stakeholders/mini case studies, inspired by the pairwise stakeholder-company (principal-agent) relationships of agency theory (and stewardship). It is used to analyse the type of demands of both public and private sector stakeholders within the groups institutional investors, financial analysts, creditors, customers, non-governmental organisations (NGOs), and reporting and environmental authorities.

**Findings:** A framework based on the three types of demand appears to be a fruitful tool for understanding and explaining central aspects of demand. Some cases have none of these types of demand while other cases do have from one up to all three of them. It should be noted that each demand type can also be based on different motives in different cases. These differing motivations appear to be related, at least partly, to public sector (and possibly not-for-profit organisations) affiliation and effects.

**Research limitations/implications:** Knowledge about the reasons behind various demand types is important input, as it ensures that pertinent stakeholder information needs are met. Based on these case study data, it appears like future research should emphasize sufficient subdivision of stakeholder groups, public and (not-) for-profit private sector affiliation, and industry affiliation etc., as well as including several groups in each study. Further studies are needed to examine the generalizability of the study findings.

**Originality/value:** This paper is only the second attempt to systematically examine both resource allocation and stewardship reasons for demand for environmental disclosure. Moreover, it is the first to explore this

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phenomenon in depth, with the aim to improve the understanding of the theory underpinning it. Finally, it is one of few studies to examine and compare the demand of several stakeholder groups, as well as explore the importance of public and private sector affiliation and effects.

## INTRODUCTION

“The reason why financial reporting (information) is in demand is not trivial, since it is not usually thought of as a consumption good” (Gjesdal, 1981). It follows that the reasons behind demand for the related environmental disclosure (and lack thereof) are not trivial either. Nevertheless, this is the most fundamental question that needs to be answered in order to understand stakeholder demand. Knowing this will make it easier to answer related questions, such as what kind of information stakeholders need, whether or not they get it with the current reporting practice, and how to ensure that they get it.

The motivation for this paper is based on several observations regarding the environmental reporting practice and the research on the subject. Firstly, there is an ample research literature on the supply of such disclosure (Fifka, 2013, Fallan, 2013b), and it shows that environmental disclosure has become common. However, relatively consistent findings reveal significant variations in quality of disclosure, and point to major weaknesses within the reporting practice, which might undermine its value for stakeholders (Deegan and Rankin, 1996, Deegan and Rankin, 1999, Niskanen and Nieminen, 2001, Larrinaga et al., 2002, Solomon and Solomon, 2006, Hopwood, 2009, Beck et al., 2010, Islam and Deegan, 2010). Research on the demand side is needed in order to explore the consequences of the reporting practice.

Secondly, while it is therefore a clear need for research on the demand side in order to explore the consequences of the reporting practice, there is a relative paucity of such studies (Deegan and Rankin, 1997, Ho and Wong, 2004, Solomon and Solomon, 2006, Campbell and Slack, 2008). Thirdly, the existing user studies focus almost exclusively on investors (and the like) and NGOs (Tilt, 1994, Deegan and Rankin, 1999, Solomon and Solomon, 2006, McInnes et al., 2007, De Villiers and Van Staden, 2010, Campbell and Slack, 2011). Fourthly, most existing studies analyse only one stakeholder group (Deegan and Rankin, 1997, Beattie and Pratt, 2002, McInnes et al., 2007), which precludes comparison in order to put findings in perspective, and misses out on “the interaction between them and the incentives they face in determining the information environment” (Beyer et al., 2010). The final observation relates to the lack of systematic theorising concerning the reasons for demand for environmental disclosure. The literature review has revealed only one paper that

assesses the usefulness of environmental disclosure, as well as discussed such objectives theoretically and empirically (De Villiers and Van Staden, 2010). Dierkes and Antal (1985) tried to develop a framework for such studies, but it does not seem to be used.

The observations point to gaps in existing knowledge, thus motivating the research question: why do stakeholders demand environmental disclosure, i.e., what are they using it for? A theoretical framework is developed, based on the types of demand for financial reporting suggested by Gjesdal (1981). It identifies and separates three types of demand: resource allocation decision-making, stewardship decision-making, and stewardship incentive demand. The framework is used to analyse stakeholder demand in 23 small case studies. Both the framework and the interview data make use of the pairwise stakeholder-company (principal-agent) relationships of agency theory.

The research question is important, as the knowledge stemming from such research helps companies identify the type of information sought, and public knowledge about the demand serves as an incentive to meet stakeholders' needs. Moreover, it might inform stakeholders, including reporting regulators, of the type of information they should secure the supply of.

The study contributes to the existing knowledge by addressing the observations presented above: exploring stakeholder demand for environmental disclosure; adding to the explicit and systematic theorising through the developed framework; simultaneously analysing resource allocation and stewardship demand; exploring groups previously not studied, using a refined stakeholder subgroup level analysis (exploring public versus private sector demand); and analysing several stakeholder groups in the same study. While most previous studies have focused on one stakeholder group only, this paper takes a broader approach and includes institutional investors, financial analysts, creditors, customers, NGOs, and reporting and environmental authorities, several of which consist of both public and private sector stakeholders.

The first finding is that for these cases, the proposed framework seems to be a fruitful tool for emphasizing important aspects of demand for environmental disclosure. There are cases in which it is identified 0, 1, 2 and 3 types of demand, and the discussion of findings indicate that the framework captures central parts of the demand. Most cases have at least one type of demand for environmental disclosure. The second finding is that stakeholders having the same type of demand might have different incentives as a basis of that demand, and it seems to be important to recognise public sector affiliation or effects in order to capture this. Other tentative findings concern both detailing level of stakeholder (sub)groups, possible industry effects, and the need for using several stakeholder (sub)groups in future studies. The demand for environmental information appears to be much higher than that for environmental disclosure, but the latter is the scope of this paper.

A first finding is that, for these cases, the proposed framework seems to be a fruitful tool for emphasising important aspects of demand for environmental disclosure. Some cases have none of these types of demand while other cases do have from one up to all three of them, and the findings indicate that the framework captures central parts of the demand. Moreover, at least one type of demand for environmental disclosure is identified in most cases. A second finding is that stakeholders that have the same type of demand might have different motives as a basis of that demand, and it seems like public sector affiliation or effects explain such variability in several of these cases. Other tentative findings concern the need to allow for subdivision of stakeholder groups, possible industry, public and private sector effects, and inclusion of several stakeholder groups, in future studies. The demand for environmental information in general appears to be higher than that for environmental disclosure specifically. However, the former is outside the scope of this paper, and is not discussed.

## RESEARCH ON USE(RS) OF CSR DISCLOSURE

Given the extensive literature on supply of corporate social responsibility (CSR) disclosure (Fallan, 2013b, Fifka, 2013), research on the demand side is comparatively scarce (Ho and Wong, 2004, Solomon and Solomon, 2006, Campbell and Slack, 2008). Table 1 provides some examples of studies of use(rs) of CSR disclosure. Much of the existing literature on use(rs) focuses on measuring the actual use of disclosure (e.g. stock market reactions) and stakeholder demand/pressure’s consequences for reporting practice – what they do (the two rightmost columns<sup>2</sup>). However, as stakeholders’ attitudes towards CSR disclosure are the focus of this study, this review of research is mostly limited to studies measuring stakeholders’ claimed attitudes – what they say they do (questionnaire surveys and interviews).

Due to the lack of user studies, and the close relationship between environmental disclosure and other types of CSR disclosure, CSR studies are included in this review. The scope of this paper is “environmental disclosure”, meaning publicly available corporate environmental disclosure. Whenever addressing other types of environmental information<sup>3</sup>, it is specifically noted.

**Table 1:** *Examples of research studies classified according to which stakeholder groups and type of data that are analysed*

	Interview studies	Questionnaire studies	Content analysis, and other	Experiments and
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<sup>2</sup> Many of these studies are often perceived as works on “supply of disclosure”, even though they consider demand aspects as well.

<sup>3</sup> Environmental information is also supplied as private information by the company itself (private corporate disclosure), and private and publicly available non-corporate information (supplied by others than the company itself).

			quantitative and document studies	observations
<b>Institutional/ professional investors (incl. stock market reactions)</b>	<ul style="list-style-type: none"> <li>• <b>CURRENT STUDY</b></li> <li>• Solomon and Solomon (2006)</li> <li>• Beattie and Pratt (2002)</li> <li>• Friedman and Miles (2001)</li> </ul>	<ul style="list-style-type: none"> <li>• Beattie and Pratt (2002)</li> </ul>	<ul style="list-style-type: none"> <li>• Cormier et al. (2011)</li> <li>• Guidry and Patten (2010)</li> <li>• Al-Tuwaijri et al. (2004)</li> <li>• Blacconiere and Patten (1994)</li> </ul>	<ul style="list-style-type: none"> <li>• Rowbottom and Lymer (2009)</li> <li>• Holm and Rikhardsson (2008)</li> </ul>
<b>Investment advisors (financial analysts etc.)</b>	<ul style="list-style-type: none"> <li>• <b>CURRENT STUDY</b></li> <li>• Campbell and Slack (2011)</li> <li>• Campbell and Slack (2008)</li> <li>• Beattie and Pratt (2002)</li> </ul>	<ul style="list-style-type: none"> <li>• Ho and Wong (2004)</li> <li>• Beattie and Pratt (2002)</li> <li>• Toms (2002)</li> <li>• Deegan and Rankin (1999)</li> <li>• Milne and Chan (1999)</li> <li>• Deegan and Rankin (1997)</li> <li>• BiE (1994)</li> </ul>		<ul style="list-style-type: none"> <li>• Milne and Chan (1999)</li> </ul>
<b>Individual/ non- professional investors</b>	<ul style="list-style-type: none"> <li>• Beattie and Pratt (2002)</li> </ul>	<ul style="list-style-type: none"> <li>• De Villiers and Van Staden (2010)</li> <li>• Beattie and Pratt (2002)</li> <li>• Deegan and Rankin (1999)</li> <li>• Deegan and Rankin (1997)</li> <li>• Epstein and Freedman (1994)</li> <li>• Buzby and Falk (1979)</li> <li>• Buzby and Falk (1978)</li> </ul>		<ul style="list-style-type: none"> <li>• Holm and Rikhardsson (2008)</li> </ul>
<b>Creditors/ lenders (incl. bond market reactions)</b>	<ul style="list-style-type: none"> <li>• <b>CURRENT STUDY</b></li> <li>• Thompson and Cowton (2004)</li> <li>• Beattie and Pratt (2002)</li> </ul>	<ul style="list-style-type: none"> <li>• Thompson and Cowton (2004)</li> <li>• Beattie and Pratt (2002)</li> <li>• Cowton and Thompson (2000)</li> <li>• Deegan and Rankin (1999)</li> <li>• Deegan and Rankin (1997)</li> </ul>	<ul style="list-style-type: none"> <li>• Menz (2010)</li> </ul>	<ul style="list-style-type: none"> <li>• Guiral (2012)</li> <li>• Rowbottom and Lymer (2009)</li> </ul>
<b>Customers</b>	<ul style="list-style-type: none"> <li>• <b>CURRENT STUDY</b></li> </ul>			<ul style="list-style-type: none"> <li>• Rowbottom and Lymer (2009)</li> </ul>
<b>Suppliers</b>				<ul style="list-style-type: none"> <li>• Rowbottom and Lymer (2009)</li> </ul>
<b>Authorities</b>	<ul style="list-style-type: none"> <li>• <b>CURRENT STUDY</b></li> </ul>		<ul style="list-style-type: none"> <li>• <b>CURRENT STUDY</b></li> <li>• Melting and Tungen (2012)</li> <li>• Fallan and Fallan (2009)</li> <li>• Nyquist (2003)</li> <li>• Larrinaga et al. (2002)</li> </ul>	<ul style="list-style-type: none"> <li>• Rowbottom and Lymer (2009)</li> </ul>
<b>NGOs/ lobby/ pressure groups etc.</b>	<ul style="list-style-type: none"> <li>• <b>CURRENT STUDY</b></li> <li>• O'Sullivan and O'Dwyer (2009)</li> <li>• Deegan and Blomquist (2006)</li> <li>• O'Dwyer et al. (2005b)</li> <li>• O'Dwyer et al. (2005a)</li> </ul>	<ul style="list-style-type: none"> <li>• Deegan and Rankin (1999)</li> <li>• Deegan and Rankin (1997)</li> <li>• Tilt (1994)</li> </ul>	<ul style="list-style-type: none"> <li>• Campbell (2004)</li> </ul>	<ul style="list-style-type: none"> <li>• Rowbottom and Lymer (2009)</li> </ul>
<b>News media</b>			<ul style="list-style-type: none"> <li>• Islam and Deegan (2010)</li> <li>• Aerts et al. (2008)</li> <li>• Fallan and Fallan (2007)</li> <li>• Brown and Deegan (1998)</li> </ul>	
<b>Employees</b>	<ul style="list-style-type: none"> <li>• Johansen (2010)</li> <li>• Ball (2007)</li> </ul>			<ul style="list-style-type: none"> <li>• Rowbottom and Lymer (2009)</li> </ul>

<b>Auditors/ accountants</b>	<ul style="list-style-type: none"> <li>• Beattie and Pratt (2002)</li> </ul>	<ul style="list-style-type: none"> <li>• Beattie and Pratt (2002)</li> </ul>		<ul style="list-style-type: none"> <li>• Rowbottom and Lymer (2009)</li> <li>• Milne and Chan (1999)</li> </ul>
<b>Accounting academics</b>		<ul style="list-style-type: none"> <li>• Deegan and Rankin (1999)</li> <li>• Deegan and Rankin (1997)</li> </ul>		
<b>CSR consultants/ intermediaries</b>	<ul style="list-style-type: none"> <li>• Friedman and Miles (2001)</li> </ul>			<ul style="list-style-type: none"> <li>• Rowbottom and Lymer (2009)</li> </ul>

## ***Research on investors and creditors***

Both investors and creditors provide capital, which is of crucial importance for companies. These stakeholder groups are often seen as the primary targets of financial reporting, both in research (Gjesdal, 1981) and conceptual frameworks of standard setters (IASB, 2010). Therefore it is not surprising that investors and their advisors are the most studied stakeholders in CSR disclosure research (Tilt, 1994, Deegan and Rankin, 1997, McInnes et al., 2007, Campbell and Slack, 2008).

### **Institutional/ professional investors**

Beattie and Pratt (2002) find that environmental disclosure is not particularly relevant for resource allocation decisions, while Solomon and Solomon (2006) argue that institutional investors consider CSR information to be useful in resource allocation decision-making (whereas public CSR disclosure is not).

### **Financial analysts**

Findings concerning investment advisors, such as financial analysts, tend to be consistent in that environmental disclosures are not read or found material (Ho and Wong, 2004, Campbell and Slack, 2011); that environmental issues are not particularly relevant for resource allocation decision-making (BiE, 1994, Beattie and Pratt, 2002); and that this is the stakeholder group with the lowest proportion of members seeking environmental disclosure and finding it material (Deegan and Rankin, 1997).

### **Individual/ non-professional investors**

Large proportions of independent investors, 72% and 92% respectively, consider environmental disclosure material in their “decisions concerning a company”, according to Deegan and Rankin (1997) and De Villiers and Van Staden (2010). In the former study, only NGOs experienced higher numbers. However, these findings are contradicted by another survey. Beattie and Pratt (2002:83) indicate that “[i]t is likely that these items were not seen to be relevant to the investment decision.”

## **Creditors**

The risks encountered by lenders differ from those associated with the stock market, e.g. because of the security banks require. Therefore, the decision processes and the demanded information might differ as well. Surprisingly few studies address the use of CSR disclosure among creditors, relative to equity investors. Deegan and Rankin (1997) reveal that two thirds of the bankers consider environmental issues to be material (most likely related to resource allocation), and 50% seek such disclosures in the annual report. Similarly, Thompson and Cowton (2004) and Guiral (2012) indicate that environmental disclosure is considered in lending decisions, and that the annual report is one among several sources where information is found. Beattie and Pratt (2002:83) on the other hand, show that environmental disclosure is perceived not to be particularly relevant for resource allocation decision-making, at least compared to financial information.

## ***Research on other stakeholder groups***

While Solomon and Solomon (2006) and Brown-Liburd et al. (2012) claim that the demand for CSR disclosure has been, and is still, increasing, Beattie and Pratt (2002:83) conclude that “the capital market is unlikely to demand more environmental, social and community disclosures.” This emphasises the need for studies of other stakeholder groups in addition to investors and creditors.

Some stakeholders, such as customers and suppliers, are important because of their direct economic relationship with the company. Nevertheless, existing research appears to overlook these two groups, with the possible exception of some supply chain studies. Different authorities and regulators might also be crucial stakeholders, as they affect the economic and regulatory conditions of companies. One example is companies that need discharge permits in order to operate. Still, as Table 1 indicates, there is a lack of both studies exploring the attitudes of these stakeholders, and explicit discussions of the role of authorities related to different types of demand for disclosure. In that respect, both reporting and environmental regulations are obviously relevant. Though, it should be mentioned that there are several quantitative-like approaches concerning regulations (Fallan and Fallan, 2009), and even document studies (Nyquist, 2003).

The call of O'Dwyer et al. (2005a:15) for research on “secondary” or “less economically powerful” stakeholders; the focus of McInnes et al. (2007:XVIII) on “stakeholder groups and ... situations where demand-led pressures are less intense than in the case of the equity market”; and the statement “while capital market participants are an important group receiving company information, there are other stakeholder groups who are widely believed to have a moral right to information” made by Beattie and Pratt (2002:83) – are all line with the stewardship perspective explored in this paper. NGOs and similar organisations are examples of stakeholders with a broader scope than just economic issues. Historically, together with investors and their advisors, they have

been the most studied stakeholder group (Deegan and Rankin, 1997). Through news media and lobbying, environmental NGOs have been successful in putting environmental issues on the agenda, and forcing companies, industries and authorities to focus addressing them. It is “one of the key user groups of CSD [corporate social disclosure]” Tilt (1994:64). Findings in studies of NGOs appear to be quite uniform, in the way that environmental disclosure is generally in demand and read (Tilt, 1994, Deegan and Rankin, 1997, O'Dwyer et al., 2005a, O'Dwyer et al., 2005b). According to Tilt (1994), (leaders of) NGOs read annual reports in order to be better informed about companies.

### ***The consistency of findings in research***

When various equity and credit capital investors are considered as one stakeholder group, the results of research concerning the materiality or relevance of CSR disclosure are mixed (Solomon and Solomon, 2006, Brown-Liburd et al., 2012, Campbell and Slack, 2008, Margolis et al., 2009). This concerns both studies measuring attitudes, as discussed above, and the much greater number of other types of studies, as exemplified in Table 1. Nevertheless, by separating the *attitude*-related studies by subgroups, as done above, the results appear more consistent within the institutional investor and financial analyst groups.

Research also indicates that financial analysts (and other investor advisors) generally perceive CSR information as less relevant for their work than investors and creditors do (Deegan and Rankin, 1999, Campbell and Slack, 2008). Nevertheless, the two studies that have addressed both groups – and should thus be most relevant for making comparisons – reached different conclusions. Deegan and Rankin (1997) report a large significant difference, while Beattie and Pratt (2002) claim that the attitudes of the groups are similar. It is of particular relevance for this study that individual investors that make their own investment decisions are significantly more likely to state resource allocation decision-making as the reason for using environmental information, compared to individual investors that rely on analyst advice etc. (De Villiers and Van Staden, 2010). However, they do not experience such difference between the two groups concerning stewardship demand. The issue discussed in this paragraph is interesting, given that “analysts are driven primarily by the requirements of their clients” (ergo investors) BiE (1994).

The *perceived* inconclusive results might be due to relationships that researchers are not fully aware of yet. The complexity of actual uses of information – where decision models might differ within and between stakeholder groups and subgroups, individuals, situations, time, industries, types of information, information sources, etc. – makes studies and their findings hard to compare. However, this raises another question – why are similar, large, inconsistencies apparently not experienced in the NGO research? The answer requires more research that addresses several



stakeholder (sub)groups simultaneously (Deegan and Rankin, 1997, McInnes et al., 2007, Beyer et al., 2010), at some depth, and even explores new aspects of reality that might be important in research models, in order to put findings in perspective both theoretically and empirically. This paper intends to address these gaps, and the topic – different types of demand for information – is one such new aspect.

### ***The use of theory in research on demand for CSR disclosure***

Several theoretical frameworks are proposed and used to explain supply of CSR disclosure, e.g. agency theory (Ness and Mirza, 1991), legitimacy theory (O'Donovan, 2002), innovation adoption theory (Fallan, 2013a), stakeholder theory (Roberts, 1992), and signalling theory (Toms, 2002, Hasseldine et al., 2005). However, except agency theory, they are of limited use in explaining why stakeholders demand environmental disclosure.

Tilt (1994:48) discusses theoretical paradigms of CSR disclosure. A functionalist approach considers the usefulness of disclosure for investors, ignoring the possibility of other stakeholders, while an interpretive approach “recognizes [...] a pluralistic set of users” of disclosure, and that e.g. “decision-usefulness theory” therefore is broadened to consider also users other than investors. When considering the needs of a broad set of stakeholder groups, it automatically means that the political and social context is exposed, in addition to direct economic aspects. Many stakeholders might influence the decisions of a company, and even if they do not, it does not mean that their demand is not important in a larger perspective. In order to map a broader picture of the demand for disclosure facing companies, this approach is implicitly supported. Agency theory makes it possible to study all relevant principal-agent relationships, not only between investor (principal) and company management (agent).

The relatively scarce research literature on demand for CSR, reviewed above, disclosure usually answer empirically whether or not there is a demand, and does to some degree describe what types of content there is a demand for. The basic question of why do stakeholders demand CSR disclosure, i.e. what it is used for, is, at best, treated superficially. Papers might hint at possible theoretical stands, without applying them systematically in the study. Many papers use detached terminology or constructs (like useful information, decision usefulness, decision-making, stewardship or accountability) without systematically clarifying their meaning, discussing their place in a more general theoretical context, and basing their research design (including hypothesis development and discussion of results) on it (Deegan and Rankin, 1997, Thompson and Cowton, 2004, O'Dwyer et al., 2005b, Solomon and Solomon, 2006, Rowbottom and Lymer, 2009, Johansen, 2010, Campbell and Slack, 2011). E.g. when Aerts et al. (2008:643) “put forward the view that information dynamics

underlying environmental disclosure are endogenously driven by both financial markets' and public interest considerations", this does not mean an explicit discussion of resource allocation decision-making or stewardship objectives. Still, investor research often seem to use some terminology related to resource allocation decision-making, while NGO research more frequently appear to focus on stewardship or accountability concepts.

While there is a lack of systematic use of theoretical frameworks to explain a potential demand in previous research on CSR disclosure, some exceptions exist. Dierkes and Antal (1985) actually suggest a framework for examining decision usefulness, but does not seem to use it. Solomon and Solomon (2006) are probably in search of theory, stating to use grounded theory. De Villiers and Van Staden (2010) and Cormier et al. (2011) use agency theory to derive hypotheses regarding investors' demand for environmental disclosure. Additionally, while several user studies of environmental disclosure seem to be based implicitly on either resource allocation decision-making or stewardship objectives, De Villiers and Van Staden (2010) seem to be the only that examines both explicitly. The study finds that, in general, at least 80-90% of individual investors in three western countries agree or strongly agree that companies should disclose environmental information due to stewardship objectives, while about 70% agree or strongly agree that such information is material for resource allocation decision-making. De Villiers and Van Staden (2010:237) indicate that shareholders need different types of environmental information "for investment decision-making" and "to ensure that their non-financial needs are met, such as the need to associate with companies with good social norms who are seen as good corporate citizens."

*"Not only does this imply that shareholders require environmental disclosure for more varied reasons than investment decision-making only, but it also shows that companies need to disclose a range of information items to meet these different requirements."*

However, one study that seeks views of one stakeholder group through a questionnaire survey is only the beginning. De Villiers and Van Staden (2010) acknowledge the limitations of their study. The resource allocation decision-making and stewardship objectives of reporting are discussed more thoroughly in financial reporting research. This paper will draw on financial reporting research to develop a theoretical framework (see next section) to analyse demand for environmental disclosure. Different types of demand will be analysed simultaneously for several stakeholder groups in an explorative study, in order to gain insight into the reasons behind the demand. One important aspect that this framework emphasises is the potential importance of public versus private sector affiliation. The literature review has not identified any studies that address this aspect, apart from the possibly

related research on private sector not-for-profit organisations [NGOs]. Still, even most of that work is conducted in separate studies (Deegan and Rankin, 1997).

## **THEORETICAL FRAMEWORK FOR INVESTIGATING WHY STAKEHOLDERS DEMAND ENVIRONMENTAL DISCLOSURE**

The objective of this study is to explore why stakeholders demand environmental disclosure (if they do), i.e. what they are using it for. The demand for such information might arise for many reasons. May (1943) lists ten major “distinguishable” uses of financial reporting. While it is not clear how the list originates, most of the items are probably incorporated in the two types of demand suggested by Gjesdal (1981), both of which are derived from economic theory – resource allocation decision-making demand and stewardship (accountability<sup>4</sup>) demand. This is a common theoretical framework to explain demand for financial reporting, and parts of it have been used, often implicitly, in some CSR research studies. Its relevance for environmental disclosure is more systematically explored here.

Is the proposed financial reporting-based framework likely to be relevant for environmental disclosure as well as financial reporting? Financial reporting includes environmental transactions, liabilities and assets, and considers environmental risks and opportunities – even though environmental aspects are not usually identified and disclosed separately. Both financial and non-financial aspects of environmental issues might be useful in financial assessments of a company, as they might affect the cost of capital and estimation of future cash flows. Financial and environmental reporting is even regulated by the same laws and standards (at least in Norway<sup>5</sup>). The informational boundaries are usually different, since external effects, for example, are at the core of environmental disclosure, while it tends to be excluded from financial reporting. The boundaries of use of communication media are also broader for environmental disclosure (PAAinE, 2007:4). Nevertheless, similar information characteristics (e.g. reporting principles) are necessary in both types of reporting in order to be useful. This is important, as “[f]inancial reporting is not an end in itself. It is a means of communicating to the users” (IASB and FASB, 2006:19). Moreover, financial reporting (and its principles) is often used as a benchmark for evaluating environmental reporting. Hence, the proposed theoretical framework is not (ex ante) disqualified as relevant for explaining the demand for environmental disclosure.

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<sup>4</sup> Stewardship and accountability are used interchangeably in this paper, as these are similar (not equal) constructs.

<sup>5</sup> The Accounting Act, and for example, the accounting standard “NRS 16 The board of directors’ report”.

Financial accounting research, e.g. Gjesdal (1981), seems to focus mostly on investors (and creditors), in line with the two primary user groups selected by financial reporting standard-setters (IASB, 2010). Is it appropriate to use this financial reporting-based framework in relation to other relevant stakeholders of environmental disclosure identified in the previous section? IASB and FASB (2006) identify seven potential user groups that general purpose financial reporting is supposed to provide with useful information (equity investors, creditors, suppliers, employees, customers, governments and their agencies and regulatory bodies, and members of the public and their representatives). The Government Accounting Standards Board (GASB) emphasises the citizenry, legislative and oversight bodies, and investors and creditors (GASB, 1987). According to Murphy et al. (2013), the objectives of the 1973 Trueblood report of the American Institute of Certified Public Accountants (AICPA), “refer to financial statements primarily serving those users with limited authority, ability, or resources to obtain information.” The framework should therefore be appropriate for explaining the use of disclosure for a broad range of stakeholders. Next, a framework for exploring why stakeholders demand environmental disclosure is developed by discussing the resource allocation decision-making and stewardship objectives of reporting. Additionally, the meaning of public and private sector for this demand is discussed specifically in a separate subsection.

### ***Resource allocation decision-making demand***

Gjesdal (1981:208) suggests that financial reporting information might be in demand because it is of “value to investors (in a broad sense) making investment decisions”, and states that resource allocation decision-making demand is derived from information economics. This theoretical approach claims that stakeholders prefer more information to less, and ignores the information overload challenge in assuming that individuals make full and correct use of all information available to them (Walker, 1988). In financial theory, the ultimate example of information relevant for resource allocation decisions is future cash flows. However, future cash flows are rarely known (with certainty), and needs to be estimated:

*“Information for decision purposes is information that enables the decision-maker (an investor) to estimate the future cash flows for investment decisions. This means information that feeds into the net present value calculation” (Christensen, 2010:293).*

Moreover, “assessing the amounts, timing, and uncertainty of an entity’s future cash flows” (IASB and FASB, 2006:44/QC1) is often difficult, and much information on stocks and flows, risks and opportunities, etc. is potentially relevant. Hence, an objective of financial reporting is to provide useful input in this expectations-forming process. In reality, it is hard to judge what information is (or is not) decision-useful. Decisions and assessments of new information are influenced by the

accumulated knowledge, beliefs and values of decision-makers. In that respect, it is possible to claim that all information might be decision-useful to some extent.

Resource allocation decision usefulness emerged in the accounting literature in the second half of the 20<sup>th</sup> century, probably in conjunction with the development of capital markets, government regulations, etc. (Zeff, 2012). In 1978, Financial Accounting Standards Board (FASB) selected decision usefulness as the primary objective of financial reporting (Murphy et al., 2013), and it is now the primary objective in the conceptual framework of IASB (2010) as well.

### ***Stewardship demand***

According to Gjesdal (1981:208), stewardship demand for financial reporting arises because “[i]nvestors usually delegate decision-making to managers. Then there may be a demand for information about the actions that are taken for the purpose of controlling them.” The described principal-agent (stakeholder-company) relationship reveals a close link with agency theory (Gjesdal, 1981, O’Connell, 2007, PAAinE, 2007). Gjesdal (1981:213) claims that this is “characteristic of the stewardship concept as it appears in the accounting literature,” and uses agency theory to analyse stewardship demand theoretically.

The company management (agent) makes decisions on behalf of the stakeholder (principal). The principal cannot observe (all) the agent’s actions. Even though the company’s performance might be observable, it is usually affected both by the agent and by events outside the agent’s control. Therefore, the principal requires information from the agent in order to reduce the information asymmetry, thereby reducing the likelihood of moral hazard. According to agency theory, reporting is not an end in itself, but a means to solve the agency information problem stemming from delegation of decision-making from a principal to an agent.

Gjesdal (1981) has analysed the stewardship objective of information production, rather than only financial reporting. Hence, theoretically, stewardship demand is equally relevant for environmental disclosure. Actually, features common to both environmental disclosure and stewardship – e.g., responsibilities beyond self-interest and narrow economic considerations – suggest that this demand is at least as relevant for environmental as for financial reporting (O’Connell, 2007). Chen (1975) claims that the original (historic) stewardship concept connotes a dual responsibility, both towards the owner(s) and society – recognising the fact that one’s behaviour (e.g., use of resources) affects others. Stewardship implicates moral obligations and responsibilities (Jeavons, 1994, Murphy et al., 2013) and fairness (Coy et al., 2001), emphasising “company performance as a whole” (PAAinE, 2007), whereby a broad set of issues and stakeholders are considered. According to Grimsey and Lewis (2002), “accountability also has broader economic and social purposes and objectives [than

investors' resource allocation] because of the many other groups that have a legitimate interest in knowing about the activities and operations." The stewardship role of accounting is particularly important in "social and environmental reporting" (O'Connell, 2007, Murphy et al., 2013), and "[a]s changes occur in our concepts and focus of accountability for the environment, demands for different flows of information, accounting and otherwise, are also likely to grow" (Hopwood, 2009:433). De Villiers and Van Staden (2010:237) found that stewardship demand for disclosure "implies both responsible environmental management and giving an account of the environmental management actions taken."

Gjesdal (1981) studied "investors (in a broad sense)." However, stewardship demand is not limited to those stakeholders. The principal-agent relationship can be seen as both explicit and implicit contracts (of delegation) (Ramanna, 2013). This enables theoretical analyses of (probably) any company-stakeholder relationship, one pair at a time, and provides an explanation for a broad range of stakeholders' (principals') demand for environmental reporting from companies' management (agents). Information concerning how companies are managing environmental issues is likely to be relevant for a broad set of stakeholders. Ramanna (2013) uses "delegation of environmental stewardship by a citizenry to an oil company" as an example of an implicit contract. However, the ownership claims and monitoring power can vary considerably for different relationships, both for explicit and implicit delegation. Still, these are not immutable states, as even stakeholders with initially weak claims or power can change their position, e.g., through strengthening competitive advantages or the use of media or lobby.

### **Stewardship decision-making demand**

In this paper, stewardship demand is divided into stewardship decision-making demand and stewardship incentives demand. Both types stem from information asymmetry. The former arises because stakeholders, post reporting, might use the content of reporting to control and evaluate the acts selected by the manager of the firm. "Here the important characteristic is the ability of the information to provide information that enables the owner to distinguish the desirable from the undesirable action" (Christensen, 2010:293). The information might enhance stakeholders' decision-making on various issues other than investors' resource allocation. For example, environmental information can serve as input in considerations of the need for intervention in management (both its decisions and composition) (Gjesdal, 1981, PAAinE, 2007); need for regulatory changes; selection of employer, partners, suppliers, or buyers of goods and services; identifications of companies to be targeted in environmental campaigns, etc.

Although, for centuries, stewardship was the sole objective of accounting, its meaning is not interpreted uniformly (Rosenfield, 1974, Chen, 1975, Birnberg, 1980, O'Connell, 2007, PAAinE, 2007, Zeff, 2012, Murphy et al., 2013). Rosenfield (1974) emphasises the delegation or decentralisation aspect of the reporting objective, stating that "[a]n objective of financial statements is to report on the control and use of resources by those accountable for their control and use to those to whom they are accountable." Birnberg (1980:73) ascribes the content of the stewardship concept to the types of resources, tasks and decisions that the principal entrusts to the agent, i.e., to "the nature of the master-servant (or principal-agent) relationship." This might be custodian stewardship that requires operational control ("management's honesty in husbanding the enterprise resources"), asset utilisation stewardship that requires even managerial control ("management's efficiency in utilizing [the enterprise resources]"), or a more strategic stewardship and ditto control ("management effectiveness in generating a return to shareholders") (Birnberg, 1980, Zeff, 2012). These types of stewardship are also characterised by differing degrees of structure and uncertainty, and thus complexity. While balance sheet information might suffice for the former type, the latter would require performance information, as well as other retrospective and prospective information (Birnberg, 1980, PAAinE, 2007, Eierle and Schultze, 2013). Ijiri (1975) elaborates on this:

*"The accountability approach [...] includes not only the traditional stewardship issues centred on the compliance with established rules but also the modern performance issues oriented toward the efficiency and effectiveness notions. Furthermore, the accountability approach may be extended to include information about the accountant's future activities where the accountant is held accountable for his plans."*

In that context, stewardship demand for information is due to control and evaluation of past actions and performance, and assessments of future prospects (PAAinE, 2007).

### **Stewardship incentives demand**

Stewardship incentives demand occurs because stakeholders provide incentives for corporate management to act in correspondence with the stakeholders' best interests (and to avoid moral hazard due to information asymmetry) (Gjesdal, 1981, Christensen, 2010). Using his analytical model, Gjesdal (1981) finds that reporting as an incentive mechanism is *ex ante* efficient, i.e., it has an enforcement effect. The fact that corporate management provides reporting information to stakeholders, which might be used for (post reporting) control or evaluation purposes, directly motivates corporate management to act more in compliance with stakeholder interests (even before the reporting takes place). Reporting has basically *ex ante* stewardship (incentive) value, regardless of whether the principal uses (at least reads) the information after it is reported (*ex post*).

However, Gjesdal (1981:219) claims that this incentive effect might be reduced or disappears if the control signal of reporting is not credible – i.e., if the agent understands that the information is not used ex post:

*“One reason for giving tests to students is to increase their study effort. On the day of the exam this is no longer true. One possible strategy would be for professors to announce that tests will take place at the end of the quarter and then cancel at the last minute. However, once students realize that this is the strategy, the incentive effect is gone.”*

This is also the consequence of the findings of Cormier et al. (2004). They conclude that corporate managers react to stakeholder demand, but that this is an evolutionary process, where managers adapt and change behaviour over time, according to their perception of both what issues or information stakeholders find important and which stakeholders are most important (in a particular context).

### ***Demand from public sector stakeholders***

There is a close link between the concept of stewardship and the role of the public sector. Politicians are elected by the people, and the public sector exists to manage public resources on behalf of the population. The natural environment is, in many aspects, a common good. The politicians are accountable for the effect their decisions have on it. Further they must ensure that the public sector acts in line with its particular stewardship responsibility, and influence the actions of others through regulations, incentive mechanisms, and by being role models. This is a principal-agent relationship governed by both formal and social contracts. Environmental accountability creates a need for information concerning environmental issues, both on a macro (society) and a micro (company) level. This leads to a stewardship demand for environmental disclosure.

When consideration of environmental issues implies potential (alternative) costs, being a steward on behalf of the environment requires an altruistic dimension, which makes it easier to relate to public sector objectives than to profit maximisation. This is reflected in financial reporting objectives. When FASB spun off GASB to separate responsibility for establishing accounting standards for US state and local governments from that of business enterprises, the most important reason was that “the duty to be publicly accountable is more significant in governmental financial reporting than in business enterprise financial reporting” (Coy et al., 2001:4). GASB (1987) acknowledges this:

*“The Board believes that financial reporting plays a major role in fulfilling government's duty to be publicly accountable in a democratic society. Public accountability is based on the belief that the taxpayer has a “right to know,” a right to receive openly declared facts that may lead to public debate by the citizens and their elected representatives.”*



This accountability is prominent in the identified primary uses of financial reports:

*“compare actual financial results with the legally adopted budget; to assess financial condition and results of operations; to assist in determining compliance with finance-related laws, rules, and regulations; and to assist in evaluating efficiency and effectiveness” (GASB, 1987).*

While GASB considers accountability “to be the paramount objective from which all other objectives must flow” (Coy et al., 2001:4) in financial reporting for the public sector, FASB selected resource allocation decision-making as the only primary objective for private companies. This difference is also reflected in the choice of primary users of financial reporting. IASB and FASB (2006) emphasise the needs of investors and creditors, while GASB (1987) opts for “the citizenry, legislative and oversight bodies, and investors and creditors.” GASB states that public sector “decision-making encompasses social and political decisions in addition to economic decisions” (Coy et al., 2001:4). Based on this, it is likely that the demand for environmental disclosure from stakeholders representing the public sector would differ from that of private business enterprises. (The same logic might also differentiate not-for-profit organisations from business enterprises.)

### ***Concluding remarks on the theoretical framework***

The framework described in this section suggests that there are at least three important reasons for stakeholders’ demand for environmental disclosure, namely resource allocation decision-making, stewardship decision-making, and stewardship incentive mechanisms. The tasks and objectives of users, represented by different stakeholder groups and public versus private sector affiliation (or possibly not-for-profit and for-profit objectives), is thought to affect the type of demand for disclosure (if any).

## **RESEARCH DESIGN**

The reason why stakeholders demand disclosure is one of the most fundamental questions of demand side research. Environmental disclosure has been previously examined in only one questionnaire survey, and is otherwise implicitly assumed, if considered at all. In order to gain a deeper understanding of the issue, it seems most adequate to start exploring it through a (multiple) case study. While reasons behind the demand are the primary interest of the paper, the choice of cases is a secondary issue that is supposed to enhance the understanding of the first, “because it is believed that understanding them will lead to better understanding, and perhaps better theorizing, about a still larger collection of cases” (Stake, 2005:446).

### ***Selection of cases***

Among several choices concerning cases, the most crucial is assumed to be the stakeholder groups.

### **Selection of stakeholder groups**

Stakeholder groups are selected based on the research question, review of research, and relevant theory. Investors (and their advisors), creditors, authorities and NGOs are included in the study partly because the objectives of their operation are supposedly extreme cases with respect to the three types of demand defined by the framework. Adding a public versus private sector dimension to the investor group as well, allows for illustrating different aspects of demand, as they can be seen as contrasting cases.

Additionally, investors and creditors are selected because both research and accounting standards indicate their importance, and because the possibly inconsistent results of previous research suggest that more knowledge is needed. The latter argument also calls for inclusion of NGOs, because the consistency of previous research findings is almost striking, given the complexity of demand indicated by investor research. Therefore, insight into the underlying elements is best served by including both. The tasks, responsibilities, power and possible information requirements of both reporting and environmental authorities, and business-to-business (B2B) customers, are likely different from those of the other stakeholders. Additionally, no similar research on these stakeholders has been conducted. For customers, the difference between public and private sector affiliation might also be relevant because the strict requirements on public procurement are voluntary in the private sector.

### **Selection of case organisations within each stakeholder group and representatives within organisations**

In order to identify cases that are likely to demand environmental disclosure, the cases perceived as extreme were sought. If disclosure is required, these stakeholders would be its most likely users. If these stakeholders find disclosure irrelevant, others would probably perceive it the same way. Previous research shows that environmental risk, of which industry sector is often used as a proxy, is one of the most important explanatory variables of supply of environmental disclosure, together with size (Fifka, 2013). Therefore, case organisations (and representatives) that interact with relatively large companies in the Global Industry Classification Standard (GICS)-sectors consumer staples, energy, industrials and materials were preferred (when possible), because such companies are used as reference in the interviews. In particular, industry within the consumer staples sector has been proven to exhibit a close relationship between economic and environmental risk. Norway was chosen partly because of its reporting regulations (case 23), and the presence of the most relevant consumer staples sector industry. Additionally, it is a society characterised by a relatively high level of trust, which hopefully enables an open interview dialogue and honest responses, leading to more

relevant data. It should be noted that there are few relatively large actors within many of these sectors in Norway.

The number of cases in the study is quite high. The interview with an environmental authorities-representative, revealed centrally-set objectives, tasks, and rules-based decision criteria that would imply relatively homogenous answers. Therefore, it was deemed more important to include a greater number of interviewees from other groups. The fact that both public and private sector entities should be included for some groups also affected the number of cases.

In order to obtain relevant data concerning the use of disclosure, it was decided to interview hands-on representatives with detailed knowledge of the issue, rather than only top management, who would likely provide more general policy information. However, the representatives were selected in cooperation with top management.

## ***Interviews***

Inspired by the designs of McInnes et al. (2007) and (Campbell and Slack, 2011), one company (and, in some cases, an industry) was used as a reference in each interview, in order to elicit specific answers and examples, in addition to general statements. The idea was to create pairs of principal-agent relationships, similar to the agency theory basis that is closely related to stewardship (and resource allocation) methodology.

Semi-structured interviews were conducted with one (two for case 11) representative from each case organisation in the autumn of 2011 and the spring of 2012. Three supplementary interviews were completed later in 2012. The duration of interviews varied between 10 and 70 minutes, with the majority lasting one hour. The author collected the data, which consists of 19 face-to-face interviews and three telephone interviews, all of which were recorded and subsequently transcribed, as well as the document study concerning case 23. The full list of all the cases is given in Table 2. All direct quotes used in the paper were translated to English by the author. In accordance with recommendations of Yin (2009), several measures were implemented based on considerations of validity and reliability. A main interview guide was developed, roughly based on the framework suggested in the previous section. Before each interview, minor adjustments were made in the guide, in order to align it to stakeholder and reference company/industry characteristics. A protocol for notes was kept, and content was identified and structured according to certain themes. During the preparations for each interview, information searches and evaluation of documentation were performed. In addition to case 23, these document studies were more extensive for cases 1-3, 11, 13, 14 and 20, due to regulations and directions, for cases 18 and 21 due to internal documents received,

and for the most relevant industry within GICS-sector consumer staples. The topics addressed include the materiality of environmental issues, to what degree they read environmental information in general and environmental disclosure in particular, why they use it (or not) more generally, examples of use, and company dialogue. The interview data are analysed in line with the theoretical framework described in the previous section.

Interviews are deemed adequate for this exploratory study, given the paucity of previous research/knowledge to build upon, as it allows for detailed explanations, issues the querist had not thought of, and follow-up questions.

**Table 2:** *Multiple mini case study data*

Stakeholder	Cases/ stakeholder group	Public or private sector affiliation	GICS-sector of reference company	Reads environmental disclosure	Resource allocation decision-making demand	Stewardship decision-making demand	Indications of stewardship incentive demand
1	Customer – B2B purchaser	Public	Industrials	No	No	No	Yes
2	Customer – B2B purchaser	Public	Industrials	No	No	No	Yes
3	Customer – B2B purchaser	Public	Industrials	No	No	No	Yes
4	Customer – B2B purchaser	Private	Industrials	No	No	No	Yes
5	Customer – B2B purchaser	Private	Industrials, IT	No	No	No	Yes
6	Customer – B2B purchaser	Private	Consumer staples, private households	No	No	No	Yes
7	Customer – B2B purchaser	Private	Consumer staples, private households	No	No	No	Uncertain
8	Customer – B2B purchaser	Private	Consumer staples, private households	No	No	No	No
9	Financial analyst	Private	Energy	No	No	No	No

10	Financial analyst	Private	Consumer staples	No	No	No	Uncertain
11	Investor	Public	Consumer staples	Yes	No	Yes	Yes
12	Institutional investor	Private	[Depersonalized]	No	No	No	Yes
13	Institutional investor	Public	Industrials, consumer staples	Yes	Yes	Yes	Yes
14	Institutional investor	Public	Materials	Yes	Yes	Theoretically, yes	Yes
15	Investment advisor	Private	Consumer staples, private households	No	No	No	No
16	Portfolio management	Private	Consumer staples, financials	No	No	No	No
17	Investment advisor	Private	Consumer staples, NGOs	No	No	No	No
18	Lender	Private	Consumer staples	Yes	Yes	Probably not	Yes
19	Lender	Private	Industrials	Yes	Yes	No	Yes
20	Environmental authorities	Public	Consumer staples	Yes	No	Yes	Yes
21	NGO	Private	Consumer staples	No	No	No	Yes
22	NGO	Private	Consumer staples	No	No	No	Yes
23	Reporting authorities	Public	Not applicable	Not applicable	Yes	Yes	Yes

## FINDINGS AND DISCUSSION

Why do stakeholders demand environmental disclosure, i.e. what they are using it for? This paper presents key findings on the underlying needs of stakeholders. It is explored whether resource

allocation and stewardship decision-making demand and stewardship incentive demand form an adequate framework to explain parts of the demand for environmental disclosure in multiple small case studies. A discussion concerning the public sector concludes the section. Some tentative findings concerning the three types of demand are listed in Table 2.

Before discussing the cases in light of the framework, it is essential to present some background information. These “answers” will be illustrated, directly or indirectly, in the discussion of the cases below. Firstly, it is important to establish whether an interest in environmental issues exists in these cases: do environmental issues matter? Theoretically, it is possible to think of situations where it holds true for all the cases. However, in practice, e.g., stakeholder 9 (financial analyst related to the GICS-sector energy) thinks environmental events that potentially can affect investment recommendations are so rare and unlikely that their effects can be disregarded.

Secondly, if stakeholders find environmental issues are material, does it mean that they demand environmental information? Again, theoretically, it seems possible for all stakeholders to think of information that would be material in their contexts. However, in reality, stakeholder 9 believes that information that makes prediction of unlikely environmental events – e.g., major environmental catastrophes – possible, does not exist. For several stakeholders the relevance depends on what the customers ask for/buy. Stakeholders 9 and 15-17 (investors, and the like) have never encountered customers asking for services that would make environmental information relevant, so it is unlikely. (However, stakeholders 15 and 17 have had requests concerning other CSR topics.) According to stakeholder 7 (B2B purchaser), potential new solutions might reduce the use of energy, packaging, transportation etc., and thereby reduce costs and improve environmental performance. Nevertheless, what matters is profitability – cost reductions compared to (changes in) consumption patterns of private households: “A square-shaped bottle that saves space in transport is not as popular as round bottles,” so it is dropped from the market. The demanded information reflects this reality, and information on the reduction in greenhouse gas emission is not important.

Nevertheless, the scope of this paper is demand for one type of environmental information – publicly available corporate environmental disclosure (environmental disclosure). Even though almost all 22 interviewees are aware of the availability of such disclosure, only six (stakeholders 11, 13, 14, 18, 19 and 20) read environmental disclosures in order to do their work (and to different degrees). For most of the 16 interviewees that do not read it, this is an option they do not even consider – it is not interesting enough. This is not a survey to generalise results. Still, the finding is thought-provoking. When the disclosure is not read, it means that it is not used for resource allocation or stewardship decision-making purposes. However, many of the 16 stakeholders still

demand such disclosure – probably because they value the stewardship incentive mechanism (environmental disclosure might make reporting companies enhance (environmental) performance). It should be noted that several of the 16 non-users of such disclosure use other types of environmental information (private corporate environmental disclosure, and public and private non-corporate environmental disclosure).

Before discussing findings concerning all three types of demand for environmental disclosure separately, case 23 is presented because reporting regulation exemplifies the relevance of all three, albeit with some notable differences. This discussion of governmental demand for environmental disclosure through reporting regulations is based on the preparatory works, which reveal the purposes of the law. When regulation of environmental disclosure in the Accounting Act was first introduced, and later extended, it was motivated by a dual purpose (UD, 2009). The first purpose is that the reported information is potentially important in itself, because its post-disclosure use might affect both resource allocation and stewardship decision-making. The second purpose is to induce better environmental performance through including the topic into the agenda. The fact that the board of directors has to confirm and sign the disclosed environmental information – and that management is obliged to provide relevant information for them – means that the decision-makers are forced to pay attention to environmental performance. This incentive mechanism is governed by the motto “what is measured is done.” In this example, the authorities (the principal) appreciate both the decision usefulness (potentially both resource allocation and stewardship decisions) and the (stewardship) incentive role of reporting. Nyquist (2003) indicates the same holds for Sweden and Denmark. Empirical studies conducted in Denmark and the US indicate that mandatory reporting of environmental information has led to improved corporate environmental performance (Bebbington, 1999, Mobus, 2005). It is also pertinent to mention that the Norwegian reporting regulations, and therefore demand, are stricter for environmentally sensitive operations, than for e.g. “office” companies. This might affect both decision making demand and the incentive mechanism. Additionally, research indicates that enforcement of reporting regulations are important concerning their effect (Patten, 2005; Fallan and Fallan, 2009). There is no enforcement of these regulations in Norway, something that is well known. When demand is not perceived as real, which has had an effect on reporting (Fallan and Fallan, 2009; Melting and Tungen, 2012), this might also influence the incentive mechanism.

### ***Resource allocation decision-making demand for environmental disclosure***

Five cases seem to demand environmental disclosure for resource allocation purposes. Case 23 is already discussed above. Not surprisingly, the remaining four cases concern investors and creditors

(resource allocators). One case concerns stakeholder 14, an institutional investor that is a public sector entity. The investor deals with various (environmentally sensitive) industries. While parts of the interview reflect the interviewee's general perceptions of demand and experiences concerning disclosure, others focus on a company in the GICS-sector "materials" in order to obtain more specific answers. The interviewee's job is to make investment recommendations based solely on environmental criteria – identification of companies that cannot be a part of the investment portfolio.

*"We use publicly available sources in the initial screening of a company: Google, the company's own information in environmental reports, and particularly annual reports. ... Our recommendations become public after a while. Therefore, the directions say that the recommendations have to be substantiated. We have to reveal our sources. Then the facts have to be correct, we have to be sure that the case is serious enough to qualify for exclusion, and therefore we often have to be thorough. ... It is future risk that we need to consider, not a punishment for previous actions, though previous actions can indicate how the company will act in the future" (stakeholder 14).*

According to stakeholder 9 (financial analyst), "there are funds whose objective is to invest in the companies that can be seen as very good [CSR and environmental performers], but it is far below one percent of the investor base." Even the few funds that do have ethical or environmental investment criteria do not have to demand environmental disclosure. While stakeholder 14 needs information in order to make such choices, stakeholder 12 (institutional investor having "ethical funds") resorts to simply copying publicly available decisions on exclusion of companies of other ethical or environmental funds: "We have followed them from day one. We think that they have such a large and good staff, work so thoroughly on these issues, and are so large, that it would just be silly not to follow them." Hence, stakeholder 12 is indirectly using environmental disclosures. Stakeholder 13 (institutional investor) has another approach, which makes use of environmental disclosure redundant:

*"We do not choose the best [or exclude the worst environmental performers] within an industry. We focus on two industries that are enhancing the environment. That [all investments in those industries] is what we call environmental investments."*

However, this is only relevant for a part of case 13's portfolio. In another area, they have sold their shares in several companies that do not fulfil certain environmental criteria of one particular industry. These decisions are made following broad analyses of several sources of information. The investor has even taken general and specific measures to improve the investees environmental reporting. The interviewee did not confirm the extent of the use, but there is some resource allocation decision making demand for environmental disclosure.



For comparison, it is interesting to highlight the attitudes of investors that do not demand environmental disclosure as well. Stakeholder 9, financial analyst of the GICS-sector energy, categorically rejects the relevance of environmental issues:

*“Environmental issues do not affect investment recommendations, not mine at least. No, it takes an incredibly lot for that [an environmental catastrophe and changes in politics concerning climate, suggested by the interviewer] to be important. Of course, in such extreme cases [the environmental catastrophe], where a lot of attention is placed on actions in breach of the law, it may in fact have an economic effect. But it is incredibly rare that we become aware of that.”*

Large environmental catastrophes are very rare, and if they occur, environmental disclosure cannot assist in their prediction. This view is supported by stakeholder 17 (investment advisor): “You cannot unveil it, no matter what you do ... even if you use large resources.” The analyst could not think of any other relevant environmental events, even regulations. Stakeholder 9 indicated absence of a resource allocation decision-making demand for such disclosure. Stakeholder 10 is another financial analyst, working with the GICS-sector consumer staples. This industry has experienced a close link between environmental and economic risk, which supposedly makes environmental issues more important to investors. Confronted with specific environmental risks<sup>6</sup> relevant for these companies, the analyst confirms that these are considered when choosing which stocks to recommend:

*“Eh, yes, well, what should I say? I would call it biological risk, and political risk. That is the angle we take, you know. Basically, we do not take the angle: are the operations of these [companies] ethical? We are not concerned with that aspect. Our attention is on the risks concerning their operations. And that is risk of litigation, or coming under suspicion by the authorities, or losses due to [environmental<sup>7</sup>] problems. That, we are concerned about – having various sources on it and talking with the company.”*

Despite the use of multiple sources of information, stakeholder 10 does not read environmental disclosures. There is apparently a resource allocation decision-making demand for environmental information, but not for environmental disclosure. The lack of demand is due to attributes of this reporting, and lack of time to cover everything. Stakeholder 12 takes a similar stand:

*“Generally, the environment and these issues will in a way not be big enough, not material enough to have any financial consequences, and then they become not that important. It is an incredible amount of information out there, so fund managers and financial analysts have more than enough to deal with, even when focusing on the most important information.”*

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<sup>6</sup> Which risks these are is made anonymous to hinder identification.

<sup>7</sup> The original expressions are made anonymous to hinder identification.

This information overload argument is contrary to the premise of “information economics” – the theory upon which resource allocation decision-making demand is derived (Gjesdal, 1981, Walker, 1988). The argument of stakeholders 15 (investment advisor), 16 (funding and portfolio manager) and 17 (investment advisor) for not considering environmental issues when making resource allocation decisions or reading environmental disclosures is that their customers do not ask for it. Occasionally, they experience some demand concerning other CSR topics, but not environmental considerations.

*“I have experienced it [customers asking for ethical investments]. Now I have worked with [investments] for twelve years, but a long time ago ... about 2002-3, there was some focus on it [ethical investments] ... Afterwards, there has not been even a peep about it, I think. ... There could be some customers that mention that they do not like it if the fund invests in weapon production and stuff, for example. We respond by saying that we cannot guarantee it entirely, but that it is at least not the strategy of the fund. Then they just accept it, so it is not a main issue anymore. But, ten years ago there were some that wanted it [ethical investments]. After that, it has been gone” (stakeholder 15).*

*“We do actually have experience with some [customers] raising that topic, but related to ethical, not environmental, issues. ... Just now, for example, we are working with [an organisation] ... that wants the possibility to exclude companies based on [labour rights]” (stakeholder 17).*

Stakeholders 9 and 10 have not even thought of the possibility that clients should demand green investments from them. Customers want high rates of return. Environmental restrictions on the investment universe are not seen as expedient, and environmental issues are not deemed relevant.

The two last cases where *a potential* resource allocation decision-making demand for environmental disclosure is identified, are lenders. According to stakeholder 18, “[a] bank is a wheel in a large machinery, and what we do – cases in which we do or do not grant loans – has a large environmental impact.” Stakeholders 18 and 19 are both bank directors, heading departments that lend money to the GICS-sectors consumer staples and industrials, respectively, and are hence making resource allocation decisions. As recognised in stakeholder 18’s strategic reports to the bank’s top management, that sector clearly faces environmental challenges, and experiences a quite close relationship between economic and environmental risk. According to the interviewee, “the relevance of environmental risk is tied to economic risk, but there is a difference between, e.g., a violation and a material violation of environmental regulations.” This is because the authorities have a low threshold that triggers their response. Consequently, there are always minor events resulting in fines or demand on approximately all companies in this thoroughly regulated sector. Stakeholder 18 notices such events, obtains the company’s version and documentation, and what measures the company is implementing to address the issues.

*“In the long run, it is a question of credibility, whether he does what he says he is doing, or is just saying it. The last group gets phased out because the risk gets too high, and for us as a bank, it is the risk of losing money at one point in time that determines it.”*

Commenting on a recent environmental event, the stakeholder elaborates on the risks in this sector and the consequences for resource allocation:

*“They lost about 15 million I would think, and that is a considerable amount, but they lost more on the history behind – the reputation. It is a very good example of not doing what they say they are. They did not detect the [event] because they did not follow their own routines. That would have been subject to a serious talk if it was one of our customers.”*

The better environmental disclosure available, the better stakeholder 18 thinks it is. Still, the banker uses multiple other sources of information in the assessments, including talks with the company and others in the sector, news media, notifications of events from the company, decisions by regulators, reports on internal control, etc.:

*“We have the annual report, which is a part of the basis of our analysis. And we will normally read through the annual report to familiarise with everything it says, but we have to go deeper than the annual report to get an adequate analysis.”*

Still, to put matters into perspective, stakeholder 18 admits that environmental issues alone have never led to rejection of a loan application, “because there are other issues that count more, but of course, this also counts.”

Apparently, within the same bank<sup>8</sup>, there are considerable differences between these two sectors, concerning the importance of environmental issues and the demand for environmental disclosure. Stakeholder 19 struggled to identify examples of relevant issues, one of which was “aesthetic pollution.” The interviewee has never experienced or heard of cases where the environment has been an important decision point. This statement questions the materiality of the natural environment for decision-making in this sector. However, other CSR issues, such as “disorderly working conditions [for foreign hired workers]”, have caused rejections of loan applications. Still, in the interviewees view, the decision process is designed to reveal even relevant environmental risks if they should occur:

*“We have made a credit case template that forces each account manager to consider [risks]. One aspect is a consideration of reputational risk, and that concerns elements, such as law, identity, moral,*

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<sup>8</sup> According to stakeholder 19’s previous work experience “there is not much difference between banks. The thing that often depraves the bank’s focus on such matters is strong incentives for growth ... then one might perhaps skip these kinds of issues a bit easily.”

*reputation, economy and ethics. You are supposed to comment on each, and in most cases it is unproblematic, but sometimes it might be relevant” [for CSR issues]. “We read the annual report and the corporate website, because much of the content in a credit case is description of the nature of the business.”*

Even though the interviewee considers the likelihood of material environmental risks as low, the possibility is nonetheless appreciated (“it is most likely to be a reputational risk”). The use of multiple information sources – including environmental disclosure – is believed to reveal any potential risks when relevant. Therefore, the information is demanded and read, just in case...

### **A brief account of resource allocation decision-making demand**

Information overload is probably pertinent in all the above cases. The key difference – concerning resource allocation decision-making demand for environmental disclosure – seems to lie in their assessment of the importance of environmental issues and information in general, and/or environmental disclosures in particular. Stakeholders 13, 14 and 18, and to a minor degree stakeholder 19 (and possibly, indirectly, stakeholder 12), recognise the potential relevance of environmental disclosure for resource allocation decision-making. Useful environmental disclosure would be beneficial in their work, and all of them, except stakeholder 12, both read and demand it. All these cases concern investors, creditors, and the regulator of financial reporting, whose objective is to provide useful decision-making information. Still, while political decisions mandate that stakeholders 13 and 14 make some environmental considerations in their investment decisions (though the required rate of return is not affected), for stakeholder 18 (and theoretically 19) this is based purely on economic considerations. These cases illustrate different uses of the disclosure.

How do these findings relate to previous research? One issue is the perceived inconsistency of previous findings regarding creditors. Case 18, and theoretically case 19, are in line with the conclusion of Deegan and Rankin (1997), Thompson and Cowton (2004) and (Guiral, 2012), that environmental disclosure matters for lending decisions, and thereby contradicts Beattie and Pratt’s (2002) interpretation that environmental disclosure is irrelevant. However, both cases 18 and 19 are in line with the underlying data of Beattie and Pratt (2002), which shows that purely financial information is perceived to be more important than environmental disclosure. Concerning the *perceived* inconsistency of previous findings, it is, potentially, even more important to notice that industry differences clearly influence the perceived importance of environmental disclosure, and, hence, resource allocation decision-making demand, in cases 18 and 19. Judging by these two cases, it seems necessary to control for industry when studying the materiality of environmental disclosure for credit capital allocation decisions.

This study also addresses professional equity investors (institutional investors, analysts, and other advisors). The findings in previous research for these subgroups indicate that the materiality of environmental *disclosure* for resource allocation decisions is low, even though it might be higher for environmental information as a whole (Solomon and Solomon, 2006). The perceived low relevance of such disclosure is in line with the findings for private sector cases in this study (cases 9, 10, 12, 15-17). This also means that the possibly different views on materiality between analysts and creditors indicated in research are supported by the cases in this study. The interviews revealed that lenders, investors and advisors do interact, but not on a day-to-day basis, as such high frequency is not necessary for lenders, whose decisions processes have longer time intervals. The differences in practices indicate different decision models for professional investors and lenders.

The survey conducted by De Villiers and Van Staden (2010) shows that about 70% of (private sector, independent) investors demand environmental disclosure for resource allocation decision-making purposes, which differs from the finding concerning the few private investor (and the like) cases in this study. However, this might be due to significant differences in attitudes between individual investors (that are not addressed in this study) and professional investors.

The interviews indicate that there is considerable complexity (including variation) concerning such relationships. Nevertheless, the analysis of these cases reveals a clear, and potentially important, difference in the motives behind, or approach concerning, resource allocation decision-making demand, between public and private (for-profit) sector affiliation, as politicians make public sector investors consider environmental issues. The intentions governing the delegation of dual perspectives to be considered in resource allocation processes, suggest that these are underlying systemic relationships, rather than just a random empirical finding in a small number of cases. If that perception holds, it is a basis for theorisation.

If the scope of the paper had been widened to include environmental information in general, rather than focusing solely on environmental disclosure, a greater resource allocation decision-making demand would likely emerge.

### ***Stewardship decision-making demand for environmental disclosure***

The study has identified five cases that might exemplify stewardship decision-making demand for environmental disclosure. Case 23, concerning reporting regulations, is discussed earlier. The remaining four cases will be addressed to obtain some of the knowledge shared by the stakeholders.

Stakeholder 11 is a public-sector based investor in many companies from various industries. Much of the interview concerns the relationship with a specific company in the GICS-sector consumer staples. However, the stakeholder's processes towards investees are rather standardised. This is a large, long-term owner, and its exercise of ownership is guided by general directions, given by the government. The investor's attitudes towards environmental issues are explicitly expressed, in publications, as expectations, rather than absolute demands. "Companies are expected to take responsibility and to be in the forefront of their fields", because, according to stakeholder 11, "when you think long-term, then good environmental work corresponds to good profitability, you know. At least, that is our hypothesis." As a result, "[c]ompanies' CSR work is a natural part of the follow-up of companies [we] own, in addition to awareness of financial results and business development." Stakeholder 11 adds that "[f]ormally, our ownership power is exercised in the general meeting of shareholders, and by electing people to the board." Therefore, information is needed to assess the performance of the board of directors (and management), on economic as well as a broader set of aspects, including environmental. Information is obtained from several sources. There is an

*"information dialogue on different occasions. Specifically, we have quarterly meetings with management, the CEO and CFO, in connection with publication of new financial results. ... Additionally, we have a meeting with the company each year that is entirely devoted to CSR. Again, it is company management and typically, from larger companies, someone working specifically with CSR. Then it is possible to have a good dialogue on their reporting, because ... our way to prepare for such a meeting is, of course, to read the latest reports etc., and we know a bit about what is going on in society."*

These meetings address both the past and the future, and the stakeholder appreciates both the forward-looking and confirmative value of reporting. It is clearly a stewardship decision-making demand for information, including environmental disclosure. "[Environmental disclosure] says something about how one works with things, what measures are taken ... ergo [it provides] much more information." The stakeholder, e.g., recommends that their investees report according to GRI. Even though the primary focus is on environmental performance, reporting is also important because "it has to be visible in order for one to know." It should be noted that "expectations concerning environmental issues do not affect the targeted rate of return", and the environment is just "one topic of many" that stakeholder 11 addresses. The relatively close link between economic and environmental risk in the company discussed in the interview means that environmental issues are incorporated in the financial reporting and considerations, explicitly and indirectly. This could suggest that there is a resource allocation decision-making demand for environmental disclosure as well. However, stakeholder 11 did not give any such indication, emphasising instead significance of their long-term ownership. It could be added that stakeholder 11 has considerable power in this principal-

agent relationship to influence economic and environmental performance “in house”. Deinvesting in this company and reinvesting elsewhere is not an option (in the short term), based on the policy established in the directions.

Stakeholder 13 uses environmental disclosure to select what companies (not) to invest in, as seen in the previous subsection. Additionally, the investor uses, e.g., meetings (potentially also the general meeting of shareholders), and written communication with investees to assess and influence their actions on certain environmental issues. Stakeholder 13 “expects companies to handle ... environmental risks that might have negative effect on its investments.” Since the stakeholder acts on behalf of the government, partly, as an environmental steward, it is clear that this environment-economic link does not have to be close. The interviewee pointed out that their focus on environmental disclosure (among other sources and measures) to assess and try to influence the environmental performance of investees is described even in the case company’s annual report – a stewardship decision-making (and incentives) demand.

This is not the case with stakeholder 14, who says that the reports prepared for resource allocation decision-making are “normally not” used to exercise ownership power in order to affect investees’ actions from inside. “It has happened once on [another CSR topic] as I am aware of, but it has never happened on environmental issues.” On that occasion, information, including disclosure, was used to confront company management, in order to make them change a CSR practice. Stakeholder 14 does not exercise ownership power, in e.g., general meetings of shareholders etc. The interviewee admits that there is a theoretical possibility that a stakeholder decision-making demand for environmental disclosure might occur in the future, but it has not happened yet.

For stakeholder 18, the quotes in the previous subsection reveal how borrowers are confronted when negative environmental events occur. The interviewee does seek environmental information, including disclosure, to assess management’s environmental performance. However, this is entirely motivated by potential effects on economic risk, and is only used as input to resource allocation decisions. The lender has no moral or environmental agenda, and has no direct say in, e.g., selection of board members or management. The close link between environmental issues and financial results turns stakeholder 18 into an environmental steward, albeit not by choice. Is this a stewardship decision-making demand? Probably not. Stakeholder 19 does not even experience the same link between environmental and economic risks, and cannot be said to have such a demand.

Stakeholder 20 represents the environmental authorities at one of the 18 County Governors. The job is set up to act as an environmental steward on behalf of society. The interview focused on companies in the GICS-sector consumer staples. This industry is thoroughly regulated, and

compliance with discharge permits and other regulations is necessary for companies to continue their operations. Stakeholder 14 bases decisions mainly on specified technical and internal control data, that companies are required to report directly to the authorities at specified points in time, in addition the stakeholder's audits and inspections. There are no formal routines that require the stakeholder to use environmental disclosure. Still: "I read it, we read corporate environmental reporting, especially in connection with our inspections. Then we read ... ask for the management's reporting, the board of directors' report, for the last few years." It is done to see how companies present themselves, and might give general information about the environmental attention and work in the company. The use of environmental disclosure is diffuse – it is difficult to point out exactly its contribution to stewardship decision-making. Nonetheless, it adds to the general impression of the organisation that might influence decisions that are partly based on discretionary judgments. The identified demand for environmental disclosure is, therefore, partly due to stewardship decision-making. The interview concerns specifically one industry. However, it is important to acknowledge that environmental regulations concern environmentally sensitive industries, and even these to a differing degree. There is likely to be industry effects associated with this stakeholder group.

### **A brief account of stewardship decision-making demand**

The five cases that can be said to have a stewardship decision-making demand for environmental disclosure all act on politically decided criteria. For the two investors that have experienced such use of disclosure, these are responsibilities and tasks that would not be carried out otherwise. Their main responsibility is resource allocation and meeting the required return on investment, while environmental responsibilities are demanded additionally. The same can be said about *parts* of the environmental reporting regulations incorporated in the financial reporting regulations, as the primary responsibility is to ensure financial reporting, with environmental disclosure requirements added "while they are at it". However, for stakeholder 20, environmental stewardship is the sole purpose of the job. If it were not for the broader stewardship responsibility taken by society, the job would not exist.

In the cases in this study there appears to be a difference between public and private (both for-profit and not-for profit) sector actors concerning stewardship decision-making demand for environmental disclosure. Starting with not-for profit private sector organisations, this appears odd at first glance. Firstly, because environmental NGOs primarily have environmental objectives. Secondly, because the lack of demand in the two NGO cases in this study, as will be presented later, is not in line with the quite consistent findings of previous NGO studies. The NGOs in this study demand environmental information, but not environmental disclosure, while the NGOs in the exiting literature clearly appear to demand environment disclosure as well.



Even some of the private sector, for-profit, organisations appear to consider broader stewardship responsibilities. As will be shown later, all the private sector purchasers (cases 4-8) make environmental requirements, albeit rarely (in some cases), and (partly) due to regulations (in others). (The latter indicates that regulations are a transfer of public sector objectives.) In addition, as investments are often both profitable and enhance environmental performance, it might be difficult to separate the “stewardship” part. However, while both public sector and private sector purchasers demand some environmental information, they do not demand environmental disclosure. The findings, concerning for-profit and not-for-profit organisations, indicate that there is considerable complexity regarding stewardship decision-making demand. This includes the definition of the distinction between economic and stewardship objectives.

The finding of De Villiers and Van Staden (2010), that 80-90% of (private sector, individual) investors demand environmental disclosure for stewardship decision-making purposes, is not in line with the findings concerning private sector investors in the current cases, though there are no individual investors among them. It should be mentioned that

*“information desired by users is likely to be an extension of that currently available”, and that research might be “biased against finding a result that environmental performance information is important to users’ decisions”* (Deegan and Rankin, 1999:314).

The methodology of the current study, as described above, is probably more likely than a survey to discover whether information claimed as valuable to stakeholders is actually used.

### ***Stewardship incentive demand***

The extent of stewardship incentive demand for environmental disclosure is potentially much greater than resource allocation and stewardship decision-making demand. This is because its value is, at least temporarily, independent of reading or other types of use of the content of disclosure post-reporting. In case 23 above, the government clearly states that its demand for environmental disclosure is partly due to stewardship incentive mechanisms. However, it might be difficult to identify this type of demand from companies that do not read such disclosures. One indication might be the finding that stakeholders nevertheless do not want companies to stop disclosing this information. Since many of the interviewees understand and appreciate the value of stewardship incentive effects arising from reporting, it is only possible to illustrate a few interesting cases here.

Cases 11 and 13 are clear examples of stewardship incentive demand for environmental disclosure. Both stakeholders use documents and meetings, letters, conferences, etc. to communicate expectations of reporting (and environmental performance directly).

*“We work specifically towards corporate reporting on certain priority areas. We have published documents that specify our expectations to the investees, our expectations as an investor... You can see that much of it concerns public reporting. ... We work in two ways: our public expectations are an important part, and we also target companies directly, we have dialogues with companies, more specifically, but those are not that frequent” (stakeholder 13).*

Stakeholder 13 particularly emphasises an expectations document addressing companies' climate strategies, and has also held a conference for companies in a climate-related industry in order to learn, inspire and call on them to report (better). In the meetings with investees, stakeholder 11 addresses environmental reporting. “We can ask a lot of questions, such as ‘why are you not on a higher level, is it because it is hard, inexpedient?’, anything, but that does not mean that we are necessarily going to force them to improve, but then they understand that either they have a good explanation or... if it is a company that is not at the forefront in the field they can get a good hint from us.” These expressed expectations from a large owner are partly a stewardship incentive demand. The investor's directions explicitly states that, “clear expectations on this area will contribute to an additional professionalization of such [CSR] work.” Reporting or visibility, as quoted above, is important as incentives for management to change behaviour, ex ante reporting, e.g. related to improved environmental performance. Stakeholder 11 emphasises that they “do not interfere in the daily operations of the company.” The regular meetings and reporting might appear as an ongoing monitoring of investees, and they claim they use environmental disclosure. Still, stakeholder 11 indicates that it is hard to identify particular decisions where it is used directly, apart from contributing to a general knowledge (unless something extraordinary should turn up). This means that the investor has got two measures left to influence companies' actions: the general meeting of shareholders (e.g., selection of board members), and incentive mechanisms (e.g., reporting). Incentives are their preferred path, at least in order to improve environmental performance. Two potentially important differences between stakeholder 11 and 13 are that the former is a larger owner in, and has repeated meetings with, each company, which results in more power in the principal-agent relationship. The investor's demand for reporting from investees might cause the latter to change behaviour.

Stakeholder 14 demands environmental disclosure from companies. Concerning decision-making, this is for the sole purpose of resource allocation, rather than stewardship. However, the criteria upon which the investor acts are politically decided, and put in place in order for society to protect the environment. Furthermore, it is future environmental performance that is assessed. Hence, letters from stakeholder 14 to investees, which clarify this and emphasise the importance of

information, must be seen as stewardship incentive demand for environmental disclosure. An objective is to make companies improve environmentally, and the ex ante effect of reporting can contribute to this.

Several private sector investors (stakeholder 9, 10, 15, 16 and 17) provide little or no indication of a stewardship incentive demand for environmental disclosure (“we [companies in general] report ourselves to death”), despite the fact that most funds do have some ethical policies. According to stakeholder 15-17, that does not necessarily mean anything:

*“Most fund managements have ethical considerations incorporated in their value bases, instead of having specific requirements for individual stocks in the fund. By using value statements (‘we shall preferably avoid’) ... general formulations on the topic, they avoid making absolute demand and rules for the fund managers. ... It is flippancy. ... If you [a customer] ask for it, it is lying in this drawer, we have got some values that form the basis of our management, where it says that we are not supposed to invest in child labour, mine producers, etc.” (stakeholder 15).*

However, this is not the case with stakeholder 12. The investor has a fund with more explicit ethical standards, but environmental disclosure is used only indirectly, through work and decisions made by others. Still, the institutional investor wants such disclosures to be present, and supports actions that might improve it. Similarly, both lenders (stakeholders 18 and 19) clearly want environmental disclosure to be present, and readily improved. Stakeholders can have various motives for a stewardship incentives demand for environmental disclosure. In these cases, stakeholders 18 and 19 appreciate good corporate governance as a key to profitability. Reporting, and its ex ante incentive effect, is still another measure that ensures management’s focus on operational control, of which environmental issues are one piece. Still, the interviewees do not matter if changed behaviour improves the environment as a side effect.

In connection with audits and inspections, stakeholder 20 requests environmental disclosure, reads it, and often talks with the companies about similar topics. It is hard to identify exactly how the information is used, but it is clear that it has at least an incentive aspect. However, the isolated ex ante effect on company behaviour from this disclosure might be minimal, compared to the effects from discharge permits, (private) reporting of technical information and internal control information due to those regulations, and the authorities’ own audits (of the physical environmental status) and inspections of internal control.

While economic considerations, rather than a reflection of a moral stand or an altruistic concern for the environment, might be stakeholder 18’s motive for stewardship incentive demand, the opposite is often the case for NGOs. Stakeholder 21 is an NGO whose objective is highly affected

by the environmental consequences of the operations of the GICS-sector consumer staples, while stakeholder 22 is an environmental NGO working with the same issues. Acting as environmental stewards, both use political lobby to improve environmental performance in the industry. Stakeholder 21 emphasises the importance of politicians “*setting the external conditions on how the industry operates.*” However, while stakeholder 22 chooses to work closely and jointly with the industry to find solutions, stakeholder 21 consistently reports environmental incidents to the police, and keep up pressure on the industry through bad press: “It has been a policy; in almost 100% of the cases, we have done it [reported incidents to the police]. Unfortunately, the reports rarely lead to any consequences, but it is done mostly to place the subject on the agenda. Of course, it is picked up by the press.” Increased political and general legitimacy risks are incentives for improved environmental performance. For stakeholder 21, the approach is selected due to the same cost-benefit considerations that cause them not to read environmental disclosure:

*“... it is a capacity issue. It is a bit like the way we have seen the dialogue line as well: As an organisation, we have such limited resources. We cannot, in addition to all other tasks, sit in meetings that we feel would not lead to anything, but which make us an alibi so that the industry could say they have a good dialogue. ... For us, and for most other environmental organisations ..., the attitude is that we have no dialogue with the industry as a single actor.”*

The usefulness of reporting and collected data is an important topic, but this is not solely related to environmental disclosure. Stakeholder 22 does not read environmental disclosure either (unless hired to do it): “I have not had a need to look at any numbers.” Despite questions concerning the quality of reporting; lack of stewardship decision-making demand; and the fact that they prefer other approaches aimed at improving environmental performance, these stakeholders still want companies to make environmental disclosure. This is a vague indication of stewardship incentive demand for environmental disclosure.

### **A brief account of stewardship incentive demand**

It is difficult to map incentive demand, especially for stakeholders that use environmental disclosure for decision-making. The fact that many stakeholders that do not use disclosure for decision-making purposes, yet still think that it has a value, is an important finding. The perceived value might lie in the ex ante effect of the reporting incentive mechanism (Gjesdal, 1981). However, it might also be, e.g., that they demand it because they know that others need it, or that they prefer transparency. This complexity should be further investigated.

## ***Public sector demand***

This study is not designed to be representative. Still, it is interesting to see the difference between public and for-profit private sector investors (including financial analysts) in the cases above. All have high financial returns as the primary objective. However, politicians seem to require that public sector investors, at least to some degree, should additionally consider a broader set of aspects – in line with taking a stewardship responsibility for society as a whole, not just on behalf of the owner (Chen, 1975). These stakeholders appear fully aware of this duality, e.g. stakeholder 11 (public sector investor):

*“This is the government’s tool. ... Our approach is of course the owner’s. But additionally, and especially important concerning reporting, we see the information we need, but should also consider information for the outside world, since we manage community assets. In that way, there is a democratic aspect as well.”*

On the other hand, the private sector investors seem to have difficulties relating to this.

*“The smallest [investors] might be tempted by one of those [SRI-funds]. If you are saving £50 a month, it might be cool to save in a SRI-fund. Or if you are gigantic, such as the ‘Norwegian Oil fund’, but that is political, it is not fund management. They do not do it because they think it is profitable ... it is only politics behind it. ... It is not proven that it gives more money. I think it is rather the other way around. If you limit your investment universe, you have to do worse than if all doors are open, if you ask me. At least the theory is like that ... it is less probable that you will beat the index. It has to be like that” (stakeholder 15).*

*“Once, ... we were pension fund supplier for the local council. It was a hype back in the beginning of the 2000s, with SRI. It was very political. It is some politicians in a local county saying that we are not to invest in child labour, pornography, weapons, gambling, tobacco, etc.” (stakeholder 16).*

*“We have got a mandate from our customers to create the highest possible return in the given market, as long as we stay within laws and regulations. Then that is ... we are ... you may call it unethical in that way” (stakeholder 17).*

The latter quote brings forth another element that is common for stewardship and corporate social responsibility. For example, stakeholder 13 (public sector institutional investor), points to their directions, saying that this is what you “do voluntarily, beyond compliance with existing laws and regulations.” While stakeholder 11 emphasises environmental disclosure expectations that “provide much more information than these Norwegian regulations”, stakeholder 19 (private sector lender) explains their corporate social responsibility approach by referring to the fact that “there are so many laws that contribute to the bank doing the right thing.” Of course, in areas deemed important, politicians might introduce laws and regulations in order to promote stewardship behavior, as seen

in cases 20 and 23. More recently, the authorities started focusing on the importance of procurement on environmental issues. By making the public sector play a pioneering role, the large aggregate volume of this procurement has potentially significant direct environmental effects. Additionally, side effects emerge, since suppliers have to make new requirements to their suppliers, and it inspires and educates others (on how) to buy green. Even though none of the suppliers use environmental disclosure (they use another source of information), all of them make environmental demands (albeit to different degrees). Hence, they are (becoming) stewards for the environment.

Neither stakeholders 1-3 (public sector B2B purchasers) nor stakeholders 4-8 (private sector B2B purchasers) read environmental disclosure (in that respect). The idea that environmental disclosure contains decision-useful information for buyers is absent. Stakeholders 7 and 8 hardly relate to it at all, and consequently have little or no stewardship incentive demand. The Norwegian procurement regulations and recommendations require public sector purchasers to make environmental considerations. However, all eight cases use environmental information (though to a differing degree). They retrieve information directly from potential suppliers through answers to specific questions in standardised bidding documents and online supplier databases: tailor-made information provided in cost efficient way (for the purchaser), probably influenced by the strict regulations of public procurement. This norm for obtaining decision useful purchasing information in these large organisations (irrespective of public or private sector affiliation), clearly reduces the relevance of environmental disclosure, even though they might be environmental stewards.

While stakeholder 1's work with environmental requirements in connection with public procurement was clearly more developed than for stakeholder 2 and 3, the same differences appear in the private sector. Documentation and traceability of environmental issues (among other things) is so important to stakeholder 6 (related to the GICS-sector consumer staples), that databases are developed, where each participant in the supply chain is required to enter large amounts of data for each consignment in order to sell their products. This is (partly) down to (public sector) regulations. Then environmental disclosure is redundant for this purpose. Stakeholder 7 (related to the GICS-sector consumer staples) argues that, in the end, private household consumption patterns (e.g., what kind of packaging they prefer) determine what solution they choose, and what information they need, regardless of environmental attributes. Environmental information is therefore less important.

## **CONCLUSION**

The objective of this study is to explore reasons why stakeholders demand environmental disclosure, i.e. what they are using it for. This is done by analysing multiple mini case studies according to a

theoretical framework, which separates resource allocation decision-making demand, stewardship decision-making demand and stewardship incentive demand. As Gjesdal (1981) states, this framework does not necessarily capture all types of demand for environmental disclosure, but it clearly identifies some of its important elements. Looking at the three last columns of Table 2, it is clear that most of the 23 cases have at least one type of demand for environmental disclosure. Moreover, each of the three types of demand exists in at least some cases, and they appear alone or together in different combinations in different cases. There are cases that experience 0, 1, 2 or 3 types of demand. It seems that this framework is a fruitful supplement to research on demand for environmental disclosure, as it addresses the lack of systematic theorisation in previous research.

However, the motives or incentives underlying each type of demand might differ between cases. The findings concerning public sector affiliation and effects, or rather the differences between public and private sector (for-profit and not-for-profit) stakeholders, seem to capture important aspects of this variation. Cases in this study provide clear indications that the broad objectives of the public sector affect demand for environmental disclosure: politically decided responsibilities motivate stewards to act differently than they would otherwise have done – both externally, through regulations etc. (e.g., cases 6 and 23); and internally, through directions etc. (e.g., cases 11, 13 and 14), and by creating new offices (case 20). For the current cases, investors with public sector affiliation assume broader responsibilities compared to those in the private sector. This is, most likely, the first user-study on environmental disclosure that makes a distinction between public and private sector demand, and especially within stakeholder groups. Another aspect briefly touched in this study is that the strength or importance of each type of demand might also vary between cases. Industry might be one relevant element in this respect.

In many cases, there is a demand for environmental information beyond the demand for environmental disclosure. Environmental information in general is outside the scope of this paper, and further investigation is left for future research. Moreover, it should be noted that this paper explores the demand for the *current* environmental disclosure, rather than focusing on demand for changes in the current disclosure practices. Even though stakeholders do not read or use the current disclosure, it does not mean that they do not demand environmental disclosure of higher quality or different content. Therefore, it is called for research on what kind of information stakeholders demand, i.e. why disclosure is or is not useful. Furthermore, there is a definite need for research exploring the fit between supply and demand for information, which is hardly examined in except for Deegan and Rankin (1999).

The reason why reporting is in demand is not trivial (Gjesdal, 1981). The cases included in this study reveal that decision processes or decision models determining what type of information that is or is not relevant and used, for different decisions, made by different stakeholders, at different times, and situations, are complex. The findings also indicate that it is difficult to identify, measure, or define different kinds of demand, i.e., the reporting incentive demand, and the distinction between economic and environmental objectives. Nevertheless, a contribution of this explorative study is as a foundation for future research, which should consider separating different types of demand, public and private (for-profit and not-for-profit) affiliation, industries, and use a sufficient detailing of stakeholder subgroups, when selecting variables to the equation. In order to investigate this further, it is important to include several stakeholder groups in future studies. Understanding these underlying aspects of demand is fundamental for knowing what types of disclosure stakeholders need and for what, whether changes in reporting practice are necessary, how to improve reporting practice, and, what measures (taken by stakeholders including the government – e.g. public pressure, law and standard regulations, enforcement, incentives, guidance and education etc.) that are best suited to make it happen.

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## **SAMMENDRAG PÅ NORSK**

### ***Motivasjon av og formål med studien***

Min doktorgradsstudie handler om tilbud av og etterspørsel etter selskapers miljørapportering. Miljørapportering i mer systematisk form begynte å vokse fram på 1970- og 80-tallet, i Nord-Amerika, Nord- og Mellom Europa, Australia og New Zealand. Fra år 2000 rapporterte alle selskaper notert på Oslo Børs slik informasjon, noe de forøvrig var forpliktet til å gjøre i følge regnskapsloven fra 1989.

Miljørapportering er relatert til regnskap, og det var slik jeg begynte å forske på miljørapporteringspraksis i 1998. Senere har jeg også sett slik rapportering fra et revisjonsståsted. Både min egen erfaring og en betydelig mengde forskning antyder at slik rapportering har vesentlige kvalitetsmessige svakheter. Dette kan være at selskaper har større tilbøyelighet til å rapportere positiv enn negativ informasjon; at det gis eksempler i stedet for fullstendige oppstillinger; at det gis mye generell, uforpliktende informasjon og lite spesifikk, kvantifiserbar og/eller finansiell informasjon; informasjonen er sjelden eksternt verifisert, og om den er det gir revisjonsuttalelsen typisk lav grad av sikkerhet etc. Dermed kan det være vanskelig å forstå hva rapporteringen kan brukes til – at den har særlig verdi. Likevel må den ha en eller annen form for verdi siden selskaper fortsetter å rapportere år etter år. Dagens forskning gir ingen fullgod forklaring på hvorfor selskaper rapporterer den informasjonen de gjør, hvilken verdi rapporteringen har, eller hvem den har verdi for. For å undersøke dette behøves studier av både tilbuds- og etterspørselsiden. Man kommer ikke langt på denne veien med fire studier, men målet er likevel å gi viktige bidrag til videre utvikling.

Artikkel 1, 2 og 3 ser på tilbudssiden, mens artikkel 2 og 4 ser på etterspørselsiden. Studiens viktigste artikkel er artikkel 3, som gjennom å diskutere hvilke elementer som inngår i selskapsledelsers beslutningsmodeller, må ta hensyn til både etterspørsel fra eksterne interessenter, intern etterspørsel og andre praktiske forhold som har betydning for hvilken informasjon som besluttet rapportert.

### ***Artiklene***

#### **Article 1: The representativeness of the annual report as data source in CSR reporting research**

Selskaper bruker mange kommunikasjonskanaler for å rapportere om samfunnsansvar. Dette kan for eksempel være årsrapporten, separate miljørapporter, websiden, pressemeldinger, reklame,

brosjyrer etc. Dermed er valg av datakilde viktig for validiteten i forskning på innholdet i slik rapportering. Målet med denne artikkelen er å gi råd om hvilke datakilder som må inkluderes for å dekke hele bredden i informasjonsinnholdet. Å samle inn data for hånd, slik det er vanlig i slike innholdsanalyser, er særdeles ressurskrevende. Samtidig er for eksempel årsrapporter mer praktisk enn websider for innsamling av tidsseriedata. Det vil være en fordel for forskere om få datakilder dekker alt rapportert innhold, og særlig vil det være en fordel om årsrapporten er tilstrekkelig.

Artikkelen inneholder en litteraturstudie som viser hvilke datakilder som er brukt i forskning på rapportering om samfunnsansvar fra 1975 til i dag. Årsrapporten har vært, og er, dominerende. Tidligere var den ofte den eneste datakilden som ble brukt i forskning på rapportering om samfunnsansvar, men det har etterhvert blitt vanligere å bruke flere kilder. Tidligere studier refererer imidlertid ikke til forskningsresultater om hvordan ulike kilder representerer totalt rapportert innhold. Det kan være fordi vesentlige metodemessige svakheter, samt gamle data, gjør tidligere forskning lite relevant.

Denne empiriske studien bruker innholdet på websider, separate miljørapporter og årsrapporter som en proxy på totalt rapportert innhold om samfunnsansvar, og sammenligner dette med rapporteringen i årsrapporten. Empiriske data er innhentet i to datasett med selskaper notert på Oslo Børs. Det ene gjelder miljørapportering og det andre arbeidsmiljøinformasjon. Studien finner at årsrapporter alene dekker tilnærmet 100% av alt rapportert innhold om henholdsvis ytre miljø og arbeidsmiljø, og den kan derfor brukes som eneste datakilde i forskning framover.

## **Article 2: Voluntarism versus regulation: lessons from public disclosure of environmental performance information in Norwegian companies**

Problemstillingen for artikkel 2 er hvordan lovkrav påvirker rapporteringen. I Norge ble det innført krav i regnskapsloven til miljørapportering i styrets årsberetning fra og med 1989, og kravene ble skjerpet fra 1999. Ved å studere miljørapportering for selskaper notert på Oslo Børs fra 1987 til 2005, er det mulig å se utviklingen i rapporteringen både i en periode uten lovkrav, to tidspunkter med endrede lovkrav, og perioder med uendrede krav. Studien viser at rapportering av lovpålagt innhold øker signifikant på tidspunktene lovkravene endres, men langt fra alle selskapene oppfyller lovkravene. Dette kan skyldes manglende håndheving av kravene, både fra myndighetene og revisorer. Vel så interessant er det at frivillig rapportering – rapportering av innhold som ikke er lovpålagt – øker jevnt og trutt i hele perioden etter innføringen av de første lovkravene i 1989, uavhengig av regulering. Dette kan tyde på at regulering ikke er det eneste virkemiddelet som får selskaper til å rapportere denne type informasjon. Interessenters behov kan bli dekket likevel.

### **Article 3: Explaining adoption rates of information content of environmental disclosure: an exploration of innovation adoption theory**

Det er det rapporterende selskapet som beslutter hvilket informasjonsinnhold som skal rapporteres, uavhengig av om informasjonen er lovpålagt eller frivillig å rapportere. Tidligere forskning har stort sett på egenskaper ved selskapet (størrelse, bransje etc.) og generell kontekst (land, tidsperiode etc.) for å forklare hvorfor selskaper rapporterer som de gjør. Denne studien ser imidlertid på egenskaper ved rapporteringen selv. Hvis en enkeltperson skal kjøpe seg en sykkel vil sannsynligvis prisen, utseende, funksjonaliteten etc. ha betydning. Dette er egenskaper ved produktet. Tanken er derfor at slike egenskaper vil ha betydning også i selskapers beslutningsprosess. En gren innen innovasjonsteori, nemlig adopsjonsteori, brukes for å identifisere fem viktige elementer i selskapenes beslutningsmodell: kompatibilitet, prøvbarhet, kompleksitet, synlighet og relativ fordel. Rapporteringen til selskaper notert på Oslo Børs er delt inn i 13 ulike typer innhold. Adopsjon av disse 13 innholdstypene fremmes eller hemmes av hver av de fem elementene i adopsjonsteorien. Dermed kan studien predikere om mange eller få selskaper vil adoptere/rapportere hver type innhold. Prediksjonene basert på adopsjonsteorien passer godt overens med de faktiske adopsjonsratene til 12 av de 13 innholdskategoriene. Disse funnene holder også når det kontrolleres for egenskaper ved selskapet (størrelse og bransje). Dette indikerer at adopsjonsteori er et fruktbart supplement til å forklare hvilken type innhold som rapporteres og hvorfor.

### **Article 4: Exploration of resource allocation decision making and stewardship demand for environmental disclosure**

En stor mengde forskning studerer miljørapportering fra tilbuds- eller produsentsiden. Det finnes relativt lite forskning på etterspørselssiden. Den forskningen som finnes fokuserer i stor grad på investorer og miljøorganisasjoner (NGOer). Videre er det en mangel på studier av flere interessentgrupper samtidig, og særlig på bevisst bruk av teori for å forklare etterspørselen. I og med at det er lite forskning på dette feltet, er det naturlig å ta tak i det mest grunnleggende spørsmålet: Hvorfor etterspør interessenter miljørapportering (hvis de gjør det), altså, hva bruker de den til? For å besvare spørsmålet brukes et teoretisk rammeverk hentet fra finansregnskapsforskning: Rapportering kan etterspørres for å brukes til beslutninger knyttet til ressursallokering (investering); beslutninger knyttet til selskapets/ledelsens forvaltning eller styring; eller fordi det at selskapet må rapportere (og dermed vet at de kan bli kontrollert) gir insentiver til å opptre annerledes – mer i overensstemmelse med interessentens interesser – enn de ellers ville ha gjort. Den siste typen etterspørsel kan altså ha verdi selv uten at rapporteringen blir lest (ex ante effekt). Studien er basert på intervjuer med og/eller dokumentstudier knyttet til investorer (inkludert finansanalytikere og

investeringsrådgivere), innkjøpere/kunder, miljøorganisasjoner, miljømyndigheter og rapporteringsmyndigheter. Investorer og kunder kommer fra både offentlig og privat sektor. Årsakene til etterspørsel av miljørapportering synes komplekse, og etterspørselen er også lav blant mange av intervjuobjektene. Likevel identifiseres det tilfeller av etterspørsel som bygger på bruk av informasjon til alle de tre formålene skissert i rammeverket. Rammeverket i seg selv synes å fange opp viktige deler av etterspørselen, i de tilfellene det er etterspørsel. Vel så viktig er det likevel at de underliggende motivene for bruk av rapportering varierer også innenfor de tre typene etterspørsel, noe som særlig framheves ved å sammenligne interessenter fra privat og offentlig sektor. Det er også indikasjoner som tyder på at bransje har betydning for sannsynligheten for eller styrken på etterspørselen blant interessentene i undersøkelsen.



### **Author declaration**

We hereby confirm that Even Fallan and Lars Fallan are authors of the article:

Even Fallan and Lars Fallan (2010): Voluntarism versus regulation. Lessons from public disclosure of environmental performance information in Norwegian companies, *Journal of Accounting & Organizational Change*, Vol. 5 (4), 472-489.

We estimate that the main author, Even Fallan, has contributed with app. 75 % of the article, while Lars Fallan has contributed with the rest of the article.

Trondheim, September 11. 2013



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