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Disclosure Tone in Environmental Reports

- A study of companies in the energy sector

Authors:

Sofia Dahlström

Malin Lantz

Supervisors:

Emmeli Runesson

Niuosha Samani

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UNIVERSITY OF GOTHENBURG
SCHOOL OF BUSINESS, ECONOMICS AND LAW

Abstract

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Authors: Sofia Dahlström & Malin Lantz

Supervisors: Emmeli Runesson & Niuosha Samani

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Background and problem discussion: Sustainability reporting has recently risen in importance and a rising number of companies choose to issue voluntary stand-alone sustainability reports. Their non-regulated nature increases the opportunity for management to angle the information in these disclosures to their own advantage. Lately the focus has shifted from examining *what* kind of information is provided in environmental disclosures, to analyzing *how* the information is presented.

Purpose: The purpose is to examine if managers in the energy sector use optimistic tone when issuing sustainability reports. The aim is to find out if the tone applied in environmental disclosures is in congruence with either the environmental or economic performance or if an excessively positive tone is being used to mislead readers.

Limitations: This study is limited to information found in environmental disclosures from private companies in the energy sector, issued in 2012 or 2013. Environmental performance is defined as the amount of CO₂e emissions and economic performance refers to annual company revenues.

Methodology: The quantification of optimistic tone is conducted using a content analysis, relying on a pre-specified wordlist and a pilot study. A quantitative methodology, more specifically statistical tests, is then used to answer the hypotheses for this paper.

Results and conclusions: More than half of the companies included in this study use a positive tone in their environmental disclosures. The results show that worse environmental performers use more optimistic tone than better performing companies, indicating that tone is used to influence stakeholder perceptions upward. This study further shows that companies with a better economic performance use a higher level of positive tone than worse performing companies.

Suggestions for further research: Since this study does not attempt to explain why there is a correlation between optimistic tone and economic performance, this might be an interesting subject to investigate further. Another suggestion is to examine these narratives in greater detail, testing textual complexity using a measure such as the FOG-index. One additional idea is to expand this study by doing a comparison on the use of optimistic tone with another sector.

Keywords: Sustainability reporting, Legitimacy, Impression management, Disclosure tone

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1 Introduction

This opening chapter contains a background description and discussion on the subject of this paper. The purpose of the thesis is then presented along with thoughts on contribution, research questions and hypotheses, limitations as well as an outline of the paper.

1.1 Background and problem discussion

Companies act in an environment with numerous stakeholders, such as owners, debt-holders, suppliers and customers who are always looking for information regarding how to act in relation to the company in question. According to the framework of IASB, the purpose of financial reporting is to hand out information concerning the financial position and results of the company and also to inform about changes in the economic position. This information is then used by stakeholders to make sound decisions regarding their own interests in the company (Marton, Lumsden, Pettersson & Lundqvist, 2012).

Over the last couple of decades, society has become more aware of social and environmental issues and how companies address them (Wilmshurst & Frost 2000). This has led to the existence of the concept corporate social responsibility (CSR), which aims to help and improve society's trust towards companies (European Commission, 2011). According to Unido (n.d.):

“Corporate Social Responsibility is a management concept whereby companies integrate social and environmental concerns in their business operations and interactions with their stakeholders.”(Unido, n.d., p.1)

Consultants have for long argued that sustainability reporting and CSR are profitable in the long run (Frostenson, Helin & Sandström, 2012). By putting more focus on sustainability activities in reports, organizations gain a better reputation and a stronger brand (Falck & Heblich, 2007). Due to this, many companies choose to shed more light on this kind of information in their annual reports (Wilmshurst et al., 2000).

Sustainability reporting is an established expression in the corporate world. It is a way for companies to communicate the framework and impact of the economic, social and environmental aspects of their operations to their stakeholders (Global Reporting Initiative, n.d.). It is also a way to measure and present the organization's actions towards corporate sustainability (Frostenson et al., 2012). Nevertheless this kind of information is voluntary, making it up to the company itself to decide whether or not they want to update and inform their stakeholders regarding these activities (Cho, Michelon & Patten, 2012). Businesses that do choose to engage in sustainability reporting can provide the information integrated in the annual report but stand-alone sustainability reports are becoming increasingly more common (Pwc, 2013). The reporting is also becoming more consistent of three clear parts: the environment, the society and the economy (Frostenson et al., 2012).

The information provided in these reports is of great importance but something perhaps more important is in what way the information is presented (Huang, Hong Theo & Zhang, 2014).

As previously mentioned, the annual reports are being utilized as grounds for decision making (Marton et al., 2012) and it is therefore key that the reader is not being misled by a too optimistic or too pessimistic tone in the text, relative to the quantitative performance (Huang et al., 2014).

The rhetoric, or the “soft” information, in qualitative texts generally informs and enables the reader to process the quantitative information. Organizations use this rhetoric for informative and/or strategic purposes when producing their disclosures (Huang et al., 2014). As an example, assume that the revenues of a company have risen through the roof and the managers are writing about it in a positive sense. The rhetoric is in this case being used for informative purposes. However, rhetoric can also be used to mislead investors and/or help present the firm in a more favorable light (Rogers, Van Buskirk & Zechman, 2011).

By providing voluntary information, for instance different forms of sustainability disclosures, companies communicate responsibility and legitimacy to its readers (Wilmhurst et al., 2000). On the other hand, since sustainability reporting is not subject to explicit rules, management is able to angle the qualitative presentation of the quantitative information any way they want (Huang et al., 2014).

Today there is a lot of existing research on the subject regarding what companies write in their sustainability reports (Cho et al., 2012; Huang et al., 2014 & Rogers et al., 2011). Something we find fascinating however, is in what way this information is presented. Voluntary CSR-accounting does not necessarily have to correspond to the actual reality (Deegan, 2002). If that is the case, it can result in misleading information in the various business disclosures. If the information in these reports is written in a questionable or unclear manner, the reader also bases his or her decisions on wrongful grounds (Beets & Souther, 1999).

Due to this, more and more studies in the accounting field discuss the impacts that rhetoric and tone have on the qualitative parts of business disclosures. Researchers are using textual analysis to determine if the qualitative texts are correspondent to the quantitative information. By doing this, they can determine whether or not managers are trying to influence the reader by manipulating the overall tone or choice of words (Huang et al., 2014). The aim is to analyze, not what kind of information that is presented, but how it is presented.

There is plenty of existing research in the field of textual analysis. However, we see a lack of studies analyzing the qualitative information in the voluntary sustainability reports of an organization. Because of the fact that sustainability reporting has risen in importance (EY, 2013) and because there is growing interest in the qualitative parts of firm communication with investors (Huang et al., 2014), we find it intriguing to see if companies are applying an optimistic tone in their issuing of sustainability reports. We especially find it interesting to see if the optimistic tone applied is too optimistic, relative to the environmental performance of the firm. Rogers et al., (2011) argues that it is fair to assume that the tone applied will vary depending on the economic performance. We therefore seek to answer if the optimistic tone applied, if not dependent on environmental performance, can be explained by the economic performance. When studying tone in the environmental sections of sustainability reports, we find it most compelling to study companies operating in sectors that leave big environmental footprints.

1.2 Purpose and contribution

The purpose of this paper is to examine whether or not managers in the energy sector are applying an optimistic tone in the environmental section of sustainability reports to present a more favorable image of the company. It examines the relation between the use of optimistic tone to environmental and economic performance. The aim is to detect whether the qualitative texts and quantitative information are interlinked or if readers can be misled by the chosen tone.

The area of research on disclosure tone and the methods of quantifying tone are both relatively unexplored issues. We contribute to previous research by applying the theories on disclosure tone to voluntary environmental disclosures issued only by companies in the energy sector, a sector known for its environmentally hazardous activities. Also, we include companies from all over the world instead of just being bound to one continent.

1.3 Research questions and hypotheses

To address the purpose of this thesis the following lead questions were designed:

- ❖ Do managers in the energy sector use optimistic tone when producing the environmental section of a sustainability report?
- ❖ Does the use of optimistic tone depend on environmental performance?
- ❖ Does the use of optimistic tone depend on economic performance?

With these questions as ground we seek to either accept or reject the following hypotheses:

Disclosure tone and environmental performance

- ❖ $H0^{env}$: Companies with better or worse environmental performance do not differ in their use of optimistic tone.
- ❖ $H1^{env}$: Companies with better or worse environmental performance differ in their use of optimistic tone.

Disclosure tone and economic performance

- ❖ $H0^{eco}$: Companies with better or worse economic performance do not differ in their use of optimistic tone.
- ❖ $H2^{eco}$: Companies with better or worse economic performance differ in their use of optimistic tone.

1.4 Limitations

This study focuses on optimistic tone in environmental disclosures. The information needed is therefore collected from either separated or integrated sustainability reports, from 2012 or 2013. We have narrowed down our information gathering process to the environmental parts of these sustainability disclosures. Due to this focus, we wanted to study firms that have a big impact on the environment. This led us to choose companies operating in the energy sector

(Cho et al., 2012). In order to increase comparability, we only study companies that are not state-owned.

The report further aims to detect if tone is dependent on environmental and/or economic performance. We here define environmental performance as the amount of CO₂e emissions emitted from the company (further information regarding CO₂e emissions is provided in section 3.2) and economic performance is defined as annual revenues in thousands of USD.

1.5 Outline

After this introduction, part two introduces the chosen theories, which will serve as the base for the analysis. The next section discusses the methodology used throughout the paper. The results from the empirical work are then presented, followed by an analysis of these results together with suggestions on further research. Lastly, the conclusions of the study are presented.

2 Theoretical framework

This chapter introduces the theoretical framework for this paper, which later will serve as the base for the analysis and conclusions made on the empirical results. The theoretical framework opens with a presentation of the function and concept of sustainability reporting and voluntary disclosure as well as an introduction on legitimacy theory. This is followed by theories and previous research regarding impression management and disclosure tone as tools for influencing readers' perceptions. Lastly, the hypotheses are developed and presented.

2.1 Sustainability reporting

Sustainability reporting is a way for companies to communicate the economic, social and environmental aspects of their operations to the stakeholders (Global Reporting Initiative, n.d.). It is also used to measure and present the firms actions and approach towards a more sustainable future (Frostenson et al., 2012).

Environmental and social reporting has been discussed in the corporate world ever since the 1970's (Frostenson et al., 2012). Some sort of sustainability reporting has in other words been present for a long time. In light of the ongoing globalization, the concept of sustainability is now more important than ever and the number of sustainability reports issued has increased drastically (KPMG, 2011). Environmental disclosures, especially carbon reporting, are growing in significance due to increased concerns on climate change (Bebbington & Larrinaga-González, 2008). The disclosure of sustainability activities and the reporting of such is still voluntary and not regulated by law. Organizations like the Global Reporting Initiative (GRI) do however offer recommendations and guidance on sustainability reporting (Cho et al., 2012).

The actual reports have recently evolved from just being disclosures on environmental and social issues embedded in the annual report, to being completely stand-alone sustainability reports (Milne & Gray, 2007). They often include environmental, social and financial information from the company; issues associated with the reporting expression "Triple bottom line" (Cho et al., 2012). Compared to CSR disclosures in annual reports, the stand-alone sustainability reports are far more comprehensive and contain significantly more detailed information. They are therefore more likely useful for stakeholders, when assessing the long-term sustainability of a company (Dhaliwal, Li, Tsang & Yang, 2011).

"Triple bottom line" is an expression founded by Elkington (1997), and is commonly used to refer to the three parts of sustainability reporting being environmental, social and financial. Environmental issues often brought up are related to pollution, climate change and biodiversity. The society part of reporting brings up the subject of human rights and equality and one common economic factor in sustainability reporting is revenues (Frostenson et al., 2012). In regard to one of the research questions of this paper, i.e. if the tone in sustainability reports is dependent on a company's environmental performance, this paper will focus only on the environmental sections of sustainability reports.

One question that arises from the field of sustainability reporting is why companies choose to engage in it, even though the reporting is voluntary. One general explanation for voluntary disclosure is that the information is demanded by the outside-owners, as means for monitoring

their contract with managers. The information is also demanded by investors for valuation of and investment decisions regarding the company (Gray, Meek & Roberts, 1995).

Consultants argue that sustainability reporting lead to greater profits in the long run (Frostenson et al., 2012), as well as a better reputation and/or a stronger company brand (Falck et al., 2007). These constitute some of the reasons as to why companies choose to focus more of their attention on the voluntary sustainability parts of their disclosures. Another reason may be that environmental information is increasingly more sought after by investors (Wilmshurst et al., 2000).

Sustainability reporting is also a way for companies to show transparency towards their stakeholders. Therefore, despite the fact that it is voluntary to present this information, they choose to issue these reports (Frostenson et al., 2012). Besides improving transparency in this way, organizations show special effort and commitment by publishing stand-alone CSR reports (Dhaliwal et al., 2011). By providing voluntary information and showcasing their work on sustainability, companies show responsibility and legitimacy towards their stakeholders (Wilmhurst et al., 2000).

2.2 Legitimacy theory

Legitimacy theory is perhaps the most frequently used theory in literature explaining the existence of social and environmental disclosures (Laine, 2009). It offers a way, for researchers and society as a whole, to critically examine and understand the voluntary social and environmental parts of corporate disclosures (Tilling, 2010). Suchman (1995) states that:

“Legitimacy is a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions” (Suchman, 1995, p. 574)

Legitimacy is defined as the consensus between the values of the organizations and the society. The theory on legitimacy rests on the assumption that companies must act within the range of what is socially acceptable when being successful (Tilling, 2010). Vanessa Magness (2006) suggests that there is an existing contract between business and society, which gives companies the moral obligation of acting responsibly. Consequently, the survival of a company can to some extent be dependent on operating within the boundaries of societal norms (Merkl-Davies & Brennan, 2007).

The legitimacy theory is commonly used to explain non-financial information in annual reports (Gray, Kouhy & Lavers, 1995), because in order to earn their legitimacy a company needs to disclose the information demanded by society (Islam & Deegan, 2007). Disclosures, especially social and environmental, are assumed to change perceptions regarding the legitimacy of an organization (Merkl-Davies et al., 2007). Accordingly, firms use these disclosures to gain, maintain and repair their legitimacy in society (Suchman, 1995). Depending on the current situation, different strategies can be utilized to accomplish this change of perceived legitimacy. Companies might for instance seek to alter society's perceptions, change public expectations or try and shift attention to positive aspects of the operations rather than negative (Deegan, 2002; Gray, Owen & Adams, 1996).

2.3 Impression management

Impression management refers to what “occurs when management selects the information to display and presents that information in a manner intended to distort readers’ perceptions of corporate achievement” (Godfrey, Mather & Ramsay, 2003, p. 96).

The management of impressions, by both organizations and managers, can be carried out through a number of different channels, with various sets of tools. It can, among other things, be accomplished by enhancing positive sides or by concealing negative outcomes. By putting impression management into practice, management is able to present an inaccurate view of the actual performance and influence stakeholders’ perceptions (Merkl-Davies, Brennan & McLeay, 2011).

Merkl-Davies et al., (2007) has identified two main manifestations of impression management in corporate disclosures: Concealment and attribution. Concealment is accomplished by either obfuscating bad news or by emphasizing good news, whereas attribution is achieved by claiming greater responsibility for successes than for failures (Merkl-Davies et al., 2007). The definition of concealment is reinforced by Henry (2008), who speculates that companies set a positive tone in their disclosures whenever possible and use more verbal complexity in an attempt to hide negative information. Attribution on the other hand is defined as a form of defense-tactic where managers assign positive outcomes to internal factors and negative outcomes to external factors (Merkl-Davies et al., 2007).

In financial reports the management of impressions can be carried out through the manipulation of narratives (Cho, Roberts & Patten, 2010), visuals (Davison, 2010) or graphs (Cho et al., 2012). In financial disclosures the performance of a certain period in time is often documented using an *accounting* portion and this performance is then described with a *text* portion (Henry, 2008). The narrative parts of disclosures are thought to function as a complement to the accounting portions, by helping the reader to process the information given and paint a fuller picture (Huang et al., 2014). These *text* portions, or accounting narratives, are often preferred over financial information for managing public impressions. Because of the fact that narratives, such as environmental disclosures, aren’t subject to any certain rules, they are easier to shape and manipulate compared to quantitative information (Neu, Warsame & Pedwell, 1998; Brennan & Merkl-Davies, 2013).

Merkl-Davies et al., (2007) further demonstrates that non-regulated disclosures, as in the case with stand-alone sustainability reporting, increase the potential for organizations’ use of impression management. It goes to show that when explicit rules are not applicable, managers are able to angle the qualitative presentation of the quantitative information in whatever way suits them (Huang et al., 2014), thus proving that sustainability reporting can be used as a tool for impression management.

The incentives behind trying to manage impressions are many. One is when facing potential threats to company legitimacy (Deegan, 2002). Several researchers (Deegan, 2002; Cho and Patten, 2007) claim that when facing threats to social or environmental legitimacy, companies have the incentives to strategically influence public impressions of the firm. Another incentive is found in Cho et al.’s (2012) research, where he determines that firms use stand-alone sustainability reporting to project a more positive image of performance, rather than doing it to provide meaningful accounting information.

Previous research regarding impression management in the environmental field establish that management is more motivated to manipulate the use of language and manage impressions the more firm performance differs from desired benchmarks (Cho et al., 2010). Cho et al. (2007) further proves that worse environmental performing companies produce more extensive disclosures, hoping to remove attention from this actual performance.

When examining impression management strategies, several researchers conclude that companies use a certain language and tone in narratives to affect and influence stakeholder perceptions of the firm in a positive way (e.g. Huang et al., 2014; Cho et al., 2010). Similar studies find that managers provide these narratives both consciously and strategically to manipulate the decisions made by the investors (Yuthas, Rogers & Dillard, 2002). These strategies will eventually result in a bias of both the language and verbal tone applied in disclosures (Cho et al., 2010).

Most research on impression management in environmental disclosure narratives focuses on quantity (Neu et al., 1998) or content (Cho et al., 2007). Merkl-Davies et al. (2007) and Cho et al. (2010) however stress the fact that also language and verbal tone are powerful tools when it comes to managing impressions and should be considered when investigating the relation between environmental disclosure and performance.

2.4 Disclosure Tone

Tone naturally varies depending on the quantitative content in disclosures, where an increase in firm performance also increases the optimism in tone. However, when the tone in the qualitative texts is non-proportional relative to the quantitative performance, it is used for strategic purposes rather than informative (Huang et al., 2014).

Disclosure tone in this study refers to the general feeling perceived by the reader, from various firm communications (Henry, 2008). Managers can use tone to affect readers' response to the given information, meaning that the same information can be interpreted and acted on differently, depending on the tone applied (Huang et al., 2014). Accordingly, disclosure tone can be used to change or affect stakeholder perceptions, thus making tone a form of impression management (Brennan et al., 2013).

The narrative parts of environmental disclosures, often being subject to impression management (Brennan et al., 2013), work as a complement to the more quantitative parts in reports. It is therefore key that the narratives presented are in congruence with the firms' fundamentals, otherwise readers are being misled or misinformed. Tone management refers to what managers do when choosing a certain tone in the qualitative texts that is non-proportionate to these fundamentals. Companies go about this management by applying a tone that is excessively positive or negative in relation to the quantitative information, even if this leads to a less accurate perception of the report and the company itself (Huang et al., 2014).

The management of tone is connected to both the content and the words chosen in disclosures. The wording that is used to describe the outcomes affects both the tone and the readers' perceived impressions from the text. By focusing on positive outcomes and describing those outcomes using positive words, managers can achieve an overall optimistic tone in their disclosures (Henry, 2008). In order to decide whether a text is too positive or negative relative to the actual performance a number of tools can be used. In her study, Henry (2008) did a

classification on a number of words often used in the financial context and then categorized them as either positive or negative. These words were then assembled into a wordlist made specifically for use in the financial domain. We partly rely on this wordlist when analyzing the different text-sections or narratives in our study (see section 3.4 Wordlist).

The incentives behind a strategic use of tone are to a great deal the same as to why managers engage in impression management. Huang et al. (2014) suggests that managers' overall goal behind disclosure tone choices is to affect the perceptions of investors. Their results show that firms use an abnormal or excessively positive tone, for strategic purposes, when having strong incentives to affect investors' perceptions upward. As to why managers feel the need to affect investors might derive from prestige or economic motives associated with agency issues (Huang et al., 2014).

Miller (2002) in his research finds that the issuing of discretionary disclosures increases during periods with increased earnings, showing a positive relation between discretionary disclosure and economic performance. This is further discussed by Rogers et al. (2011) who make the assumption that also optimistic disclosure tone varies with economic performance. He defines optimistic tone as the extent to which managers frame their firms' results in a favorable manner. Results show that sued firms' use of optimistic language is much greater than for non-sued firms, proving that these firms have misled their investors to a higher degree and have been sued accordingly (Rogers et al. 2011).

Other researchers, for instance Lang & Lundholm (2000), find a positive correlation between the amount of optimistic statements and market returns. They find that managers are able to hype their stock and increase the firm's share price by issuing optimistic disclosures that describes the firm in a more favorable light. Henry's (2008) results also suggest that the level of optimism in earnings announcements is positively related to the stock market reaction. Combined these findings all support each other in the conclusion that optimistic tone is used to misinform and mislead investors.

A few studies have been made on the subject of disclosure tone choices in environmental reports. They for instance find that one incentive for the use of optimistic tone in environmental disclosures is when facing possible threats to social or environmental legitimacy (Deegan 2002; Cho et al., 2007). Another strong motive behind self-servingly biasing tone and language lies in the attempt to change or manage the impressions of investors (Merkl-Davies et al., 2007).

Cho et al. (2010) supports this argument when finding that worse environmental performers seem to use more optimistic language in their disclosures than better performing companies. They conclude that the environmental reports from these firms *"appear to emphasize good news, obfuscate bad news, and slant attributions of performance to their advantage in an attempt to manage stakeholder impressions of their corporate environmental performance"* (Cho et al., 2010, p. 442).

2.5 Development of hypotheses

Relying on prior research in the area of impression management and disclosure tone we see a lack of studies regarding the use of tone in environmental reports. Due to the fact that the number of sustainability reports has increased drastically (KPMG, 2011) it is fair to assume that tone is used for strategic purposes also in these disclosures, especially because of their

non-regulated nature. As mentioned above, non-regulated disclosures are more easily manipulated and shaped and are therefore more likely to contain forms of impression management (Merkl-Davies et al., 2007). When studying environmental reports we find it especially interesting to examine companies that have a big impact on the environment, more specifically firms in the energy sector. These factors combined led us to our first research question:

- ❖ Do managers in the energy sector use optimistic tone when producing the environmental section of a sustainability report?

The legitimacy argument suggests that environmental disclosures are issued in order to maintain company legitimacy (Suchman, 1995; Wilmhurst et al., 2000). Therefore, beyond just examining optimistic tone in these reports, we also examine whether differences in the level of optimistic tone are associated with differences in environmental performance. Cho et al. (2010) found that the companies included in their study that were the worst environmental performers also used the most optimistic language in their disclosures. We assume that companies in the energy sector might have more to hide or accentuate when it comes to environmental performance, which is why we seek to answer if Cho et al.'s (2010) findings are applicable to the companies in this study too. Based on this assumption, we find our first hypothesis:

- ❖ $H0^{env}$: Companies with better or worse environmental performance do not differ in their use of optimistic tone.
- ❖ $H1^{env}$: Companies with better or worse environmental performance differ in their use of optimistic tone.

Relying on Cho et al.'s (2010) research we expect the worse environmental performing companies in this study to use a higher level of optimistic tone in their disclosures than their better-performing counterparts.

Rogers et al. (2011) suggest that, because discretionary disclosure is correlated with economic performance (Miller, 2002), disclosure tone would also vary depending on the economic performance. We are curious as to whether this also applies to environmental reports, or in other words, whether the use of optimistic tone in environmental disclosures is correlated with a firm's economic performance. Hence, we have our second hypothesis:

- ❖ $H0^{eco}$: Companies with better or worse economic performance do not differ in their use of optimistic tone.
- ❖ $H2^{eco}$: Companies with better or worse economic performance differ in their use of optimistic tone.

Our expectations are in line with Rogers et al.'s (2011) findings, that better economic performers use more positive tone than worse economic performers.

3 Methodology

The following chapter contains a description of the methods used throughout this paper. The different criteria for the selection of companies and data are listed, containing a description on the collection of these data. In the section that follows, an overview to the research design is presented together with information on benchmarking. Thereafter, the wordlist is presented followed by a presentation of the measurement of tone and as well as an explanation of the different statistical tests used to answer our hypotheses. An evaluation of the methodology used ends this chapter.

The initial work of this paper consisted of familiarizing with our chosen field of study by reading articles, books and other papers on the subject. Some of the keywords found in this literature were *sustainability reporting, textual analysis, environmental disclosures, impression management, disclosure tone* and *tone management*. This reading helped us to get a better understanding and deeper knowledge in this area of research.

3.1 Selection of companies and data

The key goal for this thesis is to examine if managers in the energy sector are applying an optimistic tone in the environmental section of sustainability reports. The aim is to explore if there is an existing correlation between the quantitative and qualitative information provided in these reports or if there is a variable explaining the use of optimistic tone, more specifically environmental and/or economic performance. A quantitative methodology has been chosen for our research (see further information in section 3.6 Statistical tests).

In order to answer our questions company data needed to be collected. All data is gathered from annual reports or sustainability reports, depending on whether the desired information was included in the annual report or separated. The following three criteria were selected to find suitable companies for our study:

- ❖ Operating in the energy sector
- ❖ Have an integrated or separated sustainability report from the year of 2012 or 2013, available in English
- ❖ Privately owned, i.e. not state-owned

For this study we used data from 90 companies. The database Orbis and the sustainability disclosure database of the Global Reporting Initiative were used to find companies matching with these criteria. The sustainability reports or annual reports were then collected from each company's website or from the database of GRI. In some cases information regarding the criteria, i.e. if a certain company matched the criteria or not, was limited and supplementary information therefore had to be collected from the firm's websites.

Since our focus lies on the environmental parts of annual reports we found it interesting to study companies that have a big impact on the environment. We therefore chose companies operating in the energy sector (Cho et al., 2012). Naturally, the companies chosen needed to provide sustainability information integrated in the annual report or as separate documents. The third criterion was chosen to improve the comparability between the companies.

3.2 Selecting the texts

The main analysis for this thesis centers around optimistic tone in firms' environmental disclosures and in order to analyze tone narratives needed to be collected. Length-wise the environmental reports gathered vastly differed and we therefore had to narrow down the text-gathering to one specific area. A common topic in the environmental parts of sustainability disclosures is carbon emissions (Bebbington et al., 2008) and we therefore chose to focus on these parts when assembling the narratives, selecting texts associated with the amount of CO₂e emissions. In order not to lose the overall context entire paragraphs of which the sentences was part of was collected. It is these text-sections that will serve as the base for the actual analysis on tone.

3.3 Choosing a benchmark

In order to decide if the tone used in the narratives is too optimistic relative to the actual performance we require a base level of optimistic tone to use as benchmark. By choosing a benchmark we hope to see what normal tone is and thereby also detect deviations from this normal tone. The benchmark for environmental performance is here referred to as the amount of CO₂e emissions, a natural consequence in regard to the texts also being selected based on this information. The data required concerning CO₂e emissions was thus partly qualitative, partly quantitative.

The companies included in our sample accounts for their emissions in various ways but the majority accounts for their emissions in tons of CO₂ equivalent (CO₂e) or in tons of Greenhouse Gas Emissions (GHG emissions). The gases normally included in GHG emissions are e.g. Carbon Dioxide, Methane, Nitrous oxide and Fluorinated gases, however Carbon dioxide (CO₂) generally constitutes the largest part (US Environmental Protection Agency, 2015). In those cases where CO₂e emissions weren't available, we chose to use the amount of CO₂.

Besides examining if the optimistic tone applied is related to environmental performance, this study aims to explore if the tone can be associated with economic performance. Economic performance is in this study defined as annual company revenues in thousands of USD, hence making revenues our second benchmark. Additional data on revenues was therefore collected, using the database Orbis. All data collected regarding revenues is from the year 2013.

Once the narratives and numbers regarding CO₂e emissions were collected the companies were sorted into two groups. The two groups were categorized based on their amount of CO₂e emissions (by the median), where Group 1 represents companies with low emissions and Group 2 represents those with high emissions. Group 1 serves as benchmark for optimistic tone and by putting Group 1 and 2 against each other, we can determine if the group with high emissions, i.e. the companies with a worse environmental performance, uses a higher level of optimistic tone compared to the group with low emissions.

The same method was applied to examine the relation between the use of optimistic tone and economic performance. In order to examine this relation, the companies had to be sorted into groups based on their annual revenues rather than their annual CO₂e emissions. Group 1, who serves as benchmark for optimistic tone, constitutes the group with low revenues while Group 2 represents the firms with higher revenues.

These different groups make up one of the variables in our statistical tests. The second one is the actual tone-variable, which is described in further detail in the two following sections.

3.4 Wordlist

We quantify optimistic tone using a content analysis that relies on a pre-specified wordlist by Henry (2008) (see Picture 1). The wordlist is designed for use specifically in the financial domain which is suitable for this study, since the data is collected from a financial context. The customized wordlist by Henry contains a total of 190 words that are considered as optimistic or pessimistic, based on prior research in the field of economics (Henry, 2008).

There are several other wordlists suitable for measuring tone in company disclosures and narratives. Loughran and McDonald (2011) have, like Henry (2008), designed a positive/negative wordlist specified for use in the financial domain. This wordlist is more extensive than the one provided by Henry (2008) but due to the fact that our data sample is limited, we found the Henry wordlist most suitable. There are also more general context dictionaries available, but they however may be more appropriate in understanding how nonfinancial individuals assess disclosures (Rogers et al., 2011).

The method of quantifying language through wordlists has lately become more popular and has many advantages over a subjective categorization. It increases the power of our analysis since our variable of optimistic tone is continuous rather than categorical. The method is objective, easy replicable and can be used on various lengths of texts (Rogers et al., 2011).

POSITIVITY word list
positive positives success successes successful succeed succeeds succeeding
succeeded accomplish accomplishes accomplishing accomplished accomplishment
accomplishments strong strength strengths certain certainty definite solid excellent
good leading achieve achieves achieved achieving achievement achievements
progress progressing deliver delivers delivered delivering leader leading pleased reward
rewards rewarding rewarded opportunity opportunities enjoy enjoys enjoying enjoyed
encouraged encouraging up increase increases increasing increased rise rises rising
rose risen improve improves improving improved improvement improvements strengthen
strengthens strengthening strengthened stronger strongest better best more most above
record high higher highest greater greatest larger largest grow grows growing grew grown
growth expand expands expanding expanded expansion exceed exceeds exceeded
exceeding beat beats beating

NEGATIVITY word list
negative negatives fail fails failing failure weak weakness weaknesses difficult difficulty
hurdle hurdles obstacle obstacles slump slumps slumping slumped uncertain uncertainty
unsettled unfavorable downturn depressed disappoint disappoints disappointing
disappointed disappointment risk risks risky threat threats penalty penalties down
decrease decreases decreasing decreased decline declines declining declined fall falls
falling fell fallen drop drops dropping dropped deteriorate deteriorates deteriorating
deteriorated worsen worsens worsening weaken weakens weakening weakened worse
worst low lower lowest less least smaller smallest shrink shrinks shrinking shrunk below
under challenge challenges challenging challenged

Picture 1: Wordlist (Henry, 2008)

As stated by Henry (2008) the meaning of a word may differ depending on its context. Certain words are however always clearly positive or negative, such as *successful* (positive) or *failure* (negative). Other words, especially directional, can have a different meaning in different scenarios. For example, the word *increased* can be positive when talking about earnings but negative when it regards expenses (Henry, 2008) or as in our case, tons of CO2e emissions. To determine whether the words in the wordlist were used in a positive or negative sense, we analyzed our data on the context of each word as it appeared in our samples. By analyzing the context we found that the words marked in yellow needed to switch place, from positive to negative and vice versa.

When analyzing the context in the narratives we found that certain positive and negative words was lacking from the wordlist at hand. In order to obtain a more complete and justified calculation of optimistic tone we therefore scrutinized each selected narrative again, with the purpose of finding words that weren't included in the Henry wordlist. These words are considered as an extension to the wordlist. The Henry wordlist together with these additional words are hereon after referred to as the *expanded wordlist*.

Positive words added
 beneficial efficient efficiency efficiencies effective effectively eliminated enhance enhanced enhancing favorable insignificant lowering lowered negligible reduce reduces reducing reduced reduction reductions saving shrank strive strives

Negative words added
 impossible

Picture 2: Expansion to the Henry wordlist

3.5 Tone

When applying this extended wordlist on the selected paragraphs, we receive a certain number of positive and negative words for each narrative and firm. We then define optimistic tone in the same way as Henry (2008), which enables comparison between the firms, even when paragraph lengths differ. The calculation is presented below:

$$\frac{(Number\ of\ Positive\ words - Number\ of\ Negative\ words)}{(Total\ number\ of\ positive\ and\ negative\ words\ in\ the\ selected\ paragraph)}$$

In regard to the equation above, every firm receives a value between -1 and 1. A value above 0 indicates that the company in question is applying an optimistic tone in their disclosure. A value of 0 or less means the company isn't using an optimistic tone.

The analyzing of qualitative firm communication has only recently attracted interest (Huang et al., 2014) and the method of quantifying tone in sustainability reports is therefore relatively unexplored. In order to obtain robustness and credibility a pilot study has therefore been performed. In the pilot study both authors have made a subjective assessment on all narratives, determining if the perceived impression from the text is positive, negative or neutral. To determine this, each separate narrative has been assessed in regard to three values: -1, 0 and 1. A value of -1 correspond to a negative or pessimistic tone, a value of 0 represent a tone that is neutral and a value of 1 is equivalent to a use of optimistic tone. The values

assigned from each author were then compiled and divided by two, leading to a mean value of tone for every company from the pilot study.

The pilot study has two primary purposes, the first one being to verify the overall methodology, i.e. if the expanded wordlist is an adequate approach. We controlled for this using a correlation analysis, where the tone values from the expanded wordlist and equation constituted one variable and where the tone value results from the pilot study constituted the other. If these two variables would correlate with each other, the expanded wordlist was assumed to be an appropriate method.

When doing a correlation analysis in the statistical software program SPSS the outcome shows a correlation of 0.732 that is significant at the 0.01 level. Since the wordlist seemed to capture and perceive optimistic tone in the same way we did, we concluded that the method of quantifying tone using the expanded wordlist was an appropriate method. Our subjective assessments on the narratives coincide with the objectiveness of the wordlist, making the values from the pilot study suitable as complements to our tests.

The second purpose with the pilot study is to gather additional values of tone that can be used in the execution of the main statistical tests. In the statistical tests we try our hypotheses with the tone values received from the extended wordlist, as well as the same values combined with the results from the pilot study. This means that in the tests where only the extended wordlist determines the tone, again, each company receive a value between -1 and 1. In those tests where both the values from the extended wordlist and the pilot study are present, a company can demonstrate a value between -2 and 2.

3.6 Statistical tests

We perform our different tests using non-parametric techniques in the statistical software program SPSS. The two different tests used to answer the research questions for this study are the Mann-Whitney U test and the Kruskal-Wallis test. Non-parametric techniques are useful when faced with data that do not meet the stringent assumptions of parametric tests, e.g. assumptions on normal distribution (Pallant, 2005). Non-parametric tests like these ones are useful in our case, since the data variables are not normally distributed.

The Mann-Whitney test is used to test for differences between two independent groups on a continuous measure. This test can provide answer to if the two groups with different levels of CO₂e emissions (Group 1 and 2) differ in their use of optimistic tone. The Mann-Whitney test compares the medians of the two groups and converts the continuous variables to ranks, across the two groups. Thereafter, it evaluates whether the ranks for the groups are significantly different (Pallant, 2005). The same test is used to answer our second hypothesis: if groups with different levels of revenues (Group 1 and 2) differ in their use of optimistic tone.

The Kruskal-Wallis test is similar in nature to the Mann-Whitney test but enables comparison between more than just two groups and also for nominal scale variables. The values for each group are also here converted to ranks and the mean rank for each group is then compared (Pallant, 2005). The test can be used as an expansion to the previous test mentioned, in the way that the groups separated by CO₂e emissions or revenues can be divided into several more groups.

3.7 Validity and reliability

The purpose with this methodology section is to provide information regarding the overall research approach to the reader. By receiving this information, the reader can assess the validity and the reliability of the study. Validity refers to the purpose of the study; do we measure the things we want to measure? Reliability on the other hand refers to the execution; are the results valid no matter who performs the tests or when in time they are executed?

The choosing of narratives is the most subjective part of our research, since the texts themselves constitute ground for the tone-variable. To increase the reliability when selecting the narratives both authors therefore chose sections of the environmental disclosures separately and then compared selected texts, thereby making the choosing of narratives more objective. The statistical tests can thus be conducted on a more reliable raw material.

This study, and the quantifying of optimistic tone, is based on a textual analysis relying on a pre-specified wordlist (Henry, 2008) together with a pilot study. There are other more comprehensive wordlists available for textual analysis on financial disclosures than the one provided by Henry (2008) but due to the small sample of firms and narratives we chose a smaller wordlist and instead expanded it with some “missing” words. The Henry wordlist contains words specified as either positive or negative and it was expanded with additional positive and negative words found in the selected narratives, which were not to be found in the original wordlist. This expansion was made in order to obtain a more justified reflection of the texts.

Quantitative measures, such as wordlists are an appropriate approach for analyzing texts since they are objective and can be applied to all sorts of texts. A wordlist cannot however capture sentiment and subtleties the same way individual case studies or textual complexity measures (e.g. FOG-index) do (Henry, 2008). This is why a pilot study was used as a complement to the wordlist. The purpose of the pilot study was to try and capture the complexities and context that a quantitative measure might miss.

4 Empirical results

The fourth chapter begins with a thorough presentation of the data collected and the initial results found in these data together with two examples of narratives and calculations of tone. All of the results from the statistical tests are then presented. The entire chapter is arranged around the research questions and hypotheses of this paper.

4.1 Descriptive statistics

4.1.1 General overview

a. Company name	b. Revenues	c. CO ₂ e-emissions	d. Narratives
E.ON	171 562 794	277 839 000	Reduction in CO2 emissions from..
Royal Dutch Shell PLC	451 317 000	83 000 000	The direct greenhouse gas (GHG)..
PA Resources AB	204 182	101 574	Overall the PA Resources' levels of..
Zumtobel Group AG	1 636 609	10 218	Zumtobel's total CO2 emissions due..

Table 1: Data information

A sample of the companies in this study is listed in Table 1. These four companies are the firms with the highest (Royal Dutch Shell PLC) and lowest (PA resources AB) revenues as well as the highest (E.ON) and lowest (Zumtobel Group AG) CO₂e emissions. The last column features a fraction of the selected narratives for each company.

- Company name.
- Revenues for the year of 2013, in thousands of USD. Revenues range from 204 182 th USD to 451 317 000 th USD.
- Tons of CO₂e emissions for either 2012 or 2013. They range from 10 218 tons CO₂e to 277 839 000 tons CO₂e.
- The narratives belonging to each firm.

e. Company name	f. Positive words	g. Negative words	h. Tone expanded wordlist	i. Tone pilot study	j. Total tone ¹
E.ON	0	0	0	0,5	0,5
Royal Dutch Shell PLC	2	4	-0,33	-0,5	-0,83
PA Resources AB	2	1	0,33	0,5	0,83
Zumtobel Group AG	5	3	0,25	0,5	0,75

Table 2: Data information

Table 2 depicts the positive and negative words found in every separate narrative, as well as the calculation of positive tone. The values differ depending on which of the three different methods are used. Further explanations regarding each column follow below:

¹ The two values of tone combined, i.e. the tone value received from the expanded wordlist plus the tone value received from the pilot study.

- e. Company name.
- f. Calculation of positive words, based on the expanded wordlist.
- g. Calculation of negative words, based on the expanded wordlist.
- h. Positive tone, based on the expanded wordlist. Calculated as $\frac{(Positive\ words - negative\ words)}{(Positive\ words + Negative\ words)}$
- i. Positive tone based on the results from the pilot study.
Calculated as $\frac{Tone\ Subject\ 1 + Tone\ Subject\ 2}{2}$
- j. Positive tone. Based on the value received from column h) together with the value from column i).

4.1.2 CO2e emissions

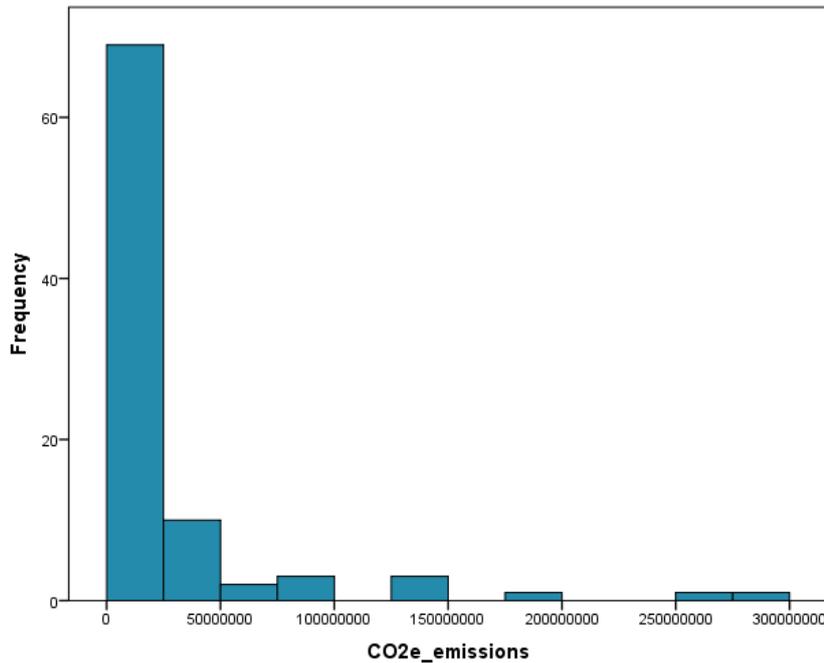


Diagram 1: CO2e emissions

Data regarding annual emissions of CO2e, in number of tons from all 90 companies, is presented in Diagram 1. The diagram is portraying positive skewness and the data is not normally distributed. As seen, most values are ranging between 0 and 50 million tons. The median for the sample is 5 213 500 tons of CO2e emissions per year.

4.1.3 Revenues

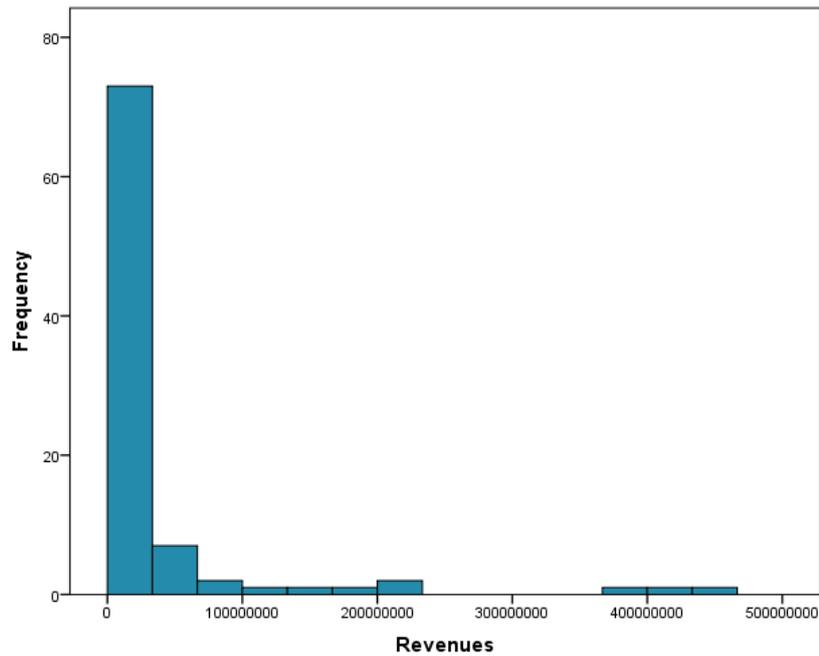
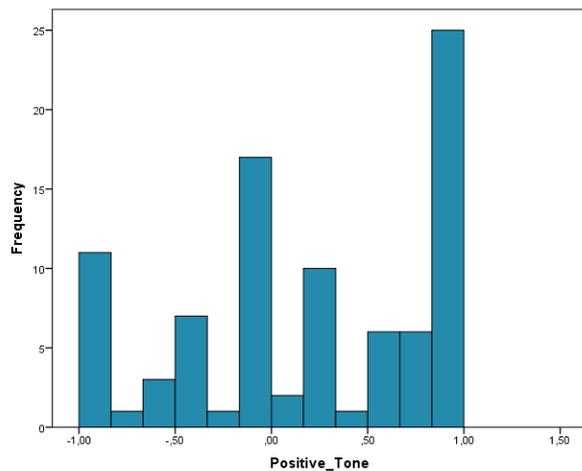


Diagram 2: Revenues

Diagram 2, presenting annual revenues in thousands of USD is also showing positive skewness. The data is not normally distributed. The highest frequency is found in the range between 0 and 100 000 000 USD (th). The median for the sample is 7 998 167 USD (th).

4.1.4 Positive tone

3a. Positive tone, calculated by the expanded wordlist.



3b. Positive tone, calculated by the expanded wordlist and the results from the pilot study

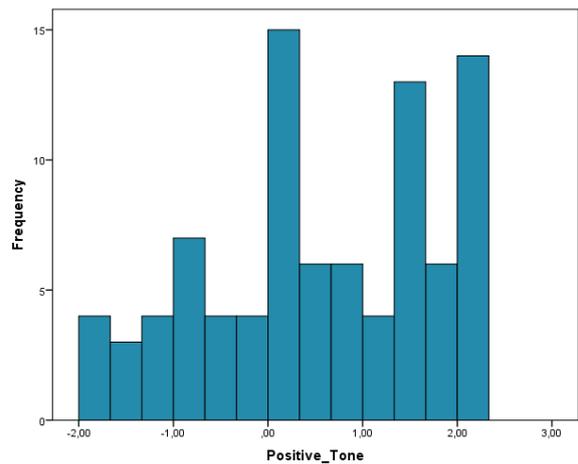


Diagram 3a: Positive tone, expanded wordlist.

Diagram 3b: Positive tone, expanded wordlist and results from the pilot study

These diagrams (3a and 3b) present the distribution of the positive tone values, according to the two definitions above. In Diagram 3a the highest frequencies are found on the values of -1 (negative tone), 0 (neutral tone) and 1 (positive tone). The highest frequencies in Diagram 3b are found on -2 (negative tone), 0 (neutral tone) and 2 (positive tone).

4.1.5 Examples of narratives and calculation of tone

Company name	Selected narratives	Positive words	Negative words	Tone expanded wordlist	Tone pilot study	Total tone ²
Halliburton	<i>In 2013, our global carbon dioxide emissions decreased by 26 percent to approximately 3.09 million metric tons. We attribute this improvement to two factors, enhanced management practices and improved methodologies for mapping our global emissions. When normalized per employee, the year-on-year reduction was 42 percent. Our dual-fuel initiatives, natural gas-powered fleet vehicles, and strong technology and innovation initiatives will continue to reduce our environmental footprint.</i>	7	0	$\frac{(7-0)}{(7+0)} = 1$	$\frac{(1+1)}{2} = 2$	$1 + 1 = 2$

Table 3: Example of positive tone.

In the example presented in Table 3, 7 positive words are found (*decreased, improvement, enhanced, improved, reduction, strong, reduce*). The value of positive tone received based on the expanded wordlist is 1. This value combined with the value from the pilot study (1) is resulting in an overall positive tone score of 2. This means that the company is using positive tone.

Company name	Selected narratives	Positive words	Negative words	Tone expanded wordlist	Tone pilot study	Total tone ³
Conoco Phillips	<i>In 2013, total CO2 equivalent GHG emissions (CO2e) were approximately 27 million metric tons, representing an increase of 5% or 1.3 million metric tons above 2012. This increase is primarily attributed to a change in the calculation methodology. In 2013, the company adopted the 100-yr global warming potentials from the IPCC 4th Assessment Report in the calculation of carbon dioxide</i>	0	7	$\frac{(0-7)}{(0+7)} = -1$	$\frac{(-1+ -1)}{2} = -1$	$(-1 + -1) = -2$

² The two values of tone combined, i.e. the tone value received from the expanded wordlist plus the tone value received from the pilot study.

³ The two values of tone combined, i.e. the tone value received from the expanded wordlist plus the tone value received from the pilot study.

	<p><i>equivalents in all voluntary external reporting. As such, the calculated CO₂e GHG emissions increased 1.2 million metric tons, or 93% of the 1.3 million increase in 2013. The actual increase in 2013, excluding the accounting change, was 0.093 million metric tons or 0.4%. The 0.4% increase was primarily due to specific counts in inventory replacing previous estimates for gas powered pneumatic devices in North American assets.</i></p>					
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Table 4: Example of negative tone

Table 4 features a narrative example containing 0 positive words and 7 negative words (increase x6, above). This leads to a positive tone value of -1, when calculation is based on the expanded wordlist. The company received a score of -1 in the pilot study and these two values combined led to a positive tone value of -2, which means that no positive tone is used.

4.2 Statistical tests

About half of the 90 companies included in this study receive a value exceeding zero, i.e. are using positive tone. When calculating positive tone based on the expanded wordlist 50 companies receive a tone score above zero. When including the pilot study results 53 companies receive a positive tone, i.e. a value above zero.

Further tests can help determine why precisely these companies use a more positive tone in their disclosures than others. In order to examine if these companies have similarities or other connections with each other two types of statistical tests have been performed, a Mann-Whitney U test and a Kruskal-Wallis test.

4.2.1 Disclosure tone and environmental performance

The Mann-Whitney U test is in this study used to test for differences between two groups in terms of their level of positive tone (Pallant, 2005). For this test the companies are categorized into two groups based on their amount of CO₂e emissions, where Group 1 represents companies with low emissions and Group 2 represents companies with high emissions. The other variable used to perform this statistical test is the value of positive tone received for each and every company. As seen in Table 5, the two first outputs (Test 1 and 2) have been performed using a Mann-Whitney U test.

Test 3 and 4 on the other hand are performed with the help of a Kruskal-Wallis test. In the Kruskal-Wallis tests the companies are divided into five groups rather than two. The firms are however still categorized into groups based on CO₂e emissions, leading to additional “levels” of emissions. Instead of being categorized as a group with either high or low emissions a company can be categorized as having the lowest, low, medium, higher or highest emissions.

The following four tests are all performed with the aim to answer the hypothesis concerning

the relation between optimistic tone and environmental performance ($H0^{env}$ and $H1^{env}$). Since the four tests are executed using different statistical methods they are presented separately, with test 1 and 2 together and test 3 and 4 together.

Test	Mann Whitney U		Kruskal Wallis	
	1	2	3	4
Variables	a) Tone (Expanded wordlist) b) Co2e-emissions	a)Tone (Expanded wordlist, pilot study) b) Co2e-emissions	a) Tone (Expanded wordlist) b) Co2e-emissions	a)Tone (Expanded wordlist, pilot study) b) Co2e-emissions
N (number of cases)	45 in each group	45 in each group	18 in each group	18 in each group
Group	1 (Low emissions) 2 (High emissions)	1 (Low emissions) 2 (High emissions)	1 (Lowest emissions) 2 (Low emissions) 3 (Medium emissions) 4 (Higher emissions) 5 (Highest emissions)	1 (Lowest emissions) 2 (Low emissions) 3 (Medium emissions) 4 (Higher emissions) 5 (Highest emissions)
Mean rank	1) 44,51 2) 46,49	1) 43,26 2) 47,64	1) 44,69 2) 41,06 3) 50,58 4) 37,14 5) 54,03	1) 45,00 2) 37,67 3) 51,56 4) 35,83 5) 57,44
Asymp. Sig. P-value (2-tailed)	0,715	0,435	0,274	0,064
Asymp. Sig. P-value (1-tailed)	0,3575	0,2145		

Table 5: Results from Optimistic Tone and Environmental performance. Significance level of 0,05.

Test 1 and 2

Both test 1 and 2 illustrate a slight difference between the groups when looking at mean rank. The mean rank shows that the median value of positive tone for Group 2 (with high emissions) is higher than the median value of positive tone for Group 1 (with low emissions). The two-tailed asymptotic significance levels (0.715, 0.435) are however higher than the alpha level of 0.05 in both cases, indicating that these results are non-significant.

Despite being non-significant in the two-tailed test, the results might be significant in a one-tailed Mann-Whitney U. To be able to analyze the results from a one-tailed test some adjustments need to be made to the previous stated hypotheses $H0^{env}$ and $H1^{env}$. The adjustment of hypotheses is only done for the one-tailed test and looks as follows:

- ❖ $H0^{env}$: Companies with a worse environmental performance use a lower or equal level of optimistic tone in environmental disclosures than companies with a better environmental performance.
- ❖ $H3^{env}$: Companies with a worse environmental performance use a higher level of optimistic tone in environmental disclosures than companies with a better environmental performance.

In order to receive one-tailed p-values for the tests, the two-tailed p-values have been divided by two. These one-tailed values (0.3575, 0.2145) are however still higher than the alpha level

of 0.05 and not significant. Both the two-tailed tests and the one-tailed tests indicate no statistically significant difference in managers' use of positive disclosure tone between the groups. They fail to reject the null hypothesis and there is insufficient evidence to suggest that the null hypothesis is false, at the alpha level of 0.05.

Test 3 and 4

In the Kruskal-Wallis tests there are five groups to consider when looking at mean rank. In both test 3 and 4, Group 5 receives the highest overall rank. The results suggest that Group 5, since having the highest score on the continuous variable, is using the highest level of positive tone. The 2-tailed significance levels are however higher than the alpha level of 0.05 (0.274, 0.064), proving that there is no statistically significant difference between the five groups regarding their use of positive tone. There is again insufficient evidence to conclude that the null hypothesis is false at the 95% confidence level and it cannot be rejected.

However, the asymptotic significance level in test 4 is as low as 0.064, indicating tentative evidence that there are actual differences between the groups in their use of optimistic tone. With a bigger sample size, and similar values, this result would have been significant based on the same alpha level. Besides, the test is significant based on an alpha level of 0.1, which is considered sufficient since the results would be reliable to 90 percent. In other words, the null hypothesis can be rejected and the alternative hypothesis is true at a 90% confidence level.

Based on these assumptions, the possible differences between the groups are further examined in a median test. The median test, featured in Table 6, can help decide the exact differences in optimistic tone use between the five groups.

Median test	Asymp. Sig. P-value (two-tailed) = 0.064
Median	1) 0,0000 2) -0,0667 3) 0,8778 4) 0,4167 5) 1,5395

Table 6: Result from the Median test, Optimistic tone and Environmental Performance

The median test shows the median values for group 1 to 5. Group 5 with the highest emissions also showcases the highest median of 1.5395 and Group 1 with the lowest emissions has the second lowest value of 0.0000. Group 2, with low emissions, receives the overall lowest median value of -0.0667. The two remaining groups representing companies with medium (Group 3) and high (Group 4) emissions both have a median value above zero, indicating a use of positive tone.

This output indicates that the companies showing a worse environmental performance use more optimistic tone than companies with better environmental performance. This is the reason why the differences between Group 5, with the highest tone-level score, and Group 2, with the lowest, is investigated in further detail. Yet another Kruskal-Wallis test is conducted for Groups 2 and 5. The results are shown in Table 7.

Test	
Variables	a) Tone (Expanded wordlist, pilot study) b) Co2e emissions
N (number of cases)	18 in each group
Group	2 (Low emissions) 5 (Highest emissions)
Mean rank	2) 14,39 5) 22,61
Asymp. Sig (2-tailed)	0,019

Table 7: Result from the Kruskal-Wallis test, group 2 and 5. Significance level of 0,05.

Due to the asymptotic significance value of 0.019, the results confirm a statistically significant difference between the two groups in their use of optimistic tone. The null hypothesis can be rejected and it is concluded that the alternative hypothesis is true at the 95 % confidence level. Companies with better or worse environmental performance differ in their use of optimistic tone. Further, the mean rank is higher for group 5 and lower for group 2, proving that the firms with the highest emissions use more optimistic tone in their environmental disclosures than the firms with low emissions.

4.2.2 Disclosure tone and economic performance

The following tests try the relation between optimistic tone and economic performance, hence testing the second hypotheses ($H0^{eco}$ and $H2^{eco}$). All output is presented in the same way as in the previous section, where test 5 and 6 are performed using a Mann-Whitney U test and where test 7 and 8 are conducted in a Kruskal-Wallis test. In all four tests the companies are categorized into groups based on annual revenues rather than CO2e emissions. Accordingly, Group 1 represents companies with low revenues and Group 2 represents those with high revenues. As for the Kruskal-Wallis tests the firms are divided into five groups, where a low group-number imply low revenues and a high group-number imply high revenues.

Test	Mann Whitney U		Kruskal Wallis	
	5	6	7	8
Variables	a) Tone (Expanded wordlist) b) Revenues	a)Tone (Expanded wordlist, pilot study) b) Revenues	a) Tone (Expanded wordlist) b) Revenues	a)Tone (Expanded wordlist, pilot study) b) Revenues
N (number of cases)	45 in each group	45 in each group	18 in each group	18 in each group
Group	1 (Low revenues) 2 (High revenues)	1 (Low revenues) 2 (High revenues)	1 (Lowest revenues) 2 (Low revenues) 3 (Medium revenues) 4 (Higher revenues) 5 (Highest revenues)	1 (Lowest revenues) 2 (Low revenues) 3 (Medium revenues) 4 (Higher revenues) 5 (Highest revenues)
Mean rank	1) 42,13 2) 48,87	1) 40,84 2) 50,16	1) 42,42 2) 44,47 3) 47,00 4) 43,61 5) 50,00	1) 42,97 2) 44,00 3) 42,83 4) 44,28 5) 53,42
Asymp. Sig. P-value (2-tailed)	0,215	0,090	0,910	0,713
Asymp. Sig. P-value (1-tailed)	0,1075	0,045		

Table 8: Results of Positive Tone and Economic performance. Significance level of 0,05.

Test 5 and 6

The Mann Whitney U tests display a difference between the two groups in mean rank. In both cases the median values of positive tone for Group 2 are higher than the median values of positive tone for Group 1. The results are however non-significant due to the two-tailed asymptotic significance levels of 0.215 and 0.090, both higher than the alpha level of 0.05. There is no statistically significance in the company use of optimistic tone between Group 1, with low revenues, and Group 2, with high revenues, and the null hypothesis cannot be rejected.

In section 4.2.1 it was examined whether the results, or the differences between the groups, would be significant from a one-tailed perspective, when not significant from a two-tailed perspective. To analyze the output from a one-tailed view, adjustments to the hypotheses had to be made. The same procedure applies to this case and the adjustments of the hypotheses look as follows:

- ❖ $H0^{eco}$: Companies with a better economic performance use a lower or equal level of optimistic tone in environmental disclosures than companies with a worse economic performance.
- ❖ $H4^{eco}$: Companies with a better economic performance use a higher level of optimistic tone in environmental disclosures than companies with a worse economic performance.

The one-tailed p-value of 0.1075 received from test 5 is still higher than the alpha level of 0.05 and therefore not significant. The results from test 5 can in other words not conclude that companies with a worse economic performance use a lower level of optimistic tone in environmental disclosures than companies with a better economic performance.

According to the one-tailed test 6, the mean value of positive tone for the group with high revenues (Group 2) is higher than the mean value of positive tone for the group with low revenues (Group 1). Additionally, the one-tailed significance value received from test 6 is 0.045, which is lower than the alpha level. In contrary to the result given by the two-tailed tests and the one-tailed test 5, this output is significant. Accordingly, the null hypothesis can be rejected and the alternative hypothesis is true at a confidence level of 95 percent, meaning that companies with a worse economic performance use a lower level of optimistic tone in environmental disclosures than companies with a better economic performance.

Since there is enough evidence to conclude that there is a difference in the median value of tone between the two groups with different economic performance a median test is performed to determine the exact differences in the use of tone between them (see table 9).

Median test	Asymp. Sig. P-value (one-tailed) = 0.045
	1) 0,2000
	2) 1,3333

Table 9: Results from Median test, Optimistic Tone and Economic Performance

In the median test Group 1 gets a median value of 0.2 and Group 2 a value of 1.3. The median value for Group 2 is in other words 6.5 times higher than for Group 1, verifying that the group with high revenues uses a far more optimistic tone in their narratives than the group with low revenues.

Test 7 and 8

The Kruskal Wallis tests presented in this section show that group 5 has the highest overall rank compared to the other groups. Group 5 gets the highest score on the continuous variable, indicating again that the best economic performers use the highest level of positive tone. The 2-tailed significance levels are however 0.91 and 0.713, both significantly higher than the alpha level of 0.05. These Kruskal-Wallis tests do not provide any further evidence to the previous Mann-Whitney tests since the null hypothesis in this case cannot be rejected.

There is again insufficient evidence to conclude that the null hypothesis is false at the 95% confidence level, meaning there is no statistically significant difference in managers' use of positive tone between the groups.

5 Analysis/Discussion

In this chapter the empirical results and findings are analyzed and discussed based on the theoretical framework. The chapter is distinguished by three segments, following the theme of the empirical results and hypotheses. The conclusions of the research are presented in the last section of this paper.

5.1 Optimistic tone in environmental disclosures

Our overall goal for this thesis is to determine whether companies use an optimistic tone when producing their environmental disclosures. A better performing company is more likely to use a higher level of positive tone in their narratives than worse performing counterparts (Huang et al., 2014). In this study better performance refers to low emissions or high revenues. Due to the fact that tone naturally varies depending on performance (Huang et al., 2014) we expected to find a use of optimistic tone, if not for all but for at least some firms.

The results, reported in section 4.1 Statistical results, show that over 50 percent of the total sample of 90 companies is using an optimistic tone. It should be noted that our results rely on quite a small sample of firms. Accordingly, the results and the analysis of them might not apply to cases with bigger sample sizes and should therefore be interpreted cautiously.

The results from the tests exploring the relation between optimistic disclosure tone and either environmental or economic performance are mixed. This might depend on the fact that our sample is relatively small and that the wordlist is far from complete. If we would have included more companies and applied several additional wordlists on the narratives, the results might have been different.

Worth noting is that we only receive significant results in those cases where the tone-value is based on both the expanded wordlist and the pilot study. The reason for this might be that the wordlist in itself is somewhat weak and lose context when only counting positive and negative words. When allowing the reader to see the full picture and to do a subjective assessment on the narrative, he or she can perceive the text as positive, despite not being classified as positive based on the wordlist. We therefore believe that a combination of the expanded wordlist and the pilot study is the best method for finding optimistic tone. It should presumably also provide the most valid results, which is why we focus on these results, i.e. the significant results, in this analysis chapter. Too much is left to chance in the non-significant results, which constitutes another reason to why we focus on the more reliable significant results.

5.2 Disclosure tone and environmental performance

Our overall results, when based on the expanded wordlist and pilot study, are consistent with findings from previous research on disclosure tone. On one hand, the Mann-Whitney results are non-significant, implying that there is no difference between better or worse environmental performing companies in their use of positive tone. On the other hand, when categorized into more groups in the Kruskal-Wallis test, results show that the worst environmental performers are exhibiting the highest level of optimistic tone in their narratives. This provides enough evidence to suggest that the hypothesis $H1^{env}$ is true, hence

proving that companies with better or worse environmental performance differ in their use of optimistic tone. The extended median test further confirms that firms with a worse environmental performance use a higher level of optimistic tone in environmental disclosures than companies with a better environmental performance.

Our research supports the findings of Cho et al. (2010), who concluded that environmental disclosures are in fact being used by organizations to manage impressions regarding environmental performance. It seems that Merkl-Davies et al.'s (2007) assumptions are true; that non-regulated disclosures increase the opportunities for impression management.

We further strengthen Cho et al.'s (2010) research in finding that the worst environmental performers in our study use a more optimistic language in disclosures than their better-performing counterparts. The positive tone applied by these companies are not proportional to their performance, in contrary, the positive tone is being used to mask it. They are in other words using tone for strategic purposes and by doing so also misleading and misinforming the reader (Huang et al., 2014).

Since this study shows that the worst environmental performing companies use the highest level of positive tone, it corresponds yet again to Cho's findings; that management supposedly are more motivated to influence stakeholders' impressions the more corporate performance differs from desired benchmarks. This indicates that the tone applied in their disclosures focus more on obfuscating bad news, enhancing good outcomes as well as claiming greater responsibility for these outcomes. Thus, reflecting the two manifestations of impression management; Concealment and attribution (Merkl-Davies et al., 2007). Our results are consistent with Merkl-Davies et al.'s framework (2007) in stating that firms use positive tone for concealment and attribution in environmental reports in order to present themselves in a more favourable light.

It is hard to draw any conclusions as to why some companies choose to bias the tone and engage in impression management and why some companies do not. Cho et al. (2007) and Deegan (2002) both find that the firms in their respective studies use impression management to shift focus from bad performance. Another reason for this might be the attempt to influence stakeholders' perceptions (Huang et al., 2014; Merkl-Davies et al., 2011; Godfrey et al., 2003). As for this case, the worst environmental performers also used the highest level of positive tone in their disclosures and we therefore find it fair to assume that the main motive for the manipulation of tone is to remove attention from this bad performance. We also believe that the firms use an optimistic tone to influence their readers' perceptions and steer them in another direction, in order to maintain their environmental legitimacy. Unfortunately, this study does not explore the exact motives behind the use of positive tone which leaves the area of incentives open for speculation.

There are many reasons to why companies choose to issue sustainability disclosures, despite the fact that they are voluntary. Our results show that the environmental performance, or CO₂e emissions, and the tone in the narratives describing these fundamentals are non-proportionate to one another. In other words, the qualitative texts do not correspond to the quantitative information. When tampering with narratives companies fail to show an accurate view of firm performance and this leads to a loss in both legitimacy and transparency (Suchman, 1995; Dhaliwal et al., 2011; Islam et al., 2007), that is, if they are exposed.

Furthermore, the overall purpose of corporate disclosure gets lost when the information provided is written to mislead readers, which will lead to decisions being made on wrongful

grounds (Beets et al., 1999). Since some of the companies included in this study go against the purpose of environmental reporting, i.e. are using an exaggerated positive tone, we assume that economic motives (Frostenson et al., 2012) are the principal incentives for their disclosing on environmental issues.

We question why these companies present environmental disclosures when the purpose with the reports is unfulfilled. Based on our findings, it seems that Cho et al.'s (2012) contention is right; that stand-alone sustainability reporting is more about presenting a positive performance rather than providing meaningful information to stakeholders.

5.3 Disclosure tone and economic performance

Our first hypothesis concerns the relation between disclosure tone and environmental performance. The second hypothesis in this thesis aimed to explore if disclosure tone and economic performance could be related to each other. Our results show a difference in the use of optimistic tone between companies with better and worse economic performance, thus supporting the $H2^{eco}$ hypothesis. We find that the better-performing companies in this study display a higher level of optimistic tone than worse performing companies, which is somewhat in line with Miller's (2002) findings that discretionary disclosure increases with economic performance.

The results are consistent with the expectation that optimistic tone would be positively correlated with economic performance. Reflecting Huang's (2014) theories our results indicate that the companies with better economic performance use tone in environmental reports for informative purposes rather than strategical. Previous studies (Rogers et al., 2011; Lang et al., 2000; Henry, 2008) examining the relation between tone and economic performance conclude that the tone is being used to misinform or mislead investors. If the tone applied in the narratives belonging to the firms in this study is applied for informative purposes it contradicts this previous research.

Our results however only conclude that there is a positive relation between optimistic tone and revenues. One question that arises is *why* this relation exists, i.e. why revenues and disclosure tone are interlinked. The informational cause mentioned above may be one reason; that the narratives in fact are provided for informative purposes and that the companies in this study want to disclose valid and useful information for stakeholders' decision making. A second reason may be an overall positive feel or sentiment in the company due to high earnings, reflecting the attribution manifestation of impression management (Merkl-Davies et al., 2007). Further claimed by Rogers et al. (2011), a well performing company with a positive mind-set naturally presents a more optimistic language and tone in their disclosures. Managers might be writing optimistic in their environmental sections of reports, even though the "emission status" itself isn't positive. This could be another reason to the optimistic tone level applied by the companies with high earnings.

Unlike previous research examining the connection between disclosure tone and environmental performance, studies regarding the relation between tone in environmental disclosures and economic performance are limited. It is complicated to come to any conclusions on these results and to why they are found, when lacking support from the existing literature. The discussion above regarding the reasons for this connection is fairly speculative. To be able to analyze the underlying elements to the positive relation between optimistic tone in environmental disclosures and economic performance more thoroughly,

further research need to be conducted.

5.4 Suggestions for further research

In this study we relied on prior research and theories to help explain and design our results and the analysis of them. There may however be other factors explaining the use of optimistic tone in environmental disclosures than the ones presented here. By examining the subject at hand from another point of view the conclusions might be different.

The subject of disclosure tone in environmental reports is still a relatively uncharted territory. This makes every study an important contribution to the existing literature. As said, this study does not explore the reasons behind the correlation between optimistic tone and economic performance and not many studies test this relation. This make up an interesting as well as important starting point for future research.

Another research topic encountered during the compiling of this report is to do a more complex analysis of the narratives. They could be further explored doing a form of context analysis using theories on rhetoric or by investigating the readability of them using for instance the FOG-index. These study suggestions could be conducted to get a deeper understanding of companies' and managers' use of disclosure tone.

This study only examines the use of tone in environmental disclosures issued by firms in the energy sector. It would therefore be interesting to expand this study by comparing the use of positive tone with companies from other sectors.

6 Conclusions

In this study we examine the use of optimistic disclosure tone in environmental reports issued by companies in the energy sector. We further investigate whether the use of positive tone is related to environmental and/or economic performance. Our most reliable results are consistent with and support previous literature on disclosure tone. First, our results show that more than half of the companies included in this study use a positive tone in their issuing of environmental disclosures. Second, we find that companies with poor environmental performance use a higher level of optimistic tone than their better-performing counterparts. This provides evidence to the idea that companies choose a certain optimistic tone level in their disclosures to present themselves in a more favorable light. Third, the results suggest that firms with better economic performance also use a higher level of positive tone.

As concluded, our results show an existing correlation between the use of optimistic tone to both environmental and economic performance. However, we do not investigate the underlying causes behind this. We contribute to the previous research by investigating positive tone in voluntary environmental disclosures, issued by companies representing many continents. Further this study focuses only on firms operating in the energy sector, a sector known for its environmentally hazardous activities. The existing research on both disclosure tone in corporate disclosures and the methods of quantifying tone are limited which make our study an important contribution to the existing literature.

7. References

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