May 16, 2016

Lappeenranta University of Technology

School of Business and Management

Master's Thesis

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Corporate green image communication through public disclosures and social media

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ABSTRACT

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Subject: Corporate green image communication through public disclosures and social media

Year: 2016 **Place:** Lappeenranta

Master's Thesis, Lappeenranta University of Technology, School of Business and Management, Industrial Marketing and International Business

127 pages, 10 figures, 17 tables and 4 appendices

Examiners: Professor Asta Salmi and Post-doctoral Researcher Joona Keränen

Keywords: corporate green image, corporate communication, annual report, sustainability report, social media, disclosure, content analysis

Today, companies need to mind the environment in all their actions. Policies, regulations and growing pressure from environmentally conscious public are driving corporations to invest increasingly in their green images. Communication plays a key role in forming and maintaining that image.

This thesis explores how six selected companies communicate about their environmental efforts and activities, and its linkage to their green images, in annual and sustainability reports and in Facebook. The companies come from the U.S. and Europe and operate in three different industries: ICT, oil and gas, and aerospace & defense. Qualitative and quantitative content analyses are conducted to examine 36 reports and 121 Facebook messages, collected from the period of 2010-2014, and from 2005 for comparison.

The results show that although the quality and quantity of environmental disclosure is increasing, there is still room for improvement. Overall, disclosure in the ICT sector is on the highest level. The European companies disclose more and on average have stronger green images than the American ones. Emissions and ways to reduce them is by far the most covered topic in both continents and in all three industry sectors. The messages in Facebook are closer to advertising, and overall the platform is utilized surprisingly little.

TIIVISTELMÄ

Tekijä: Jouni Pöyhönen

Aihe: Yritysten vihreän imagon viestintä julkisissa tiedotteissa ja sosiaalisessa mediassa

Vuosi: 2016 **Paikka:** Lappeenranta

Diplomityö, Lappeenrannan teknillinen yliopisto, Tuotantotalouden tiedekunta, Teollinen markkinointi ja kansainvälinen liiketoiminta

127 sivua, 10 kuvaa, 17 taulukkoa ja 4 liitettä

Tarkastajat: Professori Asta Salmi ja Tutkijatohtori Joona Keränen

Hakusanat: vihreä yritysimago, yritysviestintä, vuosikertomus, kestävän kehityksen raportti, sosiaalinen media, tiedottaminen, sisällönanalyysi

Nykypäivänä yritysten on huomioitava ympäristö kaikessa tekemisessään. Linjaukset, säännökset ja ympäristötietoisen yleisön paine ajavat yrityksiä panostamaan enenevissä määrin vihreisiin imagoihinsa. Viestintä on avainasemassa tämän imagon rakentamisessa ja ylläpitämisessä.

Tämä diplomityö tutkii kuuden valikoidun yrityksen viestintää ympäristöön liittyvissä asioissa vuosikertomuksissa, kestävän kehityksen raporteissa ja Facebookissa, sekä viestinnän yhteyttä yritysten vihreisiin imagoihin. Yritykset tulevat Yhdysvalloista ja Euroopasta kolmelta eri teollisuudenalalta, jotka ovat ICT, öljy- ja kaasuteollisuus sekä ilmailu- ja aseteollisuus. Laadullisella ja määrällisellä sisällönanalyysillä tutkittiin 36 raporttia ja 121 Facebook-viestiä vuosilta 2010-2014, sekä vertailukohtana vuodelta 2005.

Tulokset osoittavat, että ympäristöllisen tiedottamisen laatu ja määrä kasvaa, mutta parannettavaa on silti. ICT-yritysten tiedottaminen on kokonaisuudessaan parhaalla tasolla. Eurooppalaiset yritykset tiedottavat yhdysvaltalaisia enemmän, ja niiden vihreät imagot ovat keskimäärin parempia. Päästöt ja niiden vähentäminen on viestityin aihepiiri molemmissa maanosissa sekä kaikilla kolmella teollisuudenalalla. Facebookin käyttö on yllättävän vähäistä, ja viestit siellä ovat lähempänä mainontaa.

ACKNOWLEDGEMENTS

This Master's Thesis is the outcome of a process that started a long time ago by examining different research opportunities. When I finally decided to inquire whether it would be possible to use an own topic, I was immediately given green light and quickly got the project underway. Six months later the thesis is finished.

I would like to thank my supervisor and instructor, Professor Asta Salmi for the regular discussions and invaluable advice. Without our meetings, I would have felt lost more than once without properly knowing which way to go.

I would also like to express my gratitude for Doctoral Student Samuli Patala for his help especially in the first months of the project. The final topic of the thesis is the result of our inspiring brainstorming sessions.

Finally, special thanks goes to Minna for patiently listening my outbursts and for overall support during the last six months.

Lappeenranta, May 16, 2016

Jouni Pöyhönen

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

APPENDICES

1 INTRODUCTION

The on-going and ever-increasing discussion about the environment, climate change and the impact of industrial activity on them is a global concern, to say the least. We need to protect the world we live in. Every individual can give their contribution in their daily lives, be it cycling to work or something else. For corporations, being green is all the more important. Fortunately, companies around the world have recognized the need to give their contribution and concretely start to do their part. This call-to-action has been hastened by the increasing pressure from environmentally conscious public, government policies, and international regulations. The United Nations conference on climate change in Paris in November-December 2015 reached an agreement (COP21 2015) which binds the whole world to improve upon caring for the environment. That naturally concerns corporations to step up their game as well.

It should be kept in mind that companies still need to make financial profit in order to stay alive. In the world where being environmentally conscious will eventually be vitally important for their existence, the concept of corporate green image comes into play. Prior research has indeed proved that a strong green image positively and significantly effects firm performance (Amores-Salvadó, Castro & Navas-López 2014). A strong and trustworthy image helps companies to remain successful through positive word-of-mouth and increasing sales (Huang, Yen, Liu & Huang 2014). On the other hand, firms need to acknowledge that just being loudmouthed and yelling “sustainability, “green” or any other environmental magic words will not be enough. They need to take action; they need to walk the talk, because empty promises can severely harm them (Walker & Wan 2012). Actual efforts and activities to advance sustainability are the key, as different stakeholders with the demanding public in front (Bloomberg 2011) will surely catch any firm who claim to do great things but in reality do nothing. In addition, research has also showed the connection between corporate sustainability and financial performance, and that the greenest of companies are expected to obtain the greatest profits in the midst of growing competition, climate change, and diminishing resources (Bloomberg

2011). Hence, aiming for the win-win situation can actually provide extremely big and important wins, not just for businesses, but the whole planet itself.

1.1 Research gap

The connection between corporate communication and green corporate image has not been researched to particularly great extents, with the extant literature often focusing on e.g. Corporate Social Responsibility (CSR) communication in all of its meaning (Jahdi & Acikdilli 2009), and not particularly centering on the environmental aspect of the concept. The purpose of this thesis is to contribute to the relatively scarce existing literature and to increase knowledge about the connection between corporate communication and green image. That goal is pursued by examining the green communication and its linkage to green images of six different multinational corporations operating in three different industry sectors by using qualitative and quantitative content analyses as research methods.

This study utilizes the latest Newsweek's Green Rankings as a source of companies. A research by Ahmed and Beck (2013) found out that being included in the rankings does not directly increase firm performance. However, after being recognized by Newsweek, companies achieved better return performance, although not significant, than in the year prior to the publication of the rankings (Ahmed & Beck 2013). This suggests that being included in the rankings enhances firms' image and green image in particular, and that green corporate image has a positive effect on companies' financial performance.

Today, businesses need to mind the environment in all of their activities, so it is interesting to examine if and how companies communicate about their environmental efforts. In this study, three corporate pairs in three different industries are formed, and the communication concerning the companies' green images is examined between the companies, between the pairs, and finally between countries of origin. The aim is to form the pairs between American and European companies, and to preferably include Nordic firms. As can be seen in Chapter 4.3,

three suitable pairs were created, although the process was not very simple. Pair one with information and communications technology (ICT) companies Nokia (Finland) and Apple (U.S), pair two with oil and gas corporations Statoil (Norway) and Valero (U.S.), and pair three with aerospace and defense giants Boeing (U.S) and Airbus Group (EU).

1.2 Objectives and scope of the study

In all scientific research, the process of formulating and clarifying the research topic is the first step that a researcher must take to start their journey toward a completed research report (Ghauri & Grønhaug, 2005). Saunders, Lewis and Thornhill (2009, p. 20) add that after this, the selection of the most appropriate research strategy and data collection and analysis methods becomes possible. Research ideas are generated and refined, eventually one idea becoming the most feasible, which is then chosen and turned into research question and objectives (Saunders et al. 2009, p. 21).

The aim of the study is to find out how large companies communicate about their environmental efforts and activities and how this links to their green images. Focus is on communication in public disclosures and social media. To be precise, the annual and sustainability reports, and social media activity in Facebook of the six selected companies are examined. The findings are then compared between the companies, industry sectors and their countries of origin. The time scope of the study is from 2010 to 2014, with Facebook activity explored all the way to April 2016. Additionally, reports from year 2005 are examined for comparison. Between 2010 and 2014, attention is paid on the trends in the companies' communication. Finally, Facebook activity is examined all the way to the first days of April 2016, in order to show recent activities.

The initial idea for this study came from my Bachelor's thesis, but after refining it with the help of my instructors and discovering where my own interests laid, the final topic saw daylight. Turning the newfound idea into research project and

research questions was not easy by any means. Coming up with too hard research questions is very common (Eriksson and Kovalainen 2008. p. 38; Saunders et al. 2009, p. 33). It is useful to begin with one general focus question, which often leads to more detailed sub-questions (Saunders et al. 2009, p. 33). All these question must be related to each other in a meaningful way (Eriksson & Kovalainen 2008, p. 39). After that, matching research objectives are formulated. (Saunders et al. 2009, p. 33-34). As noted by Eriksson and Kovalainen (2008, p. 38), it is important to reformulate and redefine the research questions during the research process in order to reduce the width and complexity of the research. Considering the timespan available for conducting the study and the lack of assisting researchers, it was imperative that the whole research was feasible. After several rounds of reformulating and redefining, the three research questions found their final form, and are presented in **Table 1** with their respective research objectives.

Table 1: Research questions and objectives

Research question	Research objective
1. How do the companies communicate about their green images?	Identify how the firms communicate in public disclosures and in social media, and how it links to their green images.
2. What are the differences in communication between industry sectors?	Find the differences and similarities in the different industry sectors examined in this study.
3. What are the differences in communication between American and European companies?	Examine the differences and similarities between American and European firms.

The first research question aims at identifying the habits and means by how companies communicate their environmental issues, efforts and activities. Both the corporate reports and Facebook activity are examined by conducting qualitative and quantitative content analyses. Attention is also paid to clarify how the communication is connected to the firms' green images, and what kind of effect it

may have on the images. Newsweek's Green Ranking and especially the companies' scores in it provide clues about the quality (comprehensiveness and volume) of environmental disclosure, and about whether their green images are strong or weak. However, as Newsweek does not assess the communication or images as factors in determining the firms' ranks, the index is only used as an approximate indication. The Ranking is introduced in detail in Chapter 4.1.

The aim of the second research question is to identify the differences and similarities in communication in the three different industry sectors presented by the six enterprises in this study. The goal was to select companies from different sort of industries that have different sizes of environmental impacts.

The third research question deals with the differences and similarities in communication between the U.S. and Europe. The distribution of companies from the Old and New Word is half-and-half. The European firms all come from different countries, but are treated similar, as e.g. the differences in corporate cultures between those specific countries are smaller than the differences between the USA and Europe. The second and third research questions also encompass the communication in both the reports and in Facebook, and how it is connected to the companies' green images and how it may affect them.

1.3 Limitations of the study

The study examines six large multinational companies representing three different industries. The largest limitation is the low number of firms, which greatly reduces generalizability of the findings. As three different industry sectors are represented, which does reduce the homogeneity of the companies, the findings may not precisely and comprehensively present the exact modes of operation in any of the industries.

Large multinational companies were selected for that they have the largest impacts on the environment. The findings may not hold true with small or medium sized enterprises (SMEs). However, it can be assumed that also smaller firms can harness

some of the means presented in the results of this study in their own green communication, as long as they have sufficient resources.

In addition, one limiting factor was the time constraints and the availability of only one researcher, so only one round of scanning the initial data was conducted, but all the data selected for full analysis was carefully examined, and also further reviewed after that to ensure that the analysis was conducted as thoroughly as possible within the limited time period. Only corporate reports and Facebook activity of the companies were examined. Initially, the firms' press releases and entries in different social media sites were to be included as well, but were left out to keep the whole study feasible. Besides, after scanning the press releases and other social media activity, it became clear that the amount of relevant data from any of those additional sources was almost nonexistent. Annual and sustainability reports were chosen as the examined medium of communication as they are easily accessible sources of information, and are often regarded as the prevalent means of communicating company's activities and intentions, nowadays including more and more environmental disclosure as well. The time constraints of the thesis project partially prevented the inclusion of more than one different social media sites, but Facebook was chosen also because it provides a broad set of examples, and it is generally considered the most popular social media platform among businesses. So considering these remarks, the findings of this study should be relatively comprehensive.

The time scope of the study itself, the years 2005 and 2010-2014, may also limit the credibility of the findings. The years were selected because sustainability reporting and green communication in general has been a priority for most companies only in recent years. The year 2005 serves as a comparison to the main body of examination, the years 2010-2014.

Due to having the contribution of only one researcher, special attention needs to be paid to the subjectivity of the findings and to the whole data analysis process. According to Saunders et al. (2009, p. 194), objectivity is maintained in the data collection phase by making sure that data is recorded accurately and fully without subjectively selecting what to record. During the data collection process, strict

attention was paid to that so that valid conclusions were able to be drawn from the data. In addition to qualitative data analysis, quantitative analysis was conducted to provide broader view of the material, but also to reduce the possible subjectivity of the qualitative analysis. However, issue of subjectivity in interpretation is present, as only one researcher's analysis of the results is provided. Besides, corporate image and green image are highly subjective concepts, so it can be argued that all interpretations concerning an image of a firm, whether from a communicational viewpoint or any other, are always subjective at least to some extent.

1.4 Execution and structure of the study

This study uses both qualitative and quantitative content analysis as research methods to identify how the selected companies communicate about their green images. Although the extant research on the topic is moderately scarce, prior research constitutes a stable theoretical backbone for the study, and data is analyzed with respect to the extant knowledge on the topic. Therefore, the study follows an abductive approach, as described by Dubois and Gadde (2002). In abductive research, the systematic character of both theoretical models and the empirical world are captured and taken advantage of (Dubois & Gadde 2002). Consequently, abductive approach seemed the best fit for this study, as it can be seen as combining the best of both worlds.

The research questions are derived from the data rather than from existing literature, and are reformulated and redefined iteratively before reaching their final form. The data itself is collected longitudinally, but also cross-sectional analysis is conducted so that the findings can be compared more comprehensively.

The execution of the study follows the structure presented in **Table 2**. The inputs and outputs of each phase of the research and their relations to the chapters of the thesis are shown in the table. In essence, the thesis project has two major parts: theoretical and empirical. The theoretical section consists of the first three chapters,

while rest of the chapters form the empirical part of the study. More detailed descriptions of the chapters are presented below.

Table 2: Outline of the thesis

Input			Output
Background of the study	→	Chapter 1 Introduction	→ Purpose of the study Research gap Research questions Research approach
Starting point for the study	→	Chapter 2 Corporate green image and corporate communication	→ Describing and understanding the theory of the study
Content analysis as a research method	→	Chapter 3 Methodology	→ The role of content analysis in this study
Data and analysis of the study	→	Chapter 4 Conducting the study	→ The execution of the data analysis
Data analysis	→	Chapter 5 Results of the data analysis	→ Results of the content analysis
Findings of the study	→	Chapter 6 Conclusions	→ Managerial implications and opportunities for future research

Chapter 1 presents the background from which the study draws from. In addition, the research gap and purpose of the study, as well as research questions and objectives are presented. The chapter serves as an introduction to the research, with reasoning behind the selection of this specific topic.

Chapter 2 introduces the roles of corporate image, green image, and corporate communication. Scientific literature is utilized to build a strong theoretical base. In

addition, the connection between corporate communication and image is discussed, as that is what this thesis essentially aims to figure out.

Chapter 3 provides the methodological background to the study. The aim of this chapter is to reason why content analysis is used as the research method. Content analysis is introduced and discussed in detail. The use of Computer-aided text analysis (CATA) is also introduced, as the quantitative analysis is conducted with the help of an online software.

Chapter 4 describes how the actual data analysis is conducted. The purpose of accurate reporting is to provide the reader a transparent explanation of the analytic process. The examined corporations are introduced and formed into pairs, and the source where the companies are selected from is introduced as well. Then sampling, as well as data collection and data analysis processes are described in detail. Lastly, discussion of reliability and generalizability of the study is presented.

Chapter 5 provides the results of qualitative and quantitative content analyses, presented in three parts. First, the results of qualitative data analysis are discussed and interpretations are made. Second, the same is done for the results of quantitative analysis, and third, the results are combined in order to further interpret and compare the findings. The results are also discussed in light of the scarce, but nonetheless existing, theory.

Chapter 6 wraps up the thesis by summarizing the findings. The chapter also provides answers to the research questions. Finally, managerial implications and possible avenues for future research are proposed.

2 CORPORATE GREEN IMAGE AND CORPORATE COMMUNICATION

This chapter provides on overview of the concepts that form the theoretical basis for the research. The purpose of this chapter is to familiarize the reader with the roles of corporate image, green image, and corporate communication, and how these theoretical constructs are related to this study. Also importantly, an understanding of the connection between corporate image and communication is provided. The following subchapters serve as a basis for the actual analysis, which is presented later in the thesis.

2.1 Corporate green image

This research concentrates on the green communication of the selected corporations, and how it is related to their green images. Green communication here encompass all the communication by the companies about any of their efforts, activities or issues that in any way concern the environment. Before going into green image in more detail, the concept of corporate image in general needs to be understood.

Corporate image has numerous different definitions in the literature, but is well summarized by Fatt, Wei, Yuen and Suan (2000) as “the stakeholders’ perception of the actions, activities, and accomplishments of an organization”. In short, a corporate image is “person’s beliefs of an organization” (Ng, Butt, Khong & Ong 2013). Therefore, it is a highly subjective concept, as all the stakeholders react and deal with a corporation differently, and can have very diverse perceptions about them (Fatt et al. 2000). Grunig (1993) adds that due to corporate image being a subjective concept, individuals and society can perceive it differently also from what a corporation is trying to portray.

In the current economic situation when obtaining external financial leverage might prove challenging, building a strong corporate image has a particularly high

importance (Sun & Cui 2014). When the economy is declining, a strong image can improve corporations' financial situation and help navigating through the difficulties (Sun & Cui 2014). A good and strong overall image is important for any corporation, especially in the predominant economic situation, and in today's world it is also essential to build and maintain a robust environmental image (Montague & Mukherjee 2010). Corporate green image, in essence, means the environmental part of the whole corporate image – everything a company does or does not that concerns the environment. A strong green image helps retaining public support and trust, and maintaining loyal customer base (Montague & Mukherjee 2010). For corporations in environmentally sensitive industries, such as oil and gas industry, creating a strong and positive green image is particularly important (Amores-Salvadó et al. 2014).

Corporations have been paying increasing attention to environmental matters and green management since the early 2000s (Chang & Fong 2010). Some of the driving forces behind the increased focus on environmental initiatives have been the international regulations on environmental protection, such as Kyoto Protocol (Chen 2008). As presented later in Chapter 4.2, the companies in this study come from four different countries: United States, Finland, Norway and Netherlands. All except United States have signed and ratified the protocol, after it entered into force in 2005 (UN 2016). The protocol was initially adopted already in 1997 (UN 2016), and it ends in 2020 (WWF 2015). The path to the future was laid in the end of 2015 in the United Nations conference on climate change in Paris. The countries reached an agreement which steps into force in 2020, with the main goal of limiting the increase of global average temperature to well below 2 °C above pre-industrial levels (COP21 2015). These regulations are important to the future of companies and to the planet Earth itself. The analysis will reveal if the selected companies consider the agreement in their communications.

Other reasons that increase corporations' commitment to environmental matters are governmental regulations and policies, and the increasing environmental consciousness of the public (Chen 2008). Therefore, it is imperative for companies to protect the environment, and in order to maintain their profitability, the importance of strong green image comes into play. Grimmer and Bingham (2013)

point out that creating and maintaining an environmental image can bring remarkable benefits for companies. The prerequisite for that is appropriate communication to consumers (Grimmer & Bingham 2013). Patel (2008) adds that by creating "a culture of conservation", a company can reach environmental benefits and notice its image enhancing.

Chang and Fong (2010) define green corporate image "as the perceptions developed from the interaction among the institute, personnel, customers, and the community that are linked to environmental commitments and environmental concerns". Thus, green corporate image can indeed be considered as an environmental part of the corporate image, being also as subjective as the overall image. This study focuses on the selected companies' communication about actions, activities and accomplishments that have an effect on their green images. **Figure 1** demonstrates the driving forces behind a green corporate image and the ways by which it is created in a stakeholder's mind.

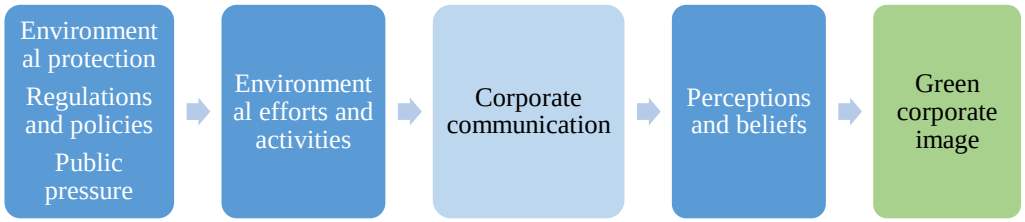

Figure 1: Green image creation process from a stakeholder's viewpoint

As can be seen from the figure, a company's green efforts and activities are influenced by international environmental protection regulations as well as governmental regulations and policies, and increasing pressure from environmentally conscious public. Green companies may also undertake actions that have a positive impact on the environment purely out of their own free will. The importance of being green will increase in the future, and as Amores-Salvadó et al. (2014) discovered, green image and profitability have a connection. However, that financial profitability along with gaining competitive advantage may be the prevalent, perhaps even the only reason to act green for some companies, without any genuine care for the environment. That is of course better than doing absolutely

nothing, and in today's world, taking zero interest in environmental matters is becoming almost impossible, especially for larger companies regardless of their industry sector.

Companies need to communicate their environmental efforts and activities to stakeholders, and this communication is the crucial part. This study concentrates on the communication and its connection to the firms' green images, without speculating on the root causes behind their environmental efforts and activities. Different stakeholders perceive those efforts and activities in their own way, and have their own existing beliefs about the company, which may, or may not, be influenced by the perceptions. As stated, however, the companies' prior or extant green images are not taken into account in this study. When the stakeholders' perceptions and beliefs are combined, a green corporate image is created.

Prior research has proved that the source country's level of environmental management (Hu & Wall 2005) and green image (Chan 2000) have a notable effect on companies' environmental images. European countries are generally considered to have better green images than United States (Dual Citizen LLC 2014). In fact, both Norway and Finland, from which two of the selected companies in this study come from, are often ranked as one of the world's greenest countries (Dual Citizen LLC 2014). That difference between Europe and United States is partly due to that the latter country's both absolute and per capita emissions are higher than those of European Union countries (World Resources Institute 2014). Results have been quite similar in earlier years' rankings as well (EPI 2010). It should also be noted that France has often fared better than Netherlands. That is worth noticing since Airbus manufactures their civil aircraft in France, and it is natural to associate the company to be French, but the Group's headquarters are located in Leiden, Netherlands.

Kim and Rader (2010) point out that stakeholder's overall expectations of a firm consist of their knowledge, perception, and beliefs of it, for example about the firm's Corporate Social Responsibility (CSR) associations, and they can be forged through direct or indirect experiences. For example, messages communicated by a corporation in various platforms can affect stakeholder's cognitive perceptions and

psychological associations of the company. Corporate Social Responsibility can be defined as ”the commitment of business to contribute to sustainable economic development, working with employees, their families, the local community and society at large to improve quality of life, in ways that are good for business and for development” (Petkoski & Twose 2003). Sustainability, in turn, means “meeting present needs without compromising the ability of future generations to meet their own needs” (The Brundtland Commission 1987). While the definition of CSR does not mention the environment as such, but as CSR is a very wide concept, this study concentrates on the companies’ CSR communication that only concerns the environment. Basically, all communication in any form or medium encompassing any CSR issues can be considered CSR communication. It is also worth pointing out that factors affecting the whole, general corporate image are ignored, but rather focus is solely on how the companies communicate about their green images.

2.2 Corporate communication

It has been proved that green corporate image and profitability have a positive connection (Amores-Salvadó et al. 2014). Slater (2009) also points out that several surveys have showed that socially and environmentally responsible companies can reach remarkable competitive advantage. The prerequisite for that is decent and effective communication to consumers and other stakeholders (Slater 2009).

As was shown, stakeholders form a perception of a company’s identity, image, and reputation through corporate communication (Balmer & Gray 2000). Especially CSR communication can be categorized as either company-controlled communication, such as marketing communications, or uncontrolled, such as word-of-mouth (Parguel, Benoît-Moreau & Larceneux 2011). According to Tewari (2012), the purpose of CSR communication is to help stakeholders to understand the environment in which the company operates in, to connect with the stakeholders and to create a positive opinion of the company among them, and strengthen the company’s relationship with them. In short, it “serves to reproduce understanding and acceptance of the institution within society” (Tewari 2012). CSR can enhance

corporate image, which in turn positively affects customers' purchasing intentions (Huang et al. 2014). Therefore, it is beneficial for companies to communicate about their CSR, including environmental efforts and issues. Communication is crucial and plays a significant role in reaching all these benefits, and communicating about CSR issues e.g. in annual reports is widely used in multiple industries (Pomering & Johnson 2009).

Pomering and Johnson (2009) state that corporate communication also encompasses advertising. Particularly corporate image advertising is used especially in celebrating CSR triumphs and to create overall awareness of a company's CSR initiatives. Corporate image advertising basically means building of a favorable image and informing stakeholders about the firm's CSR credentials and problems it is engaging with its CSR actions. The purpose of corporate image advertising is to generate positive attitudes and emotions among stakeholders and to fortify corporate brand. However, the efforts might not bring guaranteed results. (Pomering & Johnson 2009).

Morsing and Schultz (2006) point out that CSR communication usually has good intentions, but attracts critical attention and provokes skepticism. That can happen especially when a company that has a bad image, or is facing a legitimacy threat due to a corporate scandal, attempts to reposition itself toward a cleaner image and reputation. In addition, advertising in general can awake skepticism. Therefore corporate image advertising, if used for unverifiable credence claims, may worsen the situation. Corporations should instead represents their true initiatives in CSR and in their communications in general, and that can lead to external stakeholders proactively expressing their support. (Morsing & Schultz 2006). For the reasons above, annual reports, corporate websites and other softer methods are recommended over advertising, which has an overall veil of suspicion over it (Morsing & Schultz 2006).

As Grimmer and Bingham (2013) pointed out, the importance of appropriate communication when building and maintaining green image cannot be overlooked: the target audience must get the message loud and clear. In this study, communication through annual/sustainability reports and Facebook are regarded as

company-controlled communication, and focus is on communication related to environmental matters through those mediums. Even though social media often provokes word-of-mouth, it is left out in this study, as are any other forms of uncontrolled communication.

As companies realize the importance of communication, they need to remember that not all communication builds and strengthens their green image. Jahdi and Acikdilli (2009) remark that ethical claims lacking truth and communication regarded as "greenwashing" have increased disbelief and cynicism among consumers. Greenwashing can further be defined as misleading tactics about environmental practices of a company, or about the environmental benefits that a product or service offered by a company has (Terrachoice 2011). Ramus and Montiel (2005) define greenwashing as "disinformation disseminated by an organization so as to present an environmentally responsible public image". In its most comprehensible form, greenwashing means information that is not backed by any substantive actions (Walker & Wan 2012).

Lyon and Montgomery (2013) point out that companies in dirty industries, such as oil and gas industry, face risks of being labeled for greenwashing, as in these industries it is practically impossible to create large positive environmental impact. Statoil and Valero operate in oil and gas industry, which is considered dirty. When disclosing positive environmental results, the firms must prepare for claims of greenwashing (Lyon & Montgomery 2013). That can lead to difficulties in communicating believable CSR and environmental friendliness to different stakeholders (Jahdi & Acikdilli 2009). The analysis will show if that can be distinguished in the firms' communications. Parguel et al. (2011) state that nowadays there are also a lot of independent sources of information, and anyone can easily compare information from a company to, for example, data from a Non-Governmental Organization (NGO) to draw conclusions about the company's environmental friendliness and whether its communication can be regarded as greenwashing. That availability of uncontrolled information from third parties has made stakeholders to demand corporations to disclose more about their environmental matters (Parguel et al. 2011).

Parguel et al. (2011) also state that benefits brought by CSR communication may lose their effect due to greenwashing, even if the company has been considered remarkably responsible. In addition, the sheer amount of CSR communication can overwhelm consumers and trouble their judgment of corporations' CSR claims and the identification of responsible and irresponsible firms. That may encourage greenwashing and can make CSR efforts lose effectiveness (Parguel et al. 2011), and as other misleading tactics, can harm consumers' overall attitudes toward a company (Peattie, Peattie & Ponting 2009).

Everything that an organization does to enhance a green image, may not have any actual influence without proper communication, and that can even deteriorate the overall image of the company among stakeholders (Amores-Salvadó et al. 2014). It is extremely important for companies to communicate their efforts, and to do it in a congruent way (Walker & Wan 2012). Bona (2009) adds that sustainability must be in a company's DNA before it is reasonable to start communicating how green the company is. Small-scale green actions are not to be communicated with inappropriate hype. Instead, honesty and transparency in all communications are extremely important – no matter if the company is the greenest on earth, or just starting to consider the environment in its activities. Honest and transparent communication can also act as a shield against criticism. (Bona 2009). Pomering and Johnson (2009) add that reputation obtained by CSR communication can also deflect criticism and even allow some tolerance for error, which the critical public audience might anticipate. However, the existing corporate image, and therefore reputation, is ignored in this study, as stated earlier.

2.2.1 Annual reports and sustainability in corporate reporting

The ever-increasing demand from stakeholders has been pushing companies to disclose their economic performance, and also their environmental and social practices (Waddock, 2003). Environmental reporting has become a necessary and an essential responsibility (Elliot & Elliot 2011, p. 857). Daub (2005) also mentions that stricter monitoring and policing of corporations and the critical public

demanding more ethicality has increased sustainability reporting, and more and more companies include the environmental impacts of their direct and indirect activities (Bernhart & Slater 2007). Thus, companies need to present published accounts such as annual reports and sustainability reports to provide shareholders with information concerning stewardship and management performance, and to also help them predict future cash flows (Elliot & Elliot 2011, p. 186).

Corporate annual reports have evolved over time from merely legal declarations to "highly sophisticated" (Stanton & Stanton 2002) reports that help positively enhance the visibility and the image of an organization (Hopwood 1996). Companies take annual reporting seriously, and often utilize the help of design agencies, corporate photographers, and such (Hopwood 1996). Annual reports are statutory, submitted regularly, and easily accessible sources of information, and are commonly regarded as the predominant means of communication of company's activities and intentions (Smaliukienė 2007). However, Daub (2005) states that annual reports often do not tell more than what meets the eye. Many companies have produced annual reports to give themselves perhaps even misleadingly positive picture (Daub 2005). Keeping that in mind, Elliot and Elliot (2011. p. 696-697) recommend criticality, perhaps even cynicism, when assessing annual reports.

The Global Reporting Initiative (GRI 2015a) sets standards and provides guidelines for corporative reporting on economic, environmental, and social dimensions (Slater 2009, Elliot & Elliot 2011, p. 870). First version of the guidelines was launched in 2000, and currently the fourth generation of guidelines is in use (GRI 2015b). Using the guidelines is voluntary (Elliot & Elliot 2011, 870), but the demand from stakeholders is forcing more and more companies to adopt them. Smaliukienė (2007) adds that social motives encourage environmental responsibility and that stakeholders influence environmental responsiveness. Consumers, government agencies, the media, industry and trade associations, and environmental groups are usually the most influential stakeholders from an environmental perspective (Smaliukienė 2007).

The concept of CSR was reviewed earlier, and environmentally responsive approach is one part of Corporate Social Responsibility and CSR reporting, with

the two others being social and ethical approaches (Elliot & Elliot 2011, p. 866). Including all three approaches in an annual report can yield a very large volume of data; a problem which companies are assessing, for instance, by providing independent environmental reports (Elliot & Elliot 2011, p. 849). A sustainability report itself encompasses environmental, as well as both economic and social aspects GRI (2015b). Shnayder, van Rijnsoever and Hekkert (2015, p. 4) define a sustainability report as "a public report, put together by an organization to provide information to its stakeholders about organization's performance in the field of sustainability". World Business Council for Sustainable Development (WBCSD 2002) states that "one-size-fits-all" approach cannot be used in sustainable development reporting. It is up to each company to assess by themselves what approaches, if not all, they are going to include in their report (WBCSD 2002). CSR reporting and sustainability reporting can be considered synonymous (GRI 2015b).

Companies first started in mid-1990s to add more information of ethical, social and environmental activities in their annual reports (Daub 2005). Even though that trend is still growing (Daub 2005), and as more and more companies have moved to providing standalone sustainability reports, there are still lots of those who cram all the information in one and the same report. A sustainability report provides a view of a company's progress toward integrated economic growth, environmental stewardship and social responsibility (Bernhart & Slater 2007). It is up to each firm to decide whether they want to include only some or all of their sustainability indicators, but in any case, it provides a more encompassing approach to reporting than merely providing financial disclosure (Bernhart & Slater 2007). After all, disclosure of environmental activity is largely dependent upon the company's environmental policy, its actions on environmental protection, such as pollution control, and participation in environmental programs (Han & Zhang 2008). Determining factors are the size, revenues and the industrial sector (Gray, Javad, Power & Sinclair 2001), and development stage of the country (Smaliukienė 2007). Large companies in European Union countries and in Norway (Kolk 2005) are legally required to include sustainability factors in their annual reporting (Greenbiz 2014a). In United States, environmental reporting is not regulated by any laws.

Continuing with the factors affecting the amount of companies' environmental disclosure, prior research (Michelon 2011; Kilian & Hennigs 2014) has found out that firms in controversial industries are more likely to disclose information about the environmental impacts of their activities. Companies in industries such as oil and gas communicate more about those matters in order to adapt to stakeholder's increasing expectations proactively (Kilian & Hennigs 2014). Prior research has recognized the importance of sustainability reporting in oil and gas industry already in the turn of the new millennium. (Lantos 2002). As stated earlier, Statoil and Valero operate in oil and gas industry.

Michelon (2011) points out that usually European companies disclose environmental impacts of their business more than their American counterparts, and larger companies disclose more than smaller ones. That may stem from social and cultural differences between the U.S. and European countries, as American companies traditionally have a minimalist approach to social responsibility (Fisher, 2004). However, a research by Gill, Dickinson and Scharl (2008) found out that oil and gas firms tend to disclose more of their sustainability issues and activities in North America than Europe. The six chosen companies in this study are all multinational, multibillion-dollar corporations, and the great size and power of course bring great responsibility. The larger a company is, the more it generates both positive and negative effects, says Daub (2005). That then leads to the company manifesting itself more in public, and that creates a responsibility to justify its presence (Daub 2005). As mentioned before, however, this study does not go deep into the factors effecting the levels of corporate green communication, instead concentrating on the green communication itself and its linkage to the companies' green images.

Lastly, prior research has also recognized that reporting about sustainability improves the companies' chances of getting noticed by sustainability ratings, rankings and other credible third parties (G&A 2013, p. 10). As mentioned before, just being included in different sustainability ranking can bring benefits to the companies (G&A 2013, p. 6).

2.2.2 Corporate reporting and corporate image

In today's world, the need for building and maintaining trust is extremely important for corporations. G&A's research (2013, p. 36) concluded that overall transparency and reporting on sustainability increase stakeholder's trust in the companies and help to build better relationships with them. By being transparent, companies can build confidence among stakeholders and help them acquire positive experiences, both of which strengthen the reputation of the company (Piedhocki 2004), and Bernhart and Slater (2007) point out that sustainability reporting, including disclosure of environmental activities and impacts, can assist with brand management. Corporate reputation is considered a component of corporate image (Chen 2008) and therefore, communication that aims to build trust among stakeholders also enhances corporate image as well. Gray and Balmer (1998) summarize that "corporate communication is what shapes corporate image". With that in mind, the interconnection of communication and image cannot be underestimated.

Reasons why companies provide sustainability reports are plenty, but some of them can be linked with building and maintaining green corporate image. For instance, Morhardt, Baird and Freeman (2002) name a situation, when a company is under scrutiny and threat of facing sanctions, it may want to make a specific effort to ensure its operations meet environmental codes. In addition, a company may also provide sustainability reports to improve relations with different stakeholders (Morhardt et al. 2002) or to improve public perception of its activities, both of which can help to sustain and even strengthen market position (Daub 2005). Daub (2005) also adds that a company's social legitimacy is reinforced when it adopts an active environmental management approach, and as the public consciously assumes it to be responsible. Finally, Siew (2014) brings forth an observation that stakeholders regard the companies that follow GRI guidelines more transparent and more disclosing on environmental and social matters than firms who do not. A question is also raised if sustainability reporting should be made mandatory (Siew 2014).

The connection between corporate reporting and corporate image becomes evident when e.g. examining whether the data in an annual or sustainability report is externally assured or not. In fact, independent assurance by a third party is a certain way to increase the trustworthiness of a report, as stated by Hubbard (2011). Considering that, it would seem natural that every company would take advantage of assuring their reports, but they do not, although the percentage of firms doing so is on the rise (GRI 2013). Assuring can bring various benefits, as it increases the robustness and trustworthiness of the disclosed information (GRI 2013). A clear connection can be seen between external, independent assurances and a company's image. By assuring the environmental data, firms can increase the trustworthiness and credibility of their reports making them more effective in building and maintaining a strong green image.

Considering the fact that creating and sustaining a green corporate image is voluntary in itself, also the means for that could be regarded as voluntary, as is following the reporting guidelines. Again in any case, larger and more profitable companies and those operating in more "environmentally-sensitive" industries are expected to disclose more about their environmental activities (Gray et al. 2001). All the selected firms are large, multinational corporations, so presumably the differences in communication stemming from size may be non-existent, but the analysis will show e.g. if Statoil and Valero, the oil and gas companies in the study, actually disclose more than the other ones.

2.2.3 Corporate communications and social media

Social media, such as Facebook, Twitter, and YouTube, has become very popular as an outlet for companies' communication about green issues (Reilly & Hynan 2014). These platforms enable the firms to have a two-way experience with different stakeholders, compared to other media outlets who broadcast only one-way without the possibility for immediate and direct reaction or response (Kaplan & Haenlein 2010). That two-way feature of social media also enables an increasing number of people to publicly voice their opinions about companies and their

activities (Lillqvist, Louhiala-Salminen & Kankaanranta 2015). Internet's anonymity can tempt individuals to express their strong opinions and emotions more readily, easily and explicitly – in ways unthinkable in a real life environment (Champoux, Durgee & McGlynn. 2012).

The term social media can be defined as "a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of User Generated Content". Web 2.0 technically means increased interaction and the possibility of participatory and collaborative modification of content. (Kaplan & Haenlein 2010). Social media platforms can be classified in ten categories (McKinsey Global Institute 2012):

- Social networks,
- Media and file sharing,
- Blogs, microblogs,
- Ratings and reviews,
- Social commerce,
- Wikis,
- Discussion forums,
- Shared workspaces,
- Crowdsourcing,
- Social gaming. (McKinsey Global Institute 2012).

As can be seen from the list, the diversity of social media is very broad. However, due to time constraints and the use of only one researcher, this study only concentrates on Facebook, which can be categorized as a social network in the above classification.

Social media has often been perceived as an arena filled with younger users, but in recent years, different social media platforms have seen the emergence of an older audience: most of the adults over 65 years now regularly use at least one social media site (Zickuhr & Madden 2012). So social media is no longer just youngsters' playground – a fact that companies need to take into account when building their social media strategy.

The two-way nature of social media communication gives some power to individuals, but it is the companies who have the ultimate control over what messages and from whom are displayed on their Facebook walls (Champoux, Durgee and McGlynn 2012). However, removing posts and strictly controlling what anyone could publish on a company site can quickly lead to a disaster (Champoux et al. 2012). Kaplan and Haenlein (2010) note that social media offers inexpensive, timely and direct communication with a high level of efficiency compared to conventional ways of communication. Lyon and Montgomery (2013) suggest that the use of social media by external stakeholders may reduce corporate greenwashing.

As mentioned, this study concentrates on the communication concerning the green images of the six selected corporations in Facebook. A short description of the platform is provided next.

Facebook

Facebook was launched in 2004 (Facebook 2015a), and it is the world's largest social media site (Bodnar & Cohen 2012, p. 127) with well over a billion active users (Facebook 2015b). It allows users, both individuals and corporations, to interact and share digital content such as messages, photographs and videos, and also share comments on third-party websites about products and other offerings (Kaplan & Haenlein 2010). Facebook allows users to determine what information they want to share with whom, which enables companies to target specific user groups (Parsons, 2013). As about half of the users log on to Facebook every day, it offers firms a tremendously efficient channel to interact with their stakeholders and share content (Bodnar & Cohen 2012, p. 127).

Champoux et al. (2012) found out that companies use Facebook to build rapport with their existing and potential clients, and Parsons (2013) backs it up by stating that corporations mainly use Facebook to develop relationships with consumers rather than just providing information. Firms often post topics and content that are not directly related to their businesses, as "fans" look for entertainment, knowledge

sharing and interesting conversations on corporate Facebook pages. However, companies do also utilize Facebook in a more business-oriented manner, by posting e.g. sales information, promotions and new product announcements. (Champoux et al. 2012).

In Facebook, users can "like" content or certain brands, thus identifying themselves as members of community formed by other users who "like" the same brand (Parsons 2013). Any individual that has "liked" a company will see its publications on their own Facebook wall. That way, they can stay up to date without needing to manually check the company page regularly.

2.2.4 Social media's significance to corporate image

Protecting a carefully built brand in today's fast-paced world can prove to be tricky (Euractiv 2013). If a company is dishonest in their communications, social media can spread the word across the globe in an instant. That might be all that is needed for the whole brand to come crashing down. (Euractiv 2013).

Managing social media can be challenging, as customer complaints can go viral in mere moments (Kesavan, Bernacchi & Mascarenhas 2013). Social media's power cannot be denied, and companies must learn to use it as an offensive strategy and not just defensively responding to complaints. As social media practically has unstoppable influence and penetrating power globally, firms' must harness its possibilities as a CSR and corporate branding tool. (Kesavan et al. 2013). It is recommended for companies to try to integrate their social media activity with activity in traditional media in order to present a cohesive brand image (Kaplan & Haenlein 2010). Kesavan, Bernacchi and Mascarenhas (2013) also point out the same, and add that companies must make social media part of any online strategy.

Firms are expected to maintain consistency in their communication strategies also across different social media platforms (Tao & Wilson 2015). For example, if a company messages in two or more social media sites about its CSR activities, the messages must have same focus in their content in order to make the whole

communication consistent (Tao & Wilson 2015). Toppinen and Hänninen (2013) conclude their research stating that communicating in different social media sites likely function as a platform for environmentally conscious stakeholders groups around the world, who may also pay critical attention to companies CR (Corporate Responsibility) activities. However, the consistency of communication in different social media platforms will not be addressed in this study, as analysis is limited to the companies' Facebook entries. Nevertheless, the consistency between communicating in traditional media and social media will be examined. Corporate reports naturally differ from social media in several ways, but the data analysis will reveal if the companies e.g. emphasize same environmental themes in both forms of communication.

2.3 Summary of the theoretical concepts

The theoretical concepts reviewed in the previous subchapters form the foundation for this study. **Table 3** rounds up the basic premises of the concepts and helps to illustrate the most prevalent factors behind them. As stated earlier, communication is crucial in forming corporate image. In this study, environmental communication through corporate reports and Facebook, and its connection to companies' green images is examined.

Table 3: Summary of the theoretical baselines

Theoretical concept	Premises
Green corporate image	• Environmental part of whole corporate image • Highly subjective
Green communication	• Crucial in building and maintaining green image • Greenwashing vs. honesty, transparency • Corporate strategy
Corporate reports	• Predominant means in communicating company's activities and intentions • Annual reports vs. independent reports • GRI, external assurance • Reader's criticality
Social media	• Two-way vs. restricting, controlling • Easy, fast, cost-efficient, masses of people • Anonymity, virality

The theoretical concepts presented in the table are the base upon which the data analysis, the whole empirical part of the study, is built. As can be seen, green corporate image essentially means the environmental part of the whole corporate image. All communication addressing any environmental issues can be considered to have an effect in the companies' green image. The image is a highly subjective concept, and it is dictated by all efforts and activities that in any way concern the environment. As mentioned, the role of Newsweek's Green Ranking is recognized as an indicative factor that provides clues about the quality of the companies' environmental communication and their green images. That communication is crucial in building and maintaining the image. Communication can affect the image negatively if a company perpetrates to greenwashing. On the other side of the scale, honest and transparent reporting greatly enhance the image. One deciding factor is also how deep environmental initiatives are embedded into companies' strategies.

As mentioned, this study focuses on the green communication in corporate reports and in Facebook. Reports represent the most used means in communicating companies' activities and intentions. Whether the firms publish separate reports or include their environmental disclosure in annual reports makes a big difference in how their green images are perceived. Also, following GRI or other environmental reporting guidelines and including external assurance have a notable effect on the images. Finally, reader's criticality is emphasized, as it helps to evaluate the reports more objectively and prevents falling gullible to possible verbiage. Considering Facebook, and social media in general, it is characterized by providing an easy, fast and cost-efficient way to reach a vast amount of people. The two-way feature can enhance companies' images, whereas restricting or controlling conversation has the opposite effect. Lastly, anonymity is a factor that fosters virality, as anyone can express his or her opinion, no matter how harsh, without high risk of consequences.

Basically, the theory that forms the foundation to the empirical part of the study is not overly complicated, and the two main concepts, green image and green communication, have a strong interconnection. Next chapter presents the methodology, which provides a link between the theoretic and empirical parts of the study.

3 METHODOLOGY

This chapter provides an introduction of content analysis, and how it is utilized in this research. Both qualitative and quantitative content analysis are conducted later in this study in order to comprehensively analyze the data, and an online software is used to help with the quantitative analysis. Hence, the premises of Computer-aided text analysis (CATA) are also presented.

The topic of the study is companies' green image communication through public disclosures and social media, and it utilizes data from six multi-billion dollar companies' corporate reports and Facebook sites. The firms are introduced in Chapter 4.2, and their sampling process in Chapter 4.3. The particular corporations were selected because they all are large multinational companies, and thus can be expected to have notable environmental footprints and to mind the environment in their activities. The firms operate in three different industries with different sizes of environmental impacts, and importantly, they are from the US and Europe, including two Nordic companies. The timespan of the study is from 2010-2014, with reports from 2005 examined for comparison. Facebook entries are available from 2016 as well, and were scanned through in April 2016. **Table 4** presents the years and data formats under examination. Additionally, companies' scores from Newsweek's Green Ranking, and rank out of the 500 total companies in the list are presented in brackets.

The specific years were selected in order to also identify how the communication about environmental activities and issues has changed over time. Attention is also paid on how the communication has evolved within the specific enterprises, and how and to what extend the firms utilize Facebook. Main focus is on the 2010s and the year 2005 acts as comparison. Six companies were selected from three different industries. Apple and Nokia operate in information and communications (ICT) industry, Statoil and Valero in oil and gas, and last but not least, Boeing and Airbus in aerospace and defense industry. The variable spectrum of companies provide adequate amount of versatile and comprehensive data.

Table 4: Selected companies' reports and Facebook presences

		Corporate reports		Social media
Firm	**Year**	**Annual report**	**Sust. report**	**Facebook**
Apple (74,50%, 18th)	2005	✓		-
	2010		✓	-
	2011		✓	-
	2012		✓	-
	2013		✓	-
	2014		✓	-
	2015		✓	-
	2016		-	-
Nokia (46,50%, 238th)	2005		✓	-
	2010		✓	✓
	2011		✓	✓
	2012		✓	✓
	2013		✓	✓
	2014		✓	✓
	2015		-	✓
	2016		-	✓
Statoil (61,60%, 90th)	2005		✓	-
	2010		✓	-
	2011		✓	-
	2012		✓	✓
	2013		✓	✓
	2014		✓	✓
	2015		✓	✓
	2016		-	✓
Valero (6,60%, 492nd)	2005	✓		-
	2010	✓		-
	2011	✓		✓
	2012	✓		✓
	2013	✓		✓
	2014		✓	✓
	2015		✓	✓
	2016		-	✓
Boeing (68,70%, 38th)	2005	✓		-
	2010		✓	-
	2011		✓	-
	2012		✓	-
	2013		✓	-
	2014		✓	-
	2015		✓	-
	2016		-	-
Airbus (65,90%, 55th)	2005		✓	-
	2010	✓		-
	2011	✓		-
	2012	✓		-
	2013		✓	-
	2014		✓	✓
	2015		-	✓
	2016		-	✓

As can be seen from the table, some companies include environmental disclosure, if provided at all, in their annual reports, and some firms in specific sustainability reports. Only in 2014 (and in 2015 four firms so far) have all the companies provided separate sustainability reports. Some firms disclose their environmental activities and data in differently named reports, such as Social Responsibility Reports. They all are listed as sustainability reports in the table above, and only the chapter(s) including environmental disclosure are examined. Finally, it should be noted that although the table lists the 2015 reports as well, but since not all the companies had published them in time, they are not included in the study.

Apple provides separate Facilities reports starting from 2008, and as the name says, only includes assessments of their facilities. From 2014 and forward, the reports are named Environmental Responsibility Reports, with greatly increased volume and scope. In 2005 Apple only provided an annual report on form 10-K.

Nokia published a separate sustainability report already in 2005. That particular report is named Corporate Responsibility Report, and the ones from 2010 and 2011 are called Sustainability Reports, and after that, People and Planet Reports.

Statoil has also provided a separate report already in 2005. Their publications are always named Sustainability Reports. Even though the company included the sustainability part within their annual report in some years, those are listed in the table as separate sustainability reports, as they can be downloaded in standalone files in pdf format from the corporate website.

Valero has included the environmental reporting within their annual reports up until 2012. Those reports are named Summary Annual Reports, and starting in 2013, the firm has provided separate reports, named Social Responsibility Reports, which include reporting of environmental issues. However, Valero’s web pages went through a makeover early in 2016, and the separate 2013 publication was not available, and therefore their annual report of 2013 was examined, instead.

Boeing has published standalone sustainability reports in the 2010s, named Environment Reports. In 2005, the company included environmental reporting in their Annual Report.

Interestingly, Airbus' 2005 publication is named Business Legal and Corporate Responsibility report, and traditional annual reports from 2010 to 2012 EADS Annual Reviews. The company was reorganized as Airbus Group in January 2014. The latest reports, starting from 2013, are named Corporate Responsibility & Sustainability Reports. **Table 5** displays all the different names given to the reports.

Table 5: Report names

Name of report	No.
Annual report/summary/review	10
Sustainability report	8
Environment report/Environmental responsibility report	6
Corporate/Social responsibility report	5
Facilities report	4
People & planet report	3
∑	36

As the table clearly shows, the reports between the companies lack consistency in naming. According to Hubbard (2011), the reason for that might be because the firms have different aims from these reports, which can vary from true assessments of sustainability and environmental performance to just communicating of "doing good". For example, Apple's "Facilities Reports" only assess the environmental impact of their facilities - exactly what the names say. Overall, the names given to the reports tell quite descriptively what is included in them.

Facebook entries are studied from the same years as the other forms of communication, with the exception of 2005 as none of the companies were present in Facebook back then. If a company had more than one pages or accounts on the site, such as AirbusGroup Facebook page and AirbusGroupCareers Facebook page, only the main page of the company is examined. Boeing only has Facebook pages for their store and careers, but no official company page. Apple is also absent from

Facebook. Naturally, the store and career pages were not analyzed. Only official main pages or accounts of the firms were selected.

3.1 Content analysis

The history of content analysis can be traced all the way back to 1952, when Bernard Berelson first distinguished the approach, with features stemming from social science (Prior 2014, p. 359). Krippendorf (2013, p. 24) defines content analysis as "a research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use". It provides new insights, increases researcher's understanding of the studied phenomena, or informs practical actions (Krippendorf 2013, p.24). Tuomi and Sarajärvi (2003, p. 93) state that content analysis may be used in all research traditions. It can be considered either as one separate method or as a loose theoretical framework, which can be connected to different analyses (Tuomi & Sarajärvi 2003, p. 93). Krippendorf (2013) also points out that content analysis provides profound understanding into situations that is not limited by extant viewpoints or methodologies. That allows new theories on the topic to be discovered. Content analysis is also highly effective when there is a lack of applicable models, which would serve as a basis for the research. Additionally, the participants' opinion is taken into consideration, which is generally impossible in quantitative research. (Krippendorf 2013).

Content analysis is considered the prevalent scientific analysis method for corporative narrative documents, such as annual and sustainability reports (Tregidga, Milne & Lehman 2012). Tuomi and Sarajärvi (2003, p. 105) point out that content analysis is used to form a concise and general description of the research subject. The method can also be used for selected, particular sections of documents instead of full texts (Prior 2014, p. 373). As some of the companies in this study include environmental disclosure within their annual reports, only those sections of the reports are analyzed. Corporate narrative reporting, in its entirety, forms a large part of companies' communication with shareholders, stakeholders,

and the whole society. Corporate narrative documents are means of informing about managerial actions and decisions, corporate strategy, to establish organizational identity and reputation, to demonstrate of the legitimacy of the organization, and to persuade shareholders for a merger or a takedown. (Merkl-Davies, Brennan & Vourvachis 2012). Therefore, annual reports and sustainability reports can be considered ways of manifesting and strengthening corporate image.

According to Cooper and Schindler (2014, p. 385) content analysis is a systematic process which includes coding and drawing conclusions from different sorts of textual sources. At first, the type of data units are determined and selected for analysis. Data units can be categorized into four different types: (Cooper & Schindler 2014, p. 385).

- Syntactical data units: Words, phrases, sentences or paragraphs. Countable.
- Referential units: Objects, event, persons and so on. Described by words, phrases or sentences.
- Propositional units: Assertions about an object, event, person and so forth.
- Thematic units: Topics within the texts. Higher-level abstraction. (Cooper & Schindler 2014, p. 385).

The texts are coded into mutually exclusive groups based on the unit types (Cooper & Schindler 2014, p. 385). Additionally, Krippendorf's (2013, p. 99-104) definitions of units are also used to distinguish between different sorts of data sources in the study. The data units can be categorized as: (Krippendorf 2013, p. 99-104).

- Sampling units: Distinguished for inclusion in or exclusion from the analysis. Selected using an appropriate method, in other words, sampling. Annual reports and sustainability reports are examples of sampling units.
- Context units: Textual units that set limits for the information to be considered in coding units. Requires definition of textual units which are examined and which are not. E.g. environmental sections of sustainability reports or sentences referencing environmentalism.

- Coding units: Units that are separately described or categorized. Indicators or themes of content.
- Enumeration units: Measurable textual units, for example number of keywords, phrases, sentences or paragraphs. (Krippendorf 2013, p. 99-104).

Both of the categorizations of units are used in this study. The first categorization can be included in Krippendorf's category of coding units. Thus, the whole Cooper's and Schindler's classification, and Krippendorf's category of coding units, describe the actual data units that are analyzed. Krippendorf's sampling units and context units determine the units of textual material to which the analysis is targeted at.

Merkl-Davies et al. (2012) state that content analysis is mainly deductive, and it involves the use of content categories derived from theory prior to the analysis itself. However, content analysis can also be used inductively (Elo & Kyngäs 2007). In inductive content analysis, the categories are derived from the data (Elo & Kyngäs 2007). In addition, the method can be used with both qualitative and quantitative data, but Krippendorf (2013, p. 22) points out that basically all reading of texts is qualitative, even if some characteristics of a text are converted into numbers afterwards. This study approaches content analysis from both qualitative and quantitative angles. Qualitative, as the data is coded into qualitative themes, analyzed in a non-numerical manner and then inferences are derived from it to answer the research questions, and quantitative, as the occurrence and frequencies of those themes in the data are examined with the help of a computer software to derive broader and more objective inferences.

Krippendorf (2013, p. 23) sums up that over time, content analysis has evolved into a number of research methods that yield inferences from all sorts of verbal, pictorial, symbolic, and communicational data. The inferences itself can be distinguished in three categories: (Krippendorf 2013, p. 41-42).

- Deductive inferences: Implied in their premises. Logically conclusive inferences, which proceed from generalizations to particulars.
- Inductive inferences: Generalizations to similar kinds. Not logically conclusive. Statistical generalizations from smaller samples to wider populations, so they proceed from particulars to generalizations.
- Abductive inferences: Inferences that have a certain probability, but can be strengthened with other variables. Proceed from one kind of particulars to particulars of another kind. (Krippendorf 2013, p. 41-42).

Inferences in content analysis are mainly abductive by nature (Krippendorf 2013, p. 42). Also in this study, the inferences are mostly abductive: in essence, the use of particular themes by the firms in their green communication. To be more precise, the ways by which the communication affects the companies' green images is examined. In addition, the aim is to find similarities and differences, if any, in the communication. Differences may appear in the content generated by two sorts of communicators, or within one source of content, but in different social situations, when targeting different audiences, or operating with different expectations or different information (Krippendorf 2013, p. 55).

Hoskins and Mariano (2004, p. 65) point out that the data analysis guidelines are not simple, as each inquiry is distinguished from others, and the results are dependent on the skills, insights, analytic abilities and the style of the researcher. Therefore, content analysis can provide very differing findings of the same data among different researchers.

3.2 Computer-aided text analysis

Content analysis is often conducted with the help of specific Computer-Assisted Text Analysis (CATA) software. Technically CATA encompasses all forms of analysis that utilize the help of any applicable computer program. The quantitative analysis in this study was conducted with the help of an online software to examine occurrence and frequencies of themes within the data. Occurrence means the

average percentage of the keywords in each theme category appearing in the reports from years 2005 and 2010-2014, and the frequencies tell the absolute number of the themes within the data.

Analysis software is widely available (Eriksson & Kovalainen 2008, p. 106) and can greatly help in dealing with large amounts of data and repetitive coding (Krippendorff 2013, p. 19). Computers are also able to process textual data reliably and extremely quickly. However, computers recognize only character strings, and literate humans can e.g. easily recognize very complex expression that a computer might not. (Krippendorf 2013, 210). Therefore, a dictionary representing all the deductively and inductively derived themes needs to be build (Krippendorff 2013, p. 239). The process of creating the dictionary is presented later in Chapter 4.5.2.

In this study, CATA is conducted as an assisting analysis method to support the qualitative data analysis. Counting the occurrence and frequencies of the themes also increases the transparency of the interpretation of the findings. It should be noted that the amount of examined data varies between companies, because some of them report about their environmental issues and activities much more extensively than others. That is why both the occurrence and frequencies of themes are examined to make the analysis more valid.

4 CONDUCTING THE STUDY

The actual data analysis forms the most concrete part of the whole thesis project, and it dictates what type of results the research yields. To begin with, the next chapters present the source of the companies, Newsweek Green Ranking, followed by introductions of the six selected firms. The later chapters present the processes of sampling, data collection, and both qualitative and quantitative data analyses. Lastly, the reliability and generalizability of the analyses are discussed. The purpose of the whole chapter is to give an extensive view of the logic through which the eventual findings were made.

4.1 Newsweek Green Ranking

There is currently a vast amount of different sustainability rankings available, and according to Goffman (2013), critics claim that there are too many, and that the number must be reduced. The six companies, of which short introductions are provided in the next chapter, are selected from the 2015 Newsweek Green Rankings. The Rankings debuted in 2009, and underwent a makeover in 2014, receiving new analysts, metrics, and methodologies (Greenbiz 2014b). **Table 6** presents the eight specific indicators from which companies' green score is calculated (Newsweek 2015a).

Table 6: Green Score Indicators (Newsweek 2015a)

Key Performance Indicator	Weight (%)
1. Combined Energy Productivity	15
2. Combined Greenhouse Gas (GHG) Productivity	15
3. Combined Water Productivity	15
4. Combined Waste Productivity	15
5. Green Revenue Score	20
6. Green Pay Link	10
7. Sustainability Board Committee	5
8. Audited Environmental Metrics	5
∑	100

As can be seen from the table, the ranking uses eight clearly defined weighted Key Performance Indicators (KPIs), and the methodology is based on clear set of rules, and thus is replicable by a third party (Newsweek 2015b). Furthermore, there are six core principles, which the rankings follow (Newsweek 2015b):

- Transparency: Disclosure of the ranking and the results.
- Objectivity: The use of only companies' quantitative data and performance indicators.
- Public data: The use of only publicly available data points.
- Comparability: The comparison of companies against their industry group peers based on globally disclosed data.
- Engagement: The ranked companies are informed beforehand to ensure all their necessary data will be publicly available.
- Stakeholders: Feedback is requested from an expert advisory panel and other stakeholders throughout the project. (Newsweek 2015b).

The same methodology is used in the assessment of all the companies, which cannot opt out, but they can choose not to respond to data verification or contact details requests (Newsweek 2015b). The Ranking has not avoided criticism, however, as the eight new indicators created an entirely different list of winners and losers (Greenbiz 2014b). Goffman (2013) adds that companies may attempt to present themselves in the measured indexes in more favorable light. Newsweek (2015a) also states itself that the rankings are imperfect. One of the main sources of criticism is that companies can outsource their environmentally harmful operations and by doing that push those impacts out of sight. Additionally, there is a lack of context. An example of that could be the use of water in an area suffering from draught, compared to an area with a large lake. Finally, voluntary data can always lack necessary information, even though non-disclosure carries a penalty. (Newsweek 2015b).

Considering this study, it is not necessary to delve into the depths of that criticism. Although the rankings are criticized, corporate managers seek for their company to be included in these sort of lists (G&A 2013, p.6). Also being recognized by the organizations publishing these rankings, and having favorable third-party opinions for their firm's sustainability efforts is highly sought after in companies of any size, as it can help them to communicate their sustainability and responsibility efforts more efficiently. It can also help the companies to position themselves as more appealing to investors, who today increasingly care about such efforts. (G&A 2013, p. 6). In any case, this study uses the latest Newsweek ranking, and relies on the assumption that the new rankings are valid and truthful, as the new indicators should provide more comprehensive and accurate results and scores than in the earlier years.

4.2 Corporations used in the study

This study examines the corporate reports and Facebook activity from six large publicly traded companies. The aim is to examine how these firms communicate about environmental efforts and issues, and how it links to their green images. As

mentioned, the firms were selected using the 2015 Newsweek Green Rankings (Newsweek 2015a, **Attachment 1**). Three corporate pairs are formed, which are examined separately, and then compared with other pairs. **Table 7** shows the pairs with the corporations, as well as their respective industry, country of origin and Green Score. In this study, the expression "country of origin" is used often when referring to USA and Europe in general, not meaning any particular European country.

Table 7: Corporate pairs used in the study

Pair #	Industry	Corporation name	Country	Green Score
1	ICT	Apple Inc.	USA	74,50%
		Nokia Oyj	Finland	46,50%
2	Oil and gas	Statoil ASA	Norway	61,60%
		Valero Energy Corp.	USA	6,60%
3	Aerospace & defense	The Boeing Company	USA	68,70%
		Airbus Group N.V.	Netherlands	65,90%

The six corporations in the three pairs were chosen to represent industries, which differ in their absolute and relative levels of negative environmental impacts. As can be seen from the companies' Green Scores, both firms in pair one can be expected to pay attention to environmental matters. In pair two, the difference in score is very large, and oil and gas industry is often considered to have one of the largest negative impacts on the environment. Differences in the firms' approaches to environmental issues can be expected to be large and distinct. The aerospace and defense companies in pair three have very similar Green Scores, which would suggest that environmental sustainability should have an equally important role in the companies' business strategies.

The aim of forming the pairs was not just to find American and European companies operating in same industries, but also to consider the firms' scores. Even though there were not that many Nordic companies in the Rankings, the great total number of 500 of them enabled the inclusion of two Nordic enterprises and to form pairs in which the firms have different size of gaps in their scores. The gaps are moderate in pair one, vast in pair two, and practically nonexistent in pair three. Even though the three specific industries were partly determined by the possibilities of finding suitable companies and forming reasonable corporate pairs, the industry sectors were not selected completely randomly. Oil and gas industry was chosen because it has one of the largest negative environmental impacts, and information technology mainly because of the two extremely interesting companies available for examination, Apple and Nokia. Finally, choosing aerospace and defense as the third industry sector was partly due to the possibility of finding out if cultural differences between the USA and Europe can be recognized in green communication.

The companies in pair one focus on consumer products and services, even though Nokia currently has offerings mainly on B2B-markets, as majorly do both corporations in pair two. In pair three, the companies are best known to the general public by their commercial aircrafts. However, both corporations are also one of the biggest players in space and defense industries, manufacturing e.g. satellites, launch systems and military aircraft. Next, each of the companies are shortly introduced.

Pair One: ICT

The first pair constitutes of information and communications technology companies, Apple Inc. and Nokia Oyj. Apple is an American multinational technology company, which was founded by Steven Paul Jobs, Steve Wozniak and Ronald Gerald Wayne in 1976. The company is headquartered in Cupertino, California. Apple designs, manufactures and markets a wide variety of consumer electronics, computer software, and online services. (CNN 2015). Its most

renowned products include iPhone, iPad, and iMac. The company released the first generation iPhone in 2007. This completely new kind of mobile phone was something nobody had never before developed, and took the world by storm. In 2015 Apple was the most valuable company in the world, and the world's largest information technology company by revenue (Forbes 2015a). The enterprise is known for very high level of brand loyalty, and also as the most valuable brand in the world (Interbrand 2015). Between the years 2004 to 2016, Apple has introduced a number of revolutionizing products and services, for example, iPad in addition to iPhone, and during that time the company's market capitalization has more than ten-folded.

Apple's counterpart, Finnish multinational ICT company Nokia Oyj was founded all the way back in 1865 in Tampere, Finland (Nokia 2015). The company's headquarters is located in Espoo, Finland. (Nokia 2015). The early 1990s saw Nokia making a strategic decision to concentrate on telecommunications as their core business. Prior to that, the company had industrial sectors e.g. for footwear and tires, but divested itself of all other divisions than telecommunications. Nokia enjoyed great success during the late 1990s and in the start of the new millennium, being the world leader in mobile phones for over a decade. The introduction of Apple's iPhone in 2007 quickly led to Nokia's downfall (Apple Insider 2013). In 2013, Microsoft Corporation purchased Nokia's mobile phone business, after the companies had initially joined forces two years earlier. Currently, Nokia's main focus is on telecommunications infrastructure, technology development, and licensing (The Verge 2014). However, the company is planning a comeback to the mobile phone and consumer tech arena after the expiration of the non-compete deal with Microsoft in 2016 (Reuters 2015a). Forbes (2015b) currently lists Nokia in communications equipment industry, where it ranks as the third largest company in the world by market value.

Pair two: Oil and gas

The second pair consists of two multinational oil and gas companies, Norwegian Statoil ASA, and American Valero Energy Corporation. Statoil was formed in 1972 (Statoil 2015). The company merged with Norsk Hydro's oil and gas divisions in 2007, thus becoming a significant actor in international oil and gas business. Statoil is headquartered in Stavanger, Norway, and currently operates in 38 countries worldwide. The company's activities include e.g. operating in oil and gas fields internationally, producing wind power, supplying natural gas to the European market, and trading. In addition, Statoil is one of the world's largest exporters of crude oil. The company emphasizes sustainable development, considering the environment in all of its activities, and actively fighting against climate change. (Statoil 2015). Forbes Magazine (Forbes 2015b) ranks Statoil as the world's 13th largest oil and gas company by market value.

Valero Energy Corporation is an American multinational oil and gas company, founded in 1980 (Valero 2016). Company headquarters is located in San Antonio, Texas. Valero is the world's largest independent refiner, meaning that they do not drill for oil. The company also operates as a major wholesale fuel marketer. Main segments are refining and ethanol (Reuters 2015b). The company is one of the largest ethanol producers in the world. Additionally, Forbes has ranked Valero as the world's 26th largest oil and gas company by market value (Forbes 2015b). Valero owns several wholesale outlets under different brand names in multiple countries. Occupational and process safety is considered one of the main values in the company. (Valero 2016).

Pair three: Aerospace & defense

The companies in the third pair operate in aerospace and defense industry. The Boeing Company is an American multinational enterprise (Boeing 2015). Founded in 1916, Boeing is the world's largest aerospace corporation, which designs,

manufactures and sells both commercial and military aircraft and helicopters, as well as rockets and satellites. Headquarters is located at Chicago, Illinois, and the company is organized into two main business units: Boeing Commercial Airplanes and Boeing Defense, Space and Security. Due to the heated rival between Boeing and the French company Airbus, Boeing merged with their major domestic competitor, McDonnell-Douglas, in 1997. (Boeing 2015). The company is working hard in the development of jet biofuels, as the airline industry's greenhouse gas emissions are expected to grow due to increasing air travel in the future (The Seattle Times 2007). Boeing also has developed more fuel-efficient airplanes, such as the 787 Dreamliner, and is constantly updating older models (Boeing 2015).

Airbus Group N.V. is a European multinational aerospace and defense company, founded in 2000 and headquartered in Leiden, Netherlands (Airbus Group 2015). The Group consists of three business divisions: Airbus, the developer of commercial aircraft, Airbus Defence and Space, which manufactures e.g. military aircraft and rockets, and Airbus helicopters, provider of both commercial and military helicopters. Originally the company was named European Aeronautic Defence and Space Company (EADS), and was reorganized as Airbus Group N.V. in 2014. Airbus Group has achieved parity with Boeing in the segment of civil aircrafts, it is the biggest in helicopter sector, the European leader in space business, and the second largest in Europe in the defense segment. The company's core strategy and operations include value of social and environmental responsibility. (Airbus Group 2015). Later in the report, Airbus Group N.V. is referred to simply as Airbus.

4.3 Sampling process

Purposive sampling method was used in the study to select the companies for examination. According to Cooper and Schindler (2014, p. 359), purposive sampling creates a nonprobability sample which fulfill the criteria set for the sample. In purposive sampling, a conceptual hierarchy is followed, and the number of units that need to be considered for the analysis is systematically lowered

(Krippendorf 2013, p. 120). The resulting units are the population of relevant units, and units that do not possess relevant information are excluded from the analysis (Krippendorf 2013, p. 120). Purposive sampling enables the researcher to use his/her own judgment to select cases that will best answer the research questions (Saunders et al. 2009 p. 237).

As stated earlier, Newsweek Green Ranking lists 500 largest publicly traded companies both in the United States and globally on overall environmental performance (Newsweek 2015a). The global ranking is used in this study, as the aim was to form corporate pairs between American and European firms. As Nordic countries are usually considered forerunners in being green, the aim was to include at least one company from any Nordic country. In addition, a baseline for this study was to research how large enterprises communicate about green issues and how the communication affects their green corporate image, and compare the findings both inside the corporate pairs and between them. It can be presumed that more differences can be found in reporting habits and social media activities when the firms do not represent same country of origin and organizational culture. Large corporations are also the most likely to have large environmental impacts, which makes this examination meaningful in the first place. Furthermore, Newsweek's list is based on research from Corporate Knights Capital and Human Impact + Profit (HIP) Investor Inc. (Newsweek 2015a). Thus, the ranking can be considered comprehensive and reliable.

Newsweek also represents the companies with corresponding industry subcategories. That eased forming of the compatible corporate pairs, since the objective was to find companies with their core competence close to each other. Even though Nokia's core competence is currently further from Apple's than it was few years ago prior to selling their mobile phone business to Microsoft, the companies can still be regarded as competitors. Besides, later in 2016 the world will most likely see Nokia re-enter mobile phone business. Overall, the firms' close core competences enable the comparison to stay reasonable. Ultimately, Newsweek's ranking was chosen due to the great number of companies listed. Although forming the pairs was not the simplest of tasks, the great number of firms in the list helped in the process. In the end, three pairs of companies from three different industries

where formed. European companies represent the minority in the Rankings, and especially Nordic companies were scarce. The sampling process of the companies is presented in the flow chart below.

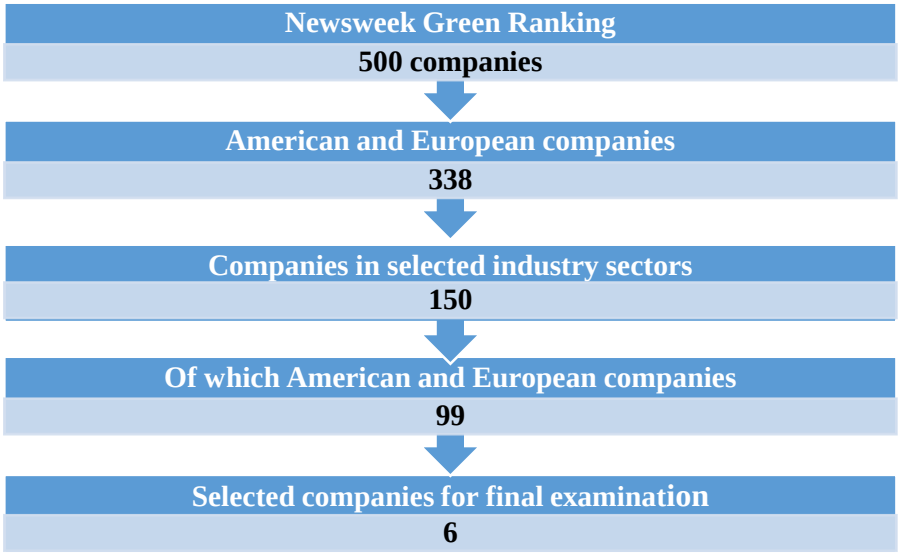

Figure 2: Sampling process of the companies

The total number of companies in the ranking is 500, of which there are 208 American companies, constituting 42 % of the whole ranking, 130 European companies, of which only 16 are Nordic, constituting 26 % and 3 % of the ranking, respectively. The total number of American and European firms is 338, making 68% of total. Selected industry sectors were Information Technology, Energy, and Industrials, in which there are a total number of 150 firms. Out of those, 99 companies are from United States and Europe. The scarce number of Nordic corporations complicated forming the pairs. Although the number of Nordic firms was low, eventually two of them were found to represent suitable industry sectors and were included in the examination. The aim of the sampling was also to form pairs in which the companies and corresponding industry sectors would presumably have differing approaches to environmental initiatives.

Before the final inclusion of the companies, their corporate report archives were reviewed in order to make sure that all the reports from the selected years were

available. In addition, Facebook presences of the firms were reviewed. The examined Facebook entries were selected by scanning them and purposive sampling method was used to select all the appropriate entries for examination. The selection criterion was the inclusion of any of the deductively or inductively derived themes that are presented in the next chapter. The selection method means that the posts do not necessarily need to include any of the keywords itself, but if they indicate any of those themes being addressed in the content of the posts, then those posts are selected for examination.

As mentioned, the important criteria in the company selection was that the corporate pairs can be formed between U.S. and European firms, and to include at least one Nordic company. These requirements were fulfilled and exceeded, as the final selection included to Nordic firms.

4.4 Data collection

The purpose of data collection is to find, identify, and collect data about environmental matters within companies' corporate reports and official Facebook pages. The basis for data collection is the timescale of the study: the years 2005, 2010-2014. Facebook activity is examined until April 2016, as all the latest entries by the firms are easily available so there was no reason to exclude them from the study. Not all the companies had provided their 2015 reports in time to be included in the study, and that is why the last examined reports are from 2014. That way the same number of reports is examined from all six companies.

In annual reports and sustainability reports, only the chapter or chapters containing environmental disclosure were selected for examination. A total number of 36 annual and sustainability reports were obtained, from which the appropriate chapters were then identified and examined. In some cases, if the report did not have clearly defined chapter/s about environmental assessment, the whole report was scanned through to identify the appropriate segments that were then examined.

The reports were downloaded from the companies' official corporate websites, and they were in pdf format.

In order to simplify the data collection from social media, data collection units need to be defined. In Facebook, the unit is each post generated by the company. A post is an update of the channel and can take the form of status updates, links, events, discussions, photos, notes, or videos. If a post was added by Facebook, such as a summarizing post about the firm's recent activity, it was not included. The Facebook entries from all the selected years were scanned, with the selection criteria being the inclusion of environmental themes/keywords, as noted earlier. Only entries in English were selected, and due to time constraints and the availability of only one researcher, only one round of scanning was conducted. That yielded a total number of 137 entries for examination, a relatively low number considering the vast total number of entries posted by the companies. During the thorough reading of these selected entries, a further criterion was utilized: if the content of an entry is not relevant to the study and does not encompass any of the themes, regardless of it being initially selected after the scanning process, the entry was discarded. After all of them were read through, 16 of them were rejected, leaving a total of 121 entries to be fully examined.

As stated earlier, this study concentrates only on disclosures that fall under the environmental theme. Duff (2014) states that establishing which themes of disclosure are captured is important as it allows clear interpretation of the findings, and also ensures the replicability of the study. The environmental theme can be further classified into more specific categories under which the topics of the companies' environmentally related activities fall into. That classification is presented in Chapter 4.5.2.

The complete list of themes can be seen in **Table 8.** The list contains both deductively and inductively derived themes, and their nearest and most often used synonyms in square brackets, which were identified with the help of an online WordNet tool. The list of inductively derived themes was collected while reading and examining the 36 annual and sustainability reports. This yielded a list of themes

that were not among the deductively derived themes. The range of topics covered in the reports is very wide as can be seen from the table.

Table 8: Themes used in the data analysis

Deductively derived themes	Inductively derived themes
Climate change	Climate
Green house (emissions) [GHG]	Carbon (dioxide) [CO2, CO^2]
Zero – Waste	Water (consumption, use,
(E-)Waste management	intake, uptake)
Recycling	Clean (energy)
Carbon credits	Renewable (energy)
Carbon footprint	Hazardous material
Pollution [contamination]	Resource
Reusing [reprocessing)	Eco-efficiency [Environmental
Emissions [discharge]	efficiency, Resource
Green	efficiency]
Sustainability	Fuel efficiency
Conservation [preservation]	Ecosystem
Environment	Ecology
Energy	Nature
Restoration [renovation]	Biodiversity
Recovery projects	Remediation
Stakeholder engagement [participation,	Clean up
involvement]	Safeguarding
Product innovation [invention]	Transparency
Lifecycle analysis	Policy
Environmental management systems	Regulation
Technological development	Legislation
Independent environmental	Independent/external assurance
reviews/audits	Carbon capture and storage
Material balance [mass balance]	[CCS]
	Compost
	Fossil
	Surroundings
	Lean
	Environmental impact
	Biodegradable
	Protection
	Biofuel [Green fuel,
	Sustainable fuel]

It should be noted that the list is by no means exhaustive, but it can be considered comprehensive for the purposes of this study, as it includes themes from both literature and the data itself. The deductive themes were adopted from Tewari's (2012) and Walker's and Wan's (2012) researches. It has to be noted that Tewari examined top 100 companies in ICT industry operating in India, including both multinational and Indian firms. He does point out that the results are not generalizable to other industries or other countries. Walker and Fan researched top hundred Canadian companies in forest, energy, mining, and chemical industries – all visibly polluting industry sectors. They also state that including only Canadian firms in those specific industries is a limitation.

The important point considering this study is that the list is as encompassing as possible, and despite their limitations stated by the authors, the themes from those two articles are used without further discussing those limitations. The particular themes cover two of three industry sectors in which the selected companies in this study operate in: ICT and oil and gas industry, which is a subsector of energy industry. The inductive list can be considered relatively comprehensible, as it covers reports from three different industry sectors and from six different years, during which corporations' environmental reporting has increased. With the inclusion of both deductively inductively derived themes in the analysis, the complete list can be considered sufficient for this study.

4.5 Data analysis

The data analysis consists of two phases, qualitative and quantitative content analyses. The sample is the same in both analyses, and includes all the 36 annual and sustainability reports, as well as the 121 sampled Facebook messages. The purpose of the qualitative analysis is to find out how the companies communicate about their environmental efforts and activities, and the data is also examined to clarify if and how that communication has evolved over time. In the quantitative analysis, the occurrence and frequencies of themes are measured with the help of an online software. Main focus is on the qualitative analysis, as corporate green

image is that much of a subjective concept that it cannot be measured as such merely with numbers. However, the quantitative analysis provides an important, more objective point of view. The following chapters present both two types of analyses.

4.5.1 Qualitative data analysis

As mentioned, extant research on the topic of green communication and green image is moderately scarce, but prior research constitutes a stable theoretical backbone for the study, and data is analyzed with respect to that extant knowledge. Therefore, the study follows an abductive approach, as described by Dubois and Gadde (2002). In abductive research, the systematic character of both theoretical models and the empirical world are captured and taken advantage of (Dubois & Gadde 2002). Consequently, abductive approach seemed the best fit for this study, as it can be seen to combine the best of both worlds. In addition, the amount of inductively derived themes coming up while reading the data strengthened the suitability of abductive approach, as the analysis would lack thoroughness if only the deductively derived themes would have been used.

In the data analysis, a procedure adapted from a method suggested by Krippendorf (2013, p. 188) is used: first, inferences from data are summarized so that they can be easily understood or interpreted, and second, patterns and relations are discovered within the findings. Technically, the data is analyzed to find differences in green communication between the companies, industry sectors and between the U.S. and Europe, and finally to find out if and how the communication has evolved over time. The inclusion of data from 2005 especially helps in identifying how the communication has changed.

Alasuutari (1995) points out that most qualitative studies are in-depth analyses of single phenomena in a specific and situational context. Therefore, generalizations of the findings as such cannot be made, but instead the findings should be related to the existing theoretical views of the phenomena to explore what sort of general conclusions can be made (Alasuutari 1995). This holds true in this study as well,

but the low number of companies and different industry sectors reduce the generalizability of the findings.

The qualitative content analysis was conducted for 36 annual and sustainability reports, and for a total of 121 Facebook entries. As mentioned earlier, Apple and Boeing do not have official Facebook pages. **Table 9** presents the company-specific number of posts concerning environmental issues by the four companies that are present in Facebook. Additionally, year and month of joining the platform, the average number of green posts per year since joining, and the number of "likes" on the companies' corporate profile pages are displayed in the table.

Table 9: Companies in Facebook

Company	**Joined in**	**Likes*** (thousands)	**Green posts*** (total)	**Average green posts per year**
Nokia	March, 2009	13 287	5	<1
Statoil	September, 2012	25	75	21
Valero	August, 2011	28	26	5
Airbus	January, 2014	107	15	7

*in April 2016

The table shows that there are differences in Facebook activity between the companies. The overwhelmingly large number of "likes" on Nokia's page probably stems from time when the Finnish firm was the largest mobile phone manufacturer in the world. Although Nokia currently does not manufacture mobile phones, focusing mostly on products and services for businesses, instead, the number of likes is still over hundredfold compared to the company with the next most "likes", Airbus. When Nokia's non-compete deal with Microsoft expires later in 2016 (Reuters 2015a), and when they start manufacturing their own mobile phones after the hiatus, that number will most likely start growing faster. If Apple were present in Facebook, it would be interesting to see how many likes it would have, but given

their absence, it can only be speculated. In any case, that number would most likely be even larger than Nokia's, considering that Apple was regarded the most valuable brand in the world in 2015 (Interbrand 2015). Considering Statoil and Valero, it is quite interesting that the latter has more likes, although the difference is very small. That may be due to that way over 300 million people live in the U.S. whereas there are only 5 million people in Norway. Finally, the number of likes on Airbus' Facebook page can be considered even surprisingly low, given the fact that Airbus is one of the two largest and dominant players in commercial aviation - the other one being Boeing, of course. The very absence of Boeing in Facebook, however, renders the speculation somewhat meaningless, as there is no valid reference.

The number of posts in the companies' Facebook pages is strikingly low. The table shows Statoil communicates in Facebook clearly the most often, and Valero and Airbus are quite far behind. It can be stated that Statoil, having large negative environmental impact as an oil and gas company, posts about environmental efforts and activities fairly often. That is not the case with Valero, however, as the company has much less posts about anything concerning the environment. The conclusion about Statoil is in line with Gray et al. (2001), who stated that companies operating in "environmentally-sensitive" industries are expected to disclose more about their efforts and activities. However, that does not hold true in Valero's case, and because there are only two oil and gas companies in the study, that observation cannot by any means be flagged as an absolute truth. Lastly, it can be stated that green communication is something that Nokia clearly is not paying much attention to.

4.5.2 Quantitative data analysis

The purpose of quantitative analysis is to provide objectivity and depth to the findings of the qualitative analysis. The 36 corporate reports and the 121 Facebook entries were coded thematically, and the analysis was conducted with the help of an online software. In order to count the occurrence and frequencies of the deductively and inductively derived themes within the data, a dictionary has to be constructed. That was created by following the outlines of a process presented by Short, Broberg,

Cogliser and Brigham (2010), but modified taking the availability of only one researcher into account. In this study, the process is as follows:

1. A comprehensive list of commonly used words is identified,
2. Words are classified in categories,
3. Words and their categories are iteratively refined to ensure that they match the construct to be measured.

In the first phase, the collected theme list is used. Second phase includes the categorization of the themes, and finally, the list is further refined and WordNet tool is used to find the most common synonyms for the themes, so that the completed dictionary covers all the possible variations of the words, and every aspect of the examined phenomena. The aim of constructing and refining the dictionary was to measure the occurrence and frequencies of the themes within the data, so that the conclusions drawn from the results are as reliable as possible.

The dictionary borrows its base from the theme-list presented in Chapter 4.4, and the themes were classified in four following categories, Environmental involvement, Natural environment, Waste/recycling, and Emissions (reduction). The categorization of the themes can be seen in **Table 10**.

Table 10: Theme categories and keywords

Environmental involvement	**Waste and recycling**
Green	Zero - Waste
Sustainability	(E-)waste management
Protection	Recycling
Conservation	Reuse
Restoration	Water
Remediation	Hazardous material
Safeguarding	Compost
Clean up	Lean
Recovery projects	Material balance
Policy	Biodegradable
Regulation	
Legislation	**Emissions (reduction)**
Transparency	Carbon (dioxide)
Assurance	Climate change
Stakeholder engagement	Carbon credits
Product innovation	Green house (emissions)
Technological development	Pollution
Environmental management systems	Emissions
Review/audit	Resource
Environmental impact	Lifecycle analysis
	Eco-efficiency
Natural environment	Fuel-efficiency
Environment	Clean (energy)
Ecosystem	Renewable (energy)
Ecology	Energy
Nature	Fossil
Climate	Biofuel
Biodiversity	Carbon footprint
Surroundings	Carbon capture and storage

The theme “Environmental involvement” includes keywords of environmental actions, and words that reflect e.g. the driving forces behind those actions. In addition, factors that enhance the quality of communication such as “assurance”, and increase competitiveness, for example “technological development”, are listed under the category. “Natural environment”, as the name suggests, includes keywords that are used when referring to the natural environment itself. “Waste and recycling” consists of keywords representing different forms of waste itself and means to cut them. The last theme, “Emissions (reduction)” includes lot of keywords of which many are closely related to different means, procedures and technologies that aim to reduce the emission levels. The last two categories are directly linked to reducing companies’ environmental impact.

The table shows that “Environmental involvement” and “Emissions (reduction)” have the most theme words. It should be noted that many of the themes/keywords represent more than one category, but were listed only in the one that they are most often associated with. An example of such term is “regulation”, and although those are often directly aimed at e.g. reducing emissions and waste, it is listed under environmental values/involvement. All in all, the categories are quite self-explanatory, although the placement of themes in them could cause dispute, but for this study, they can be considered sufficient. Their purpose is to provide approximate information if any of the theme-categories is more common in some of the selected companies’ reporting, in some of the three different industry sectors or in either of the continents.

Krippendorf’s (2013, p. 99-104) categorization of data units, presented earlier in Chapter 3.1, is used in this study to identify the units for examination from the whole sample of 36 annual and sustainability reports and 121 Facebook entries. The categorized data units are presented in **Table 11**.

Table 11: Data analysis units used in the study

Data analysis unit	Examined unit	Example
Sampling unit	Corporate reports, Facebook	Boeing 2010 Environment Report
Context unit	Sections containing environmental efforts/activities/matters in corporate reports, and similar social media entries	Climate change chapter in Statoil's 2013 Sustainability Report
Coding unit	Deductively and inductively derived themes	Biodiversity, Emissions, Recycling
Enumeration unit	Number or themes/keywords within the data	Occurrence or frequency of "Emissions" in a report

Entering the dictionary into the software and running the analysis provided the occurrence and frequencies of both deductively and inductively derived themes within the data. The results are analyzed first as such, then combined with the findings of the qualitative content analysis to determine the conclusive findings of this study, and to answer the research questions. The comprehensive results of the analyses are presented in Chapter 5.

4.6 Reliability and generalizability of the study

Generally, specific criteria are used to test and evaluate the measurement of variables and to ensure the quality of data, research design methods and the overall quality of the results (Adams, Khan & Raeside 2014, p. 245). In this study, reliability and generalizability are briefly assessed. In qualitative study, especially generalization often proves hard. (Adams et al. 2014, p. 245).

Reliability means "the extent to which data collection technique or techniques will yield consistent findings" (Saunders et al 2009, p. 600). It also requires that the observations made or conclusions reached by other researchers are similar and

constant even with varied measuring processes (Saunders et al. 2009, p. 600; Adams et al. 2014, p. 245).

In this study, the process of conducting the analysis is reported in detail, which would enable it to be replicated to a certain level in different circumstances. However, this study relied on the contribution of only one researcher, which reduces the reliability. Krippendorf (2013) noted that content analysis involves human subjective interpretation. Although the analysis procedure used in this study may be followed to the letter, the consistency of findings still suffers from the subjectivity caused by the use of a single researcher. The use of quantitative analysis in this study provided more objective interpretation of the results, and it purpose was also to reduce the overall subjectivity of the study.

Generalizability is defined as the "extend to which the findings of a research study are applicable to other settings (Saunders et al. 2009, p. 592). Adams et al. (2014, p. 253) summarize generalizability as the ability of a research design to produce similar findings which are applicable to other situations, organizations, countries and other people. It is dependent on the quality of the underlying theory used in a research. The whole point of scientific research is to push knowledge forward, and if there is no generalizability, that will not happen. (Adams et al. 2014, p. 252-253).

The generalizability in this study suffers considerably from the low number of examined companies. The findings cannot be generalized, as a larger sample might yield different results. In addition, as Alasuutari (1995) pointed out, most qualitative studies are linked to a specific and situational context, and thus generalizations cannot be made as such. Instead, the findings should be related to the existing theoretical views of the phenomena to explore what sort of general conclusions can be made (Alasuutari 1995). In this study, the findings are linked to their theoretical premises, and quantitative content analysis was conducted to support the observations of the qualitative analysis and to provide a broader, more objective view of the data. However, the small sample still reduces the generalizability of the findings.

5 RESULTS OF THE DATA ANALYSIS

In this study, the companies' green communication in corporate reports and in Facebook is examined in the selected years of 2005 and 2010-2014. Concerning the corporate reports, 2014 is the last year because not all of the companies had published their 2015 ones by the time they were examined. With the latest of them from 2014, the same number of reports are included from all the firms to keep the analysis more equal. In addition, social media entries in Facebook about green activities are analyzed all the way to early April 2016. This chapter presents the results of qualitative and quantitative content analyses of the 36 corporate reports and 121 Facebook messages.

5.1 Results of the qualitative content analysis

Qualitative analysis was conducted to both the corporate reports and Facebook activity. Due to the time constraints of the study, only one social media platform was included. However, a larger number of social media platforms used by the companies are listed in **Table 12** to get an overview of the companies' overall social media presence.

Table 12: Companies' social media presence

Firm	Facebook	Twitter	YouTube	LinkedIn	Google+	Instagram
Apple	-	-	✓	✓	✓	-
Nokia	✓	✓	✓	✓	✓	✓
Statoil	✓	✓	✓	✓	✓	-
Valero	✓	-	✓	✓	✓	-
Boeing	-	✓	✓	✓	-	-
Airbus	✓	✓	✓	✓	✓	✓

As can be seen from the table, all of the companies have presence on social media sites that are excluded from this study. The European firms, Nokia, Statoil and Airbus, all use Facebook, whereas only one American company, Valero, is present there.

The keywords “Facebook”, “Twitter”, “YouTube”, “LinkedIn”, “Google plus”, and “Instagram”, were used when searching the companies’ web pages. If no corporate social media sites were identified, the next step was to conduct a Google search with the corporate name followed by the names of the aforementioned social media platforms. The procedure follows the one used by Tao and Wilson (2015) in their research, but broadened to include all the six different social media sites used in this study. The table seems to indicate that European companies are more active in social media than their American counterparts are. However, that estimation greatly lacks generalizability, as the number of firms is so low. It is useful to be aware of the companies’ overall social media presences, even though only their entries on Facebook are under scope in this study.

Apple is somewhat of an exception concerning all the social media platforms, as it is absent from Facebook and quite a few other sites as well. Boeing is also absent from Facebook, but it has presence on other platforms. Perhaps Apple does not see the need to communicate in social media as a corporation. Apple’s customers are probably the most brand-loyal of any company, and word-of-mouth can be considered the most effective form of marketing, something that Apple’s products and services greatly induce (The Telegraph 2013). Still, the company’s absence from social media means not only missing from a remarkable marketing opportunity, but the company is also turning its back on an important channel for customer feedback and support (Hootsuite 2014). Perhaps that is because Apple works differently than the majority of companies, and by having revolutionized multiple industries with category-defining products, it easy so say that they do most of the things right (Hootsuite 2014). Apple wants to be in control, whether it is over the features of their products, the layout of their stores, or their communication channels. Social media is an uncontrolled and unpredictable environment, which Apple wants to stay away from. On the other hand, the company does not really even need it. (The Telegraph 2013).

In conclusion, four of the six companies have official corporate Facebook pages. Apple and Boeing are not present in the platform. Consequently, green communication in Facebook by the other four companies is analyzed this study.

The following subchapters present the results of qualitative content analysis of the corporate reports, as well as the Facebook entries. The findings are first discussed on firm level, after which comparisons are made between the companies, industry sectors, and countries of origin. Communication in reports is examined from 2010 to 2014, with an overview of publications from 2005, followed by analysis of Facebook activity until April 2016.

5.1.1 Pair one: ICT

The two companies in pair one, Apple and Nokia, have had very different approaches to environmental reporting. Starting with Apple, due to the firm's well known absence from Facebook, the analysis was conducted only on their corporate reports.

Apple

Until 2014, Apple provided reports that assess only their facilities' environmental impact. These limited reports range from only few pages to 16 in length, and follow almost the exact same structure. Even some complete chapters are word-for-word the same. Apple repeatedly states commitment to reducing their environmental footprint, and that the company assesses the complete life cycle of their products in their quest to reduce GHG emissions.

The facilities reports present means through which Apple has been able to improve their environmental efficiency, e.g. by increasing the use of renewable energy in their data centers, corporate offices, and retail stores. In fact, in 2014 94% of corporate operations worldwide are powered by renewable energy, such as solar power. While that sort of numbers might seem convincing, the depth of disclosure

itself in the short facilities reports does not build a robust green image. However, Apple provides their GHG emissions, energy and water use, waste etc. in column charts reaching back few years, but only as "per employee" units. Even though the absolute levels, which have increased year by year are presented within the text, only the more attractive looking per unit levels are presented visually. Apple's business has grown considerably every year, but the company provides hardly any explanation, let alone in detail, about what precisely constitutes the increased emissions, resource use and such.

Apple's approach to environmental reporting changed drastically in 2014, as from that year on the company has provided longer, much more detailed Environmental Responsibility Reports. In addition to previous years' content, the company now communicates a much more structured and holistic approach to the environment. For example, the firm sets priorities for their work on how to reduce their environmental footprint, reports them in detail, and assesses the impacts throughout the whole supply chain. The new reports state that climate change is a real problem and that they have a responsibility to do their part, e.g. by making "not just the best products in the world, but the best products for the world". In addition, the company acknowledges that while they have been making great progress, there is still a lot of work to be done. That can be seen as an honest view of their impact on the environment, which is an important factor in green image building.

Considering the visual presentation of environmental data, the charts still only provide per unit levels of the factors, while the absolute numbers are among the text. However, the company now explains in much greater detail why those levels have repeatedly gone up, and also provides more data, including indirect GHG emissions. The reports always follow the current GRI guidelines, but do not present GRI checklists. One thing that also enhances the conveyed green image is that a third party now assures the environmental data. Independent assurance can greatly enhance the trustworthiness of a report, as stated by Hubbard (2011). That also strengthens the company's green image, but the lack of an environmental index slightly hampers it.

The tone of the reporting is neutral, and because there are no case studies or such, there is no feeling of advertising or praising. It is somewhat peculiar that although there are images in most of the chapters, those are more or less generic pictures, which could belong to almost any company's report. The scarcity of attention-grabbing visuals does not particularly enhance the firm's green image, but on the other hand, neither does it cause any harm.

Considering year 2005, Apple's environmental reporting was practically nonexistent back then. The only report available on their website is annual report on form 10-K. It does mention the environment, but only by repeatedly stating that environmental laws have had no effect on the company's business, but that they might have in the future. The 2005 report does not convey anything about Apple's environmental image, as green communication is so minuscule. In fact, the company might not any intentions to build a green image back then in the first place.

In conclusion, Apple's environmental reporting has taken a big leap forward in the time period of this study, and especially it has greatly increased in 2014. That may result from the company realizing that it nowadays needs to take the importance of green communication into account when building and maintaining their green image – after all, communication is an all-important factor in the process through which a corporate image is perceived by stakeholders. Apple's high Green Score of 74,50% can be associated to their current habit of reporting, although it suggests that the company's environmental disclosure is on even higher level and that green image conveyed by the reports would be stronger.

Nokia

Apple's counterpart, Nokia, has had a very different approach to environmental reporting. Their sustainability reports, later named People & Planet reports, are long and comprehensive throughout the examination period. In fact, their 2012 publication is 172 pages long, with dozens of pages reserved for environmental topics. Nokia repeatedly states their commitment to sustainable development in all their activities and to enabling people of the world to make sustainable choices.

Moreover, there are clear environmental goals set for the future, e.g. to reduce greenhouse gas emissions, with detailed progress so far and methods how the company aims to achieve them. The reports emanate a genuine care for the environment, which would be hard to achieve with shorter and more superficial publications. On the other hand, the reports are so long that reading them might prove to be quite a chore. In some cases, making them a bit more concise would work perhaps even better, although the content is well structured and easy to read. Nevertheless, the length alone indicates that the company takes the environment seriously, although the last examined report, from 2014, is much shorter than the longest one.

The contents of the reports encompass Nokia's environmental efforts and activities very thoroughly, including own dedicated chapters for e.g. climate strategy and green operations and facilities. After their mobile phone business was sold to Microsoft, the emphasis naturally leaned toward their services and to providing ways how people can reduce their own environmental footprint by using their products and services. In fact, Nokia repeatedly highlights that there are over a billion people in the world using what the company offers. Nokia has a sound and holistic environmental approach, and the company assesses the environmental impact of their suppliers as well. All these things together create a perception of a firm that extends their environmental thinking beyond the limits of their corporative borders, and help in building a stronger green image.

As Nokia's reports are so long, there is relatively lot of repeating: e.g. the energy-efficiency of their mobile phone chargers is repeated over and over. The company also uses many case studies, which should be read with criticality. Often case studies are examples of best case scenarios, which partly holds true for Nokia as well, but some of the cases have more neutral tone and do not come across as attempts to promote or praise the company's efforts. The number of case studies has greatly decreased over the years, however, and the overall base of the content in the reports mainly stays the same.

Nokia has presented comprehensive lists of their environmental data in every report during 2010-2014. In addition, there is a GRI index in every report except the latest

one, which is somewhat odd since it is easy to check from the list how thoroughly the company has reported about each of the environmental factors. Leaving that out reduces the report's transparency, which slightly affects the company's green image negatively. However, Nokia's reports are externally assured every year, which communicate truthfulness and in turn increase the reports' transparency, strengthening the green image. As noted, the importance of external assurance is fundamental for credibility (Hubbard 2011).

Nokia was remarkably devoted to environmental reporting already in the reference year of 2005. Their Corporate Responsibility Report includes an 11-page long separate chapter of environmental disclosure, stating that the company implements environmental policy and strategy across the organization. The main principles are basically the same as in the later reports, but there is no environmental data or assurance. Nonetheless, Nokia has clearly considered the environment already in the time when most companies ignored all remarks that they should start taking care of the planet. Nokia's environmental communication has had a strengthening effect in their green image in 2005, and the lack of data or assurance does not have a notable negative effect, as the times were very different than they are now.

Nokia's reports have gotten less visual during the years, and the latest publications do not utilize illustration nearly as much. There are pictures that highlight the diversity of nature – Finnish nature most likely – but they could be used a bit more. Well thought pictures can strengthen the message. However, the lack of illustration does not harm the company's green image in itself, but can make reading the long reports a bit more dull.

Overall, Nokia's sustainability reports present the company as a committed, honest actor with genuine care for the environment. Publishing separate sustainability reports alone gives a picture of a green company, and the reports being so deep and comprehensive make the firm's green image to grow even stronger. Their Facebook activity, however, does not have the same effect. Even though Nokia joined the social media platform already back in 2009, earlier than any other company in this study, the firm has only posted five messages that address anything about the environment. Considering the depth of their sustainability reports, and especially

the effort to help how customers can use their products and services sustainably, their utter silence in Facebook is odd. Majority of people who use their mobile phones and other products and services are much more likely to visit the company's Facebook site than read their corporate reports. In the future, Nokia should definitely utilize Facebook more, because among the majority of customers, it is the most used and most effective channel to communicate greenness. Currently, however, Facebook does not have any effect on the Finnish firm's green image.

Nokia's Green Score of 46,50%, if purely judged by the amount of environmental disclosure, is low. The score also suggests that the company's green image conveyed by the reports would be weaker than it in reality is. The depth of reporting does not have an effect on the score, as it is calculated from other factors, and if those factors would be in order as finely as the company handles its environmental disclosure, the score would unquestionably be higher.

5.1.2 Pair two: Oil and gas

The two oil and gas companies, Statoil and Valero, have a massive gap in their Green Scores. Examining the reports quickly proved that there are also large differences in their environmental disclosure – differences that are much more distinct than between the companies in the two other pairs.

Statoil

The European oil and gas company in the study, Statoil, has published sustainability reports from 2001 – the longest of all the examined firms, with dozens of pages reserved for environmental disclosure every year. The reports have gotten more concise recently, but still pack a large amount of environmental information. Statoil's green score is 61,60%, which is substantially high considering Lyon's and Montgomery's (2013) remark that an oil and gas company creating large positive environmental impacts is practically an impossibility.

Statoil states through the reports that being green and meeting the growing demand for energy while at the same time reducing greenhouse gas (GHG) emissions is part of their overall corporate strategy. In addition, the latest reports state that the company supports policy makers in addressing climate change. Although not on the analyzed reports, it is worth mentioning that Statoil welcomes the 2015 Paris agreement on climate change with open arms. An attitude like that when expressed in a convincing way is certain to get noticed by stakeholders, especially since the Paris conference received so much worldwide media attention.

Statoil works with governments, companies, peer companies and civil society organizations to facilitate the developments of viable global policies and regulatory frameworks to help restrain and stop climate change. Furthermore, the latest report talks about a "Sustainability Strategy" with several specified targets for the next year, 2020, and 2050 including e.g. considerable reduction in carbon dioxide (CO_2) emissions to minimize their environmental footprint. In addition, it provides detailed predictions of possible future scenarios, all including measures how to reduce environmental impacts. That strengthens the perception of a company that aims to protect the environment for the environment itself, rather than just as means to stay profitable in the future, thus improving their green image. However, one of the reasons behind the company's strong focus on being green and environmental reporting might be the relatively strong environmental corporate legislation and, for example, high carbon tax in Norway.

Statoil's publications include column charts of their absolute levels of different GHG emission, energy consumption etc. with comparison levels reaching few years back. Hubbard (2011) appropriately points out that the world needs an "absolute decrease" in resource use, so a company reporting their absolute levels gets a better grade than one that only lists normalized performance, which often might seem more seductive to do. If those levels have gone up for Statoil, the reports also explain why that has happened, but that is done in a stating fashion, which may leave a feeling that it just needs to be mentioned. Although the explanations may not be as thorough as they could, disclosure of environmental data enhances the transparency of the reports, and has a positive effect on the company's green image.

Statoil frequently uses case studies in their reports, which often seem like shrouded advertisements of their capabilities, as in them the tone is closer to advertising. Otherwise, the tone in the reports is more neutral. The case studies need to be read with a more critical mindset, but even then, some of them can come across as tendentious means to fortify their green image. In these cases, the opposite can happen as the image can slightly suffer in a critical reader's eyes.

Statoil's environmental data has been assured every year by a third party. That greatly strengthens the company's green image, as the assurance ensures that the reported data is truthful. Additionally, the reports follow GRI guidelines, but none provides a GRI index, so the depth of reporting the environmental factors cannot be ensured. Siew (2014) noted that by following the guidelines, a company presents itself as more transparent and more disclosing than a firm that reports environmental issues arbitrarily, but without the indexes, the green-image-strengthening effect is slightly diminished.

Already back in 2005, Statoil published a separate sustainability report with plenty of environmental information. The company lists emissions, energy consumption, oil spills etc. and compares them to few earlier years. Although the report does not explain why some of them have increased, it is still rare back then to include the data in the first place. Furthermore, the report states in a dedicated environmental chapter that sustainable development is primarily about how they run their business. Subchapters include e.g. Statoil's climate strategy, and actions to conserve biodiversity. This time there is even a GRI index and an external assurance report. Statoil's commitment to the environment and environmental protection has had a positive impact on their green image already in 2005, and the company has had a dedicated approach to building and maintaining the image ever since.

Statoil's reports are illustrated rather poorly. There are pictures within most of the chapters relating to the topic of the chapter in question, but most of the them are generic and not very distinctive to Statoil. The visual aspect of the reports could be exploited more. The current sparing utilization of photographs does not do any harm to the firm's green image in itself, but neither does it strengthen it.

Examining Statoil's posts about environmental issues in Facebook immediately shows that it is the most active of the selected six companies, with a total of 75 posts after joining in September, 2012. The company also posts in other languages occasionally, for example in Norwegian, but only entries in English were examined. Among the 75 posts, there are quite a lot of repetition, including a large number of posts about their wind farms, for example. However, the consistency in communication between the reports and Facebook is good. Many posts state their aims in the cleaner future, and the Paris agreement is also noted. Additionally, there is information about events that do not make it to the reports, e.g. a worker receiving recognition for individual environmental efforts. That kind of posts may serve the purpose of strengthening the perception that being green is not only embedded in their corporate strategy, but also in their smallest daily operations. Although such posts may appear to be slightly promotional, the overall tone is neutral in Facebook as well

Statoil often aims to utilize the two-way feature of the platform, as it attempts to spark discussion about their environmental activities. Asking the stakeholders to participate and to voice their opinions gives a picture of a more responsible company than one that restricts discussion, which can be seen as if the firm fears what people might say.

All in all, Statoil's reports and activity in Facebook convey that the company is something that is perhaps quite rare among the oil and gas industry – a firm that manages to convey a genuine caring for the environment, and does not brag about their achievements in extravagant fashion. The communication does not come across as greenwashing, although the sections with more promotional tone should be read with criticality in mind.

Statoil's Green Score is significantly high for an oil and gas company, and it does manifest in their environmental reporting. The score can be linked to the level of the company's environmental disclosure and green image notably well. As is the case with companies in highly polluting industries, they often need to pay special attention to their green image, and as stated before, communication has a crucial role in building and maintaining the image. Statoil has taken heed to that. However,

Hubbard (2011) mentions a common way in oil and gas companies' environmental reporting, that the firms often express their actions as something "good" that they do for the environment, never stating the fact that they are one of the worst polluters in the world in the first place. That is also the case with Statoil. Nonetheless, the green image conveyed by the reports is strong and communicates quite an authentic care for the environment, but it should be always kept in mind that Statoil is, after all, an oil and gas company.

Valero

Statoil's American counterpart, Valero, has distinctly the lowest green score of all the companies in this study, 6,60%, leading to a presumption that the company's level of environmental reporting is still in its infancy. In fact, Valero only started providing separate Social Responsibility Reports (later referred to as SCRs) in 2013, but that report was unavailable on the company website at the time of this study, so their 2013 Summary Annual Report was analyzed instead.

Valero's reports during 2010-2014 varied from 12 to 42 pages in length, with the SCR from the last year being the longest. In their summary reports, the chapters including any environmental reporting were only few pages in total per year. In 2010, the company stated that regulations and proposals affecting greenhouse gases will be detrimental to the industry, is bad for jobs, consumers, and the country, and that it still will not have the tiniest impact on global warming or climate change. Also in later reports, the actions to restrain climate change through laws and regulations are seen as a way to hurt them. With different stakeholders that care for the wellbeing of this planet and the increasingly environmentally conscious public, it is surprising that a company that large expressed such a strong opinion about climate change, practically putting themselves in the same boat with climate change deniers. That, if anything, severely harms their green image.

Although the amount and depth of their environmental disclosure has increased in later years, and while the more recent reports do state commitment to the environment's wellbeing, the company's green actions are often reasoned with

increased financial profitability. There is no expressed connection between being green and their corporate strategy. Being more competitive is of utmost importance for businesses, of course, but in Valero's case, the reports give no sense of a company that has true environmental aims behind their actions.

The reports do give examples to reduce their environmental footprint e.g. by a creative waste management program, a biodiesel joint venture, and innovations to reduce emissions in their refineries. These same examples are repeated in the reports every year, and the company does not provide any environmental data, such as energy consumption, emissions or waste. Only statements if they have been able to reduce some of those are reported, and even then, the levels are seldom compared to those of last year, but instead to further back in the past to make them look more impressive. That reduces the transparency of the reports, and also affects their green image in a negative way, hinting that the data that is left out might be too harmful for their image to be reported. In addition, their improvement in reducing oil spills and other environmentally harmful incidents are emphasized, and the fact that they damage the environment in the first place are ignored. That is in line with Hubbard's (2011) statement that oil and gas companies focus on positive reporting, stating what "good" they do, without addressing the negative impacts on the environment. In addition, none of the reports are externally assured, but as there is no actual, detailed environmental data reported, there is not much anything to assure. That also reduces the transparency and credibility of the reports, hurting the company's green image.

In 2005, Valero's environmental communication was very scarce. Their annual report only briefly states that environmental safety is one of their highest priorities, and that the company is on track to reduce GHG emissions. It also mentions large investments in environmental projects, but never goes into details. There is no environmental data, indexes or assurance. The 2005 report does not greatly differ from some of Valero's later reports, even though disclosure has somewhat increased. The scarcity of environmental disclosure in 2005 only has a minimal, practically nonexistent effect on the company's green image.

Valero’s reports utilize photographs, most of them depicting their refineries and other industrial sites or people working in the company. The pictures of personnel or workforce come across as staged, but nonetheless add a colorful touch to the reports. The latest report also utilize green color in the short environmental chapters, linking the content more to the environment itself. The appearance of the reports is good, but the content itself and depth of environmental reporting is lacking behind. Still, Valero’s publications do look greener than those of many other companies’ in this study, both literally and figuratively.

Valero’s green communication in Facebook has increased slightly in previous years, and during the examination period, the company has posted a total of 26 messages concerning the environment. Although there is no green posts so far in 2016, 14 of those are from last year. Their communication has some of the same topics that are also reported in their corporate reports, e.g. many posts about their renewable diesel plant, so consistency in communication between corporate narratives and Facebook is good. However, many of the 26 messages repeat the same content, including multiple posts about the diesel plant and environmental awards that the company has received. The overall tone of communication in Facebook is somewhat praising and advertising, as the company mainly posts about how they or their products do “good”. An example of that is a post from January 2015:

A Cleaner Fuel. A Clearer Choice. Valero's high quality gasoline is TOP TIER certified and has more cleaning power to keep your engine performing at its best!

The two-way feature of Facebook is not utilized, as the messages are not used to spark dialogue with other stakeholders. Instead, the platform is used for one-way announcing by the company. Restricting people to voice their opinion has a negative effect on the company’s green image.

It can be rightly concluded that caring for the environment is not part of Valero’s very being, but it needs to be noted that Valero invests a lot in Research and Development (R&D), which does also yield environmental innovations, such as technological improvements to reduce emissions. However, it remains to be seen

which of the benefits of those innovations the company will emphasize in their reporting – the economical or the ecological. Because concrete results from R&D can take years to achieve, it can be expected that environmental initiatives will be more on the company's radar in the future. That is, after all, the way in which they need to move. Nevertheless, the low score in Newsweek's Green Ranking clearly manifests in Valero's scarce environmental reporting so far, which does not convey a strong green image neither through the reports nor through Facebook. The score also accurately indicates that the company's environmental image is very weak. The actual content of their Facebook messages does not speak about protecting or taking care of the environment itself – very much the same as the overall tone in the corporate reports. The company should have also increased their environmental disclosure much more than they actually did from 2005 to the 2010s in order to build a decent green image. Therefore, the emptiness of message content in Facebook, the lack of transparency and environmental data in reports, and the acclaim given to their not-so-remarkable achievements in both mediums may even deteriorate their green image – although it is not very green to begin with.

5.1.3 Pair three: Aerospace & defense

The companies in pair three, Boeing and Airbus, have very similar Green Scores, 68,70% and 65,90%, respectively. Judging only by the scores, their green communication should be alike as well. However, it quickly turns out that similarities are not as widespread as the scores would suggest.

Boeing

The American company Boeing has provided separate Environment Reports in all years except 2005, although environmental reporting is not statutory in the U.S. The standalone publications range from two dozen to about fifty pages in length, and

have dedicated chapters for e.g. reducing their environmental footprint and designing future aircraft technologies, and are all clear and easy to read.

Boeing gives a lot of emphasis to the incremental improvements of their current commercial airplanes. In addition, fuel-efficiency and other technological improvements in aircraft models currently in-development are discussed every year. Boeing also extends their environmental thinking to their military aircraft. In addition, much attention is paid to reporting about their remediation efforts on their old manufacturing sites. The company cares for the environment not just by designing more eco-efficient products, but also by concretely taking care of it. The reports present Boeing to have a versatile environmental approach, and overall build a proportionately strong green image.

Many of the reports use several examples or short cases of their efforts and highlight e.g. their personnel and their contribution in reducing the company's environmental footprint. These show that being green extends to the individual level in the company, and do give a deeper and more personal view into what the firm does, but as usual, may come across as tendentious means to give special highlight to their capabilities. Consequently, they should be read with a hint of criticism. The overall tone in Boeing's reports is neutral and does not come across as advertising, or unnecessarily highlighting very small efforts. The company does not commit to greenwashing, although the abovementioned parts of the reports should be read with a bit more critical mindset.

The reports lack GRI indexes, but from 2012 forward greenhouse gas emissions are verified by a third party. The firm states that assurance is limited, but it still enhances the transparency of the reports, although the positive effect on the green image is not as large as it could be. Additionally, the lack of GRI checklists leaves unanswered questions, since the depth of reporting and the inclusion of all the issues recommended by GRI cannot be verified right off.

In the reports, there are diagrams of GHG emissions, water consumption, waste etc. and comparisons to few previous years. Additionally, the absolute levels of all those factors are listed in tables. However, the diagrams and charts are not always very straightforward and not the easiest to interpret, but providing the absolute amounts

give a clearer picture about how the company is doing, as the world needs an absolute reduction in emissions, as noted by Hubbard (2011). The comprehensive listings of emission etc. enhances the transparency and trustworthiness of the reports, but the lack of GRI indexes eats away part of the positive effect it has on Boeing's green image. The external assurance on the GHG emissions ultimately has a rather neutral effect on the image – the assurance is there, but it is limited.

Boeing did not have a separate Environment Report in 2005, but included a little of environmental disclosure in their annual report. Emphasis in on the then upcoming new aircraft models and their environmental performance. Boeing also had much more interest in lean manufacturing principles in 2005 than in the 2010s. The report states that the company is subject to federal and state requirement for environmental protection, hinting that back in 2005 being green was dictated more by regulations and less by their own commitment to protecting the planet. All in all, there is very little environmental information, and no data about emissions or any other factors. In addition, the lack of indexes and assurance render the report practically inconsequential considering the company's green image.

Boeing uses a lot of photographs in their reports to support the message of the chapters. The cover pages of their reports usually have a picture depicting some of their newest and most eco-efficient commercial aircraft over snowy mountains or such, or their electric-powered prototype airplanes. The photographs work their part sufficiently well, and slightly enhance the company's green image. The textual content is still more important, of course, but good illustration can increase the weight of the content itself.

As noted before, Boeing does not have a corporate page on Facebook, so the analysis is limited to the corporate reports. The independent, easy to read and comprehensive environmental reports do well in building Boeing's green image, although some sections of the reports do not work as well, e.g. the case studies, and environmental data listings could be clearer in some occasions. Overall, though, the publications present the company as one that has an honest, organization-spanning approach to the environment. Boeing's high Green Score of 68,70% can be seen to extend to their reporting as well, although environmental disclosure has no effect

on it. In addition, the score manifests in the company's strong green image. However, Boeing's reporting still has room for improvement, e.g. by opting for more comprehensive external assurance and including GRI indexes.

Airbus

Boeing's competitor, European aerospace and defense company Airbus has mainly included environmental disclosure in their annual reports, and published separate sustainability reports starting from 2013 – later than Boeing. In 2005, a separate Corporate Responsibility report was provided, which is somewhat odd since later no such independent publications were provided until 2013.

Airbus' reporting about their environmental issues and efforts is very scarce before 2013, with only a few dedicated pages, but improving fuel-efficiency of their aircraft and other similar efforts are assessed within their own chapters. The depth of reporting is very superficial, however, and does not go into details. Airbus covers several other environmental issues very briefly within their annual reports, e.g. sustainable energy, biofuels, and reducing the environmental footprint of their industrial operations, but these can only be regarded as short summaries. Considering Airbus' green image, the brief reporting does not strongly enhance it, but as the company still does disclose their environmental efforts from a wide angle, albeit superficially, neither does it weaken the image.

Airbus does not provide any environmental data in their reports before 2013, only percentage improvements over the last few years on some rare occasions. Neither are there any GRI indexes nor external assurance reports, although a statement is made that company-wide environmental data is externally audited starting from 2010, but does not tell by whom nor include the audit report in the publications at all. The lack of all these eats away the transparency, trustworthiness and credibility of the reports. The effect on the company's green image can be considered two-fold: reporting about environmental matters, despite briefly and superficially, has a positive effect as such, but the lack of data, indexes and assurance report has a negative effect. Furthermore, if the reports are compared to a publications by a

corporation that discloses environmental information in much greater depth, the negative effect is more severe. All in all, the reports before the year 2013 do not communicate Airbus as a particularly green company.

Airbus started to provide separate sustainability reports in 2013, with much more emphasis on environmental information. The company's main focus is on improving their current aircraft and developing eco-efficient future technologies, with the improvements and innovations mostly concerning their commercial airplanes. Airbus' military segment receives only little environmental focus, but the company is developing e.g. new-generation propulsion technologies, which will be implemented to all their aircraft and other products in the future. Airbus also states that it invests significantly in environmental protection, including climate monitoring through satellites.

The new sustainability reports include detailed future targets, which encompass extensive reductions in emissions, energy and water consumption and so on. Additionally, similar targets that have been set in earlier years are reported with progress so far, but all these are revenue-adjusted, and no absolute numbers are provided. Also all their environmental data is disclosed as revenue-adjusted amounts. The lack of absolute levels reduces the overall transparency, and due to that, the inclusion of environmental data does not reach its full green image-strengthening potential.

Independent assurance is included in the newer sustainability reports, as well as detailed GRI indexes. Comparing to earlier years', those two important components and the inclusion of environmental data, although only revenue-adjusted, strengthen the company's green image. Airbus' environmental disclosure in annual and sustainability reports has taken a significant step forward in building and maintaining their green image.

The structure of the more recent reports is more focused than in earlier years, with specific chapters dedicated to environmental disclosure, but some related information is still scattered here and there. Overall, the structure is easy to follow, but the reports, newer or older, do not emanate as genuine care for the environment as they could. Additionally, the appearance of Airbus' reports does not particularly

work as a strengthening factor to the company's green image. There are much less photographs in the more recent Corporate Responsibility reports than the older annual reports, which used a lot more pictures depicting e.g. their newer and more eco-efficient aircraft. Overall, the appearance and the use of photographs only has a minor effect on Airbus' green image, as most of the times the illustration does not display the company's commitment to the environment in a concrete way.

Airbus had a dedicated environmental chapter in their 2005 report, and although it is very short, the company lists emissions and other environmental factors. However, the levels are not compared to any previous years, and the report does not provide any explanation about them. The chapter also states their commitment to e.g. minimizing environmental impacts of their activities, but does not go into details. In addition, Airbus also gives emphasis to improving the eco-efficiency of their current and upcoming aircraft. Overall, and as with most of the companies in this study, the 2005 report does not have a significant effect on the company's green image. Although the report is lacking indexes or assurance, the negative impact on the image is small, as the times and environmental reporting in general were so different back then.

Airbus extends their green communication to Facebook, where the company has an official page after joining the platform in January 2014. The company is, in fact, after Statoil the second most active firm in this study in posting messages concerning the environment. Airbus has published a total of 15 messages with information about their green efforts and activities. In some posts, the company asks individual Facebook users to comment and join the discussion, thus utilizing the two-way feature of the platform. Most of the messages itself include same topics as in their corporate reports, e.g. eco-efficient ways to improve their aircraft. In that part, the consistency between communication in corporate reports and Facebook is reasonably good, but majority of the Facebook posts come across as promotional. There are also a couple of videos about Airbus' electric aircraft, and although it is a respectable achievement to build such a plane in the first place, the videos highlighting it are sheer advertisements. Overall, the firm seems to reserve Facebook for posts that emphasize some of their very specific environmental achievements. Although Airbus is the second most active user, green posts are still

notably scarce and only have a small effect on their green image. Given that Facebook as a medium differs greatly from corporate reports, the promotional tone does not have as dramatic effect on the image as it would have in the reports. In fact, Airbus' Facebook communication has a very little effect whatsoever on their green image.

All in all, Airbus' green communication has increased in most recent years, but some of the environmental information is still scattered here and there. Grouping the chapters together would give a clearer picture about the company's environmental efforts, and would have a slightly larger positive effect on its green image. Airbus' Green Score of 65,9% is high, but it suggests that the company's environmental reporting would be on a higher level and green image conveyed by the reports would be stronger than they in reality are.

5.1.4 Key observations from the qualitative content analysis

The qualitative content analysis provided diverse insights to the environmental reporting habits of the selected companies. The findings differed in various ways. **Table 13** displays the most distinct and relevant observations from the analysis.

Table 13: Main observations from the qualitative analysis

Company (Green Score)	Level of environmental disclosure	Emphasis on	Conveyed green image
Apple (74,50%)	Narrow, currently more extensive	Green facilities, operations and products	Good
Nokia (46,50%)	Very comprehensive and thorough	Green products and services helping customers/consumers to be greener	Very good
Statoil (61,60%)	Very comprehensive and thorough	Stopping climate change e.g. by reducing emissions and collaboration	Very good
Valero (6,60%)	Superficial	Producing green products, e.g. biodiesel	Poor
Boeing (68,70%)	Comprehensive and thorough	Eco-efficient aircraft, remediation of old sites	Very good
Airbus (65,90%)	Narrow, currently more extensive	Eco-efficient aircraft, green future technologies	Average - good

The table shows that there are large differences in how the companies report about their environmental efforts and activities. Nokia and Statoil have shortened their reports in most recent years, while the other firms have increased their environmental reporting. Regardless of that, the Finnish and Norwegian companies still disclose more comprehensively than the other firms do, although Boeing is not far behind. On the other side of the scale, there are Valero's short and superficial reports, which may even harm the company more than do any good, as the amount and depth of disclosure are very low and might suggest even disregard to the environment.

The Green Scores give some guide about the level of disclosure and the conveyed green image, although in Apple's and Airbus' cases the scores would suggest even

deeper level of disclosure. Nokia's score is in turn quite a lot lower than their environmental reporting might suggest. Valero provides perhaps the clearest connection between score and image, as both their environmental reporting and conveyed green image are very poor.

Issues the companies' are most focused on are quite easily recognizable from the reports, and are quite similar between the two firms in each of the three different industry sectors. Boeing and Airbus are the closest to each other as they both invest a lot in improving their current aircraft and developing new more eco-efficient technologies. Apple and Nokia also have similarities, but the latter extends their efforts to concretely helping users of their products and services to reduce their own environmental footprint as well. Statoil and Valero have the largest difference in what the companies put emphasis on, as in Valero's reports that is mostly communicated by repetition only, and nothing is disclosed in detail.

Even if this study only includes six companies, the differences and similarities in their environmental reporting are distinguishable. In addition, the amount of efforts a company puts on improving their greenness is quite well, but not unambiguously, reflected by their Green Scores.

5.2 Results of the quantitative content analysis

The purpose of the quantitative content analysis is to provide more objectivity and insight into the interpretation of the data, by examining occurrences and frequencies of the themes with the help of an online software. Although the software provided an extensive output of keywords, the results were went through manually to verify that the contexts of words were appropriate. For instance, "environment" could also refer to business environment, and in such cases, the words were not counted in.

The occurrences tell the average percentage of the keywords in each theme category appearing in the reports, while the frequencies tell the absolute number of times a keyword belonging to any of the theme categories was mentioned within the data. Occurrence provides information about how diversely and thoroughly the

companies report about the main themes, and frequencies reveal the quantity or volume of reporting of each theme. Chapter 4.5.2 presented the dictionary with the categorized theme words. The following results show if some particular themes receive more attention than others within the corporate reports. Companies' Facebook entries are not included in the quantitative analysis, as the number of messages concerning anything about the environment is too low to enable any meaningful analysis. The number of posts is low in part because Apple and Boeing are not present in Facebook at all.

The following subchapters present the results of the quantitative data analysis, with comparisons of companies, corporate pairs and American and European green communication habits. Years 2010-2014 are compared to year 2005.

5.2.1 Main themes in the corporate reports

The occurrences of main themes within all the examined 36 reports are presented in **Figure 3**, with dots displaying the percentage of how many of the keywords in each theme category appear in the reports in 2005, and lines showing the trend for 2010-2014. There were six reports from 2005, one from each company, and 30 reports from the 2010s.

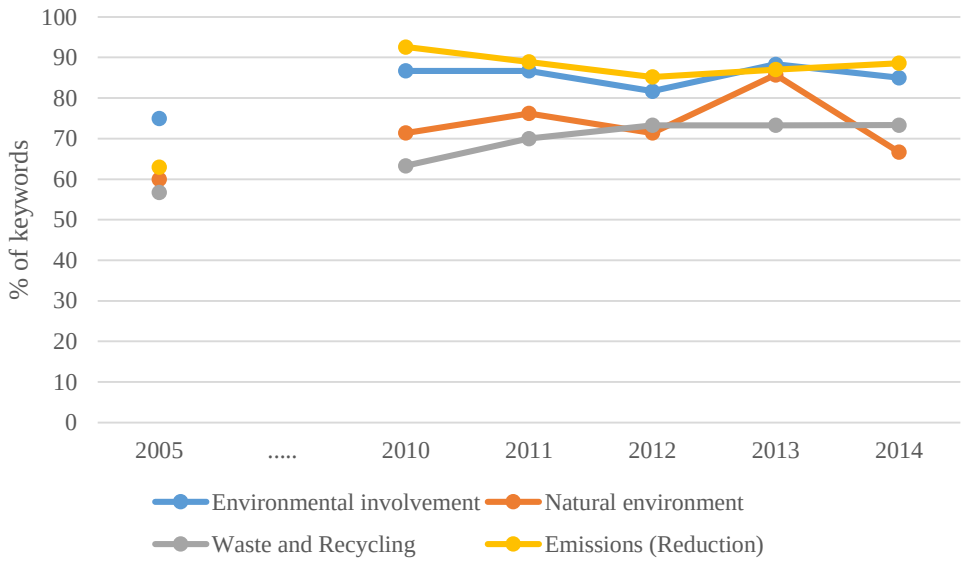

Figure 3: Occurrence of main themes

It is perhaps a bit surprising that the main themes and the dictionary keywords were used that much in 2005. In 2010-2014 the percentage stays mostly the same in all the main themes except “Natural environment”. That decline comes from Nokia and Statoil, two firms that have been the most active in using the particular keywords, publishing more concise reports in the most recent years. Airbus also reduced the use of keywords in that category.

The theme ”Emissions (and reduction)” is the most comprehensively reported in 2010-2014, and increased the most from 2005. Reducing emissions is often considered as the most effective way how companies can reduce their environmental footprint and become greener. “Environmental involvement” is currently a close second, and in 2005 it was clearly the most covered theme. The companies mention “Sustainable development” in various occasions, which makes the “Environmental involvement” theme so common.

Main conclusion from the chart is that environmental disclosure and the use of environmental themes and keywords has increased in the 2010s from the 2005 levels. The decrease in “Natural environment” theme is so visible because this study only examined six companies, so the two most thoroughly disclosing firms shortening their reports affects the trend so distinctly.

The frequencies of the main themes in the 36 reports can be viewed in **Figure 4**. As mentioned, the frequency chart displays how many times the keywords belonging to any of the main theme categories was mentioned within the data.

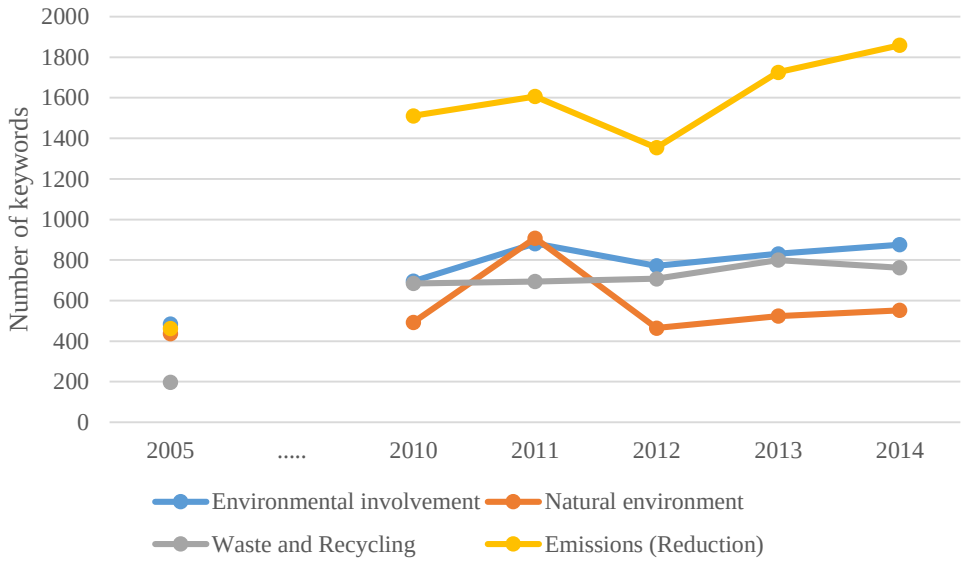

Figure 4: Frequencies of main themes

The figure provides a whole different view to the reports, as it shows that "Emissions (reduction)" is by far the most reported theme in the 2010s, and that the amount has multiplied since 2005. As mentioned, reducing emissions is the most effective way how the companies can battle climate change. However, there is a decline in 2012, as it is in reporting about "Natural environment" theme as well. Most firms disclosed less about both main themes in that particular year, and Nokia, for example, has used less and less emissions keywords in their reports every year after that. After 2012, most of the other firms increased their amount of disclosure about emissions, so the line goes upward. The theme also includes a very high number of different keywords, which partly increases the absolute number of times it is mentioned in the reports. However, because only six companies are examined, a decline or an increase in a trend can result from changes in only one or two companies' reports – the same phenomenon that could be seen in the occurrence figure.

It is perhaps slightly surprising that the amount of reporting about "Waste and recycling" is not particularly high compared to emissions theme, even though cutting waste and recycling are also essential in reducing companies' environmental footprint. In addition, the large public may perceive recycling as having a high importance, as it is one of the most concrete ways by how individual consumers can reduce their own environmental impact. Considering that, the overall quantity of reporting about the theme seems a bit low. The quantity is only slightly higher than in 2005, and that also holds true for all the other themes except emissions.

What is not surprising, on the other hand, is that the themes are reported more in the 2010s than in 2005, but the overwhelming growth of emission keywords makes the other themes look more valueless than they are. All in all, the occurrence and frequency charts provided a different view to the companies' reporting habits, and revealed something that is not so clearly distinguishable by the qualitative analysis – that overall the companies report very comprehensively in the 2010s, and especially the prominence of reducing emissions theme.

5.2.2 Pair one: ICT

In the following chapters, charts displaying the occurrence and frequencies of main themes by the two companies in each corporate pair are presented. This provides an alternative view on the data and enables to objectively examine if there are similarities and differences between the two companies in each pair.

Starting with corporate pair one, **Figure 5** shows the occurrence of themes in Apple's and Nokia's reports. As usual, dots on the left side of the chart present year 2005, and the lines display the trend between 2010 and 2014.

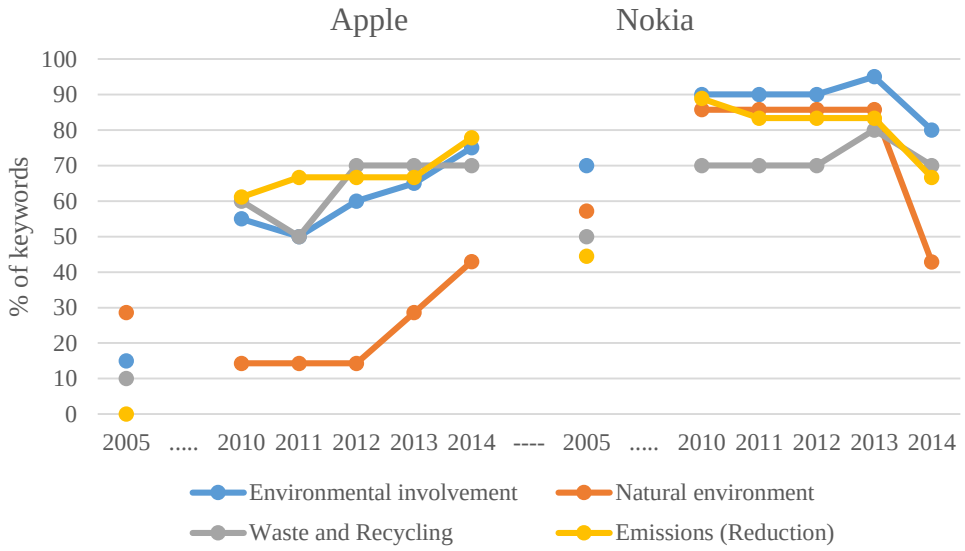

Figure 5: Occurrence of main themes, Pair 1

The differences in the depth of environmental disclosure are obvious, with Apple increasing their reporting and Nokia publishing reports that are more concise in the most recent years. Apple started properly reporting about environmental matters as late as 2014, and their latest report is the most comprehensive one, which can be seen in the chart by the highest percentage of keywords used during that particular year. Nokia had provided a separate report already in 2005, which explains the higher theme percentages back then, but the decline in the thoroughness of reporting in 2014 is quite radical. The much shorter 2014 report clearly shows in the chart, with the use of "Natural environment" theme decreasing the most. However, that particular category has the least different keywords in it, so the lower occurrence in 2014 does not necessarily mean more superficial reporting about that theme. The depth of disclosure about all the other themes decreased as well, though, but not as drastically. Nokia's environmental reporting is still high quality, and the decline does not become apparent in the qualitative analysis of the company's reports nearly as distinctly.

Currently, Apple addresses the themes as comprehensively as Nokia, and "Emissions (reduction)" in even greater depth, although the difference is practically unnoticeable. The chart presents Apple in a slightly more favorable light compared

to Nokia, and hints that their reporting is currently on the same level. However, the absolute amount of themes in the companies' reports, as seen in **Figure 6**, reveals that there are large differences.

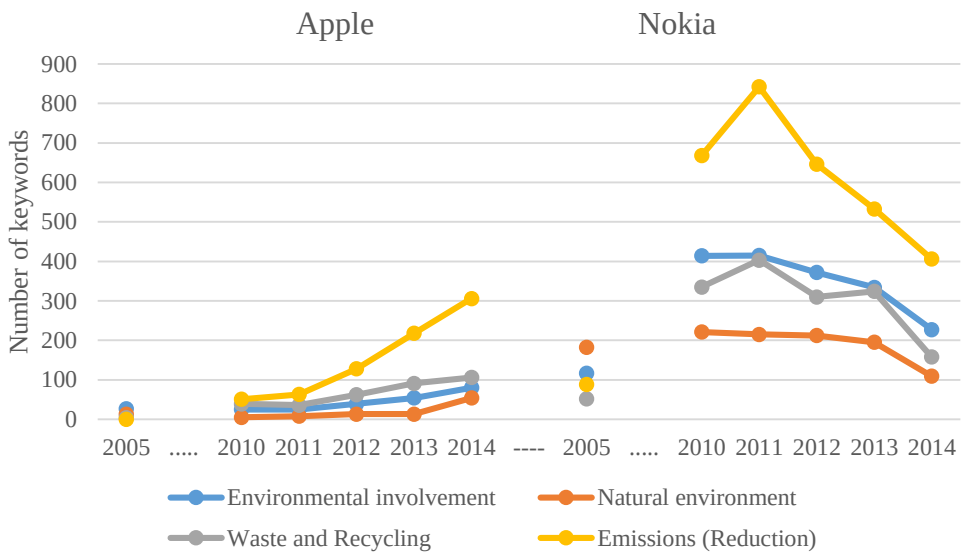

Figure 6: Frequencies of main themes, Pair 1

Examining the frequency of the main themes in the firms' publications reveal enormous differences in the number of times the specific keywords belonging to the theme categories were used. Of course, the difference again is mostly due to Nokia's longer and more comprehensive reports, but now the trend in 2010s is declining even more drastically, starting already in 2011. Especially reporting about reducing emissions has decreased by over half since that year, but it is still the most covered subject. The use of all the other themes has decreased as well, but again, the declining lines presents Nokia's reporting as worse than it in reality is, which is still on a very high level.

Considering Apple, it is not surprising that also the absolute amount of theme use has increased. Reducing emissions is the most important topic for the American company as well. Although the use of all the themes is increasing, Apple's environmental reporting still lags way behind Nokia's. If the trend continues the same, the situation might change in the next few years.

The two figures clearly show in which way the companies' environmental reporting is evolving, but in Nokia's case, the trajectory is in conflict with the actual quantity and quality of the company's reports. Perhaps in the future Nokia will remain on their 2014 levels of environmental disclosure, as it would be irrational to reduce the disclosure much more than that. In the future, it would also be interesting to see how much more Apple will increase their environmental disclosure. All in all, Nokia's reporting is on a very high level, and so is the company's green image, despite the drastically declining trends, but Apple is quickly catching up and may overtake their European counterpart in depth and volume in the coming years.

5.2.3 Pair two: Oil and gas

Moving on to the oil and gas companies, Statoil and Valero. **Figure 7** displays the occurrence of main themes in the companies' reports.

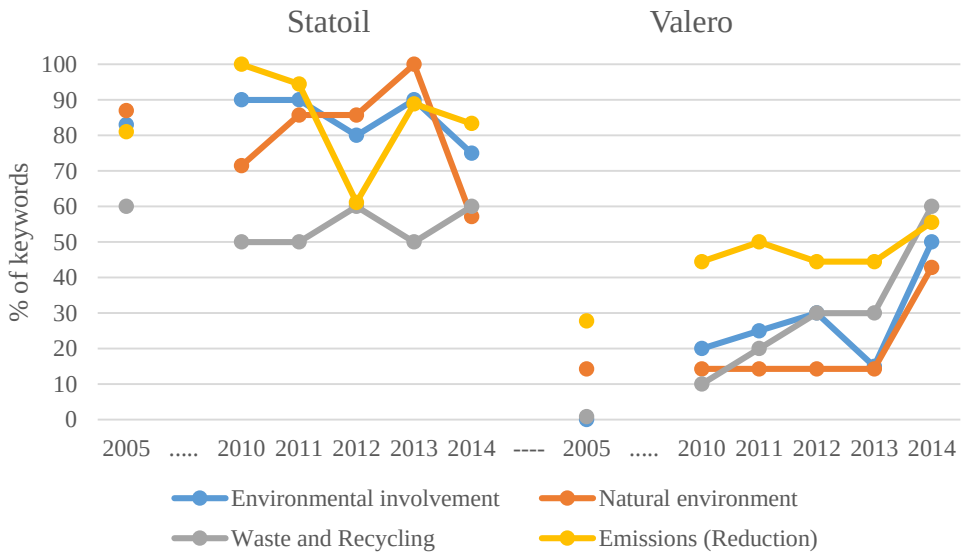

Figure 7: Occurrence of main themes, Pair 2

Examining the figure reveals massive differences in both 2005 and the 2010s. Environmental disclosure by Statoil is comprehensive already in 2005, but very scarce in Valero's publications. For the American company, only 2014 report saw

a significant increase in disclosure, but the overall percentage of environmental themes is still behind Statoil. In any case, biofuels, belonging under "Emissions" category, is the most common topic used by Valero, making the theme of reducing emissions the prevalent category in their reports overall.

Statoil, on the other hand, discloses environmental information much more thoroughly in all their reports. There are two notable declines, "Emissions" theme in 2012 and "Natural environment" theme in 2014. The 2012 report is a bit shorter than in the other years, with less topic-specific chapters than before, which partially explains the decrease. As it was with Nokia, the low number of keywords in "Natural environment" category in 2014 can make the decrease to appear steeper than it in reality is.

It is surprising that disclosure about "Waste and recycling" is quite superficial in Statoil's reports. Valero, on the other hand, has increased their disclosure about the theme. However, it could be expected that oil and gas enterprises would report more comprehensively about their waste and recycling efforts. Reasons behind that may be many, but perhaps the companies try to avoid presenting themselves as enormous waste producers, and therefore keep their disclosure brief. The scarcity of reporting about the theme is also very obvious in volume as well, as can be seen in **Figure 8**.

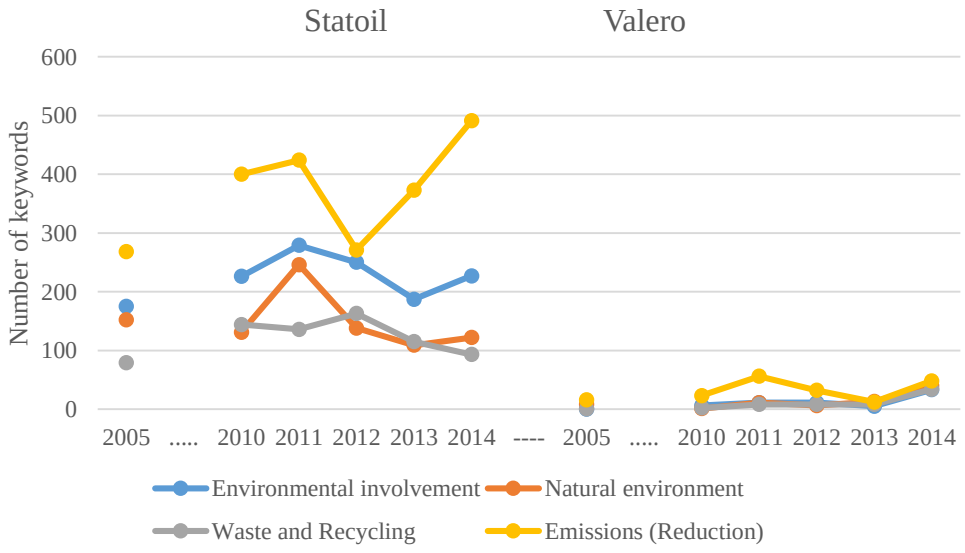

Figure 8: Frequencies of main themes, Pair 2

Analyzing the frequency of themes in the firms' reports reveals that "Emissions (reduction)" is the most prevalent theme. Although the decline in Statoil's reporting about emissions in 2012 is very visible in the frequency chart as well, the dominance of the theme may be partly due to firm mentioning the word "emissions" and "energy" really often, most of the times without necessarily linking them to actually reducing the emissions or to clean, renewable energy. After all, an oil and gas company essentially is an energy company. It is worth noting that disclosure about the theme very rarely admits high levels of emissions and almost never mentions the word "pollution". That might stem from oil and gas companies wanting themselves to be perceived as operators that only do "good" for the environment, and that their negative impacts would not be as large as they in reality are.

The figure shows massive overall difference in the volume of disclosure between the two companies, and that Valero reports very scarcely overall. That is in-line with the findings of the qualitative analysis. Statoil's separate, longer and much more comprehensive reports clearly show in the chart, and Valero's separate report in 2014 makes no substantial difference, and its disclosure is still very modest especially in volume.

Considering the companies green images, Valero's almost nonexistent overall disclosure does not have a large impact on it. In fact, as oil and gas industry is often considered one of the most polluting industries, Valero's short and superficial environmental reporting might lead to perceptions that the state of their green affairs is so poor that they are better left undisclosed. Naturally, such assumptions can severely harm its green image. Statoil does not have a problem of their reports being short, but the quantitative results may strengthen the observation that the company might want to present itself as though their actions harm the environment only a tiny amount, and highlights its efforts that do have an actual positive environmental impact. In some cases, some might deem that as greenwashing. As stated before, Statoil is an oil and gas company and does have a large negative environmental impact, regardless how the firm itself reports about it. In spite of all, the Norwegian company's comprehensive and voluminous reporting has an enhancing effect on their green image, with Valero greatly lacking in every aspect.

5.2.4 Pair three: Aerospace & defense

Quantitative analysis of the third pair, Boeing and Airbus, is presented next. The occurrence of main themes in their reports can be seen in **Figure 9**, showing differences that where observable in the qualitative analysis as well, but still giving a new and valuable viewpoint to the companies' reports.

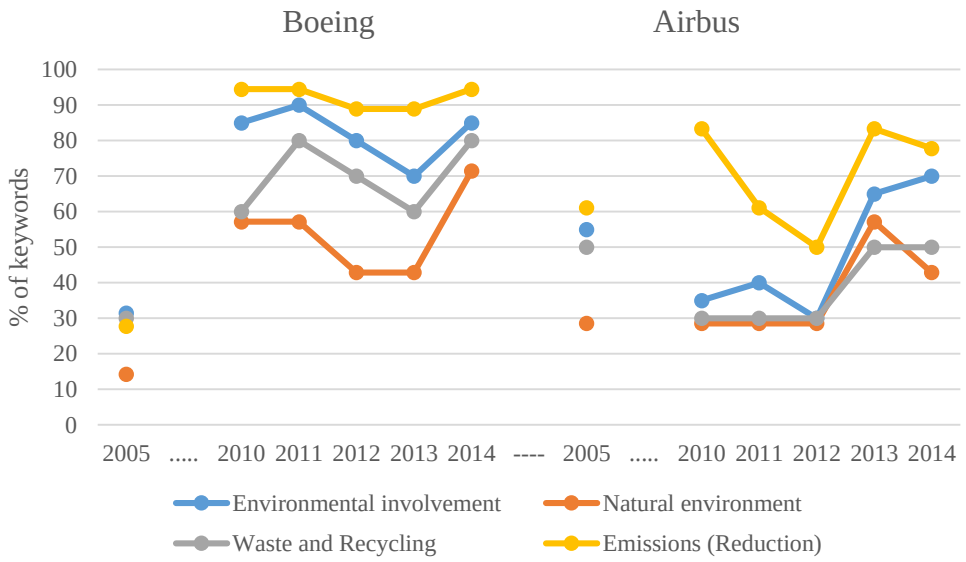

Figure 9: Occurrence of main themes, Pair 3

The chart shows that Boeing is more comprehensive discloser of environmental issues. That is mostly because the company provided separate reports in all years except 2005. Airbus started publishing standalone reports only in 2013, but provided a separate one also in 2005. The big increase in all the four themes in Airbus' report in 2013 results from that, but Boeing is still the company with more comprehensive disclosure.

Emissions and ways to reduce them is the most covered topic in both firms' reports. Boeing is very thorough in that aspect, and currently Airbus is not far behind. In 2010-2014, Boeing has overall been more thorough than their European counterpart, with the use of all the themes currently increasing. In Airbus' case, it

remains to be seen in the future what level the use of themes will settle on. In 2005, Airbus published a separate Corporate Responsibility report, and in that year disclosed environmental information more comprehensively than Boeing. It is quite peculiar to provide an independent publication back then, as after that the company included all the information in their annual reports until 2013.

It is worth noting that because occurrence of a theme can increase by using synonyms, it may sometimes lead to more repetition about the topic without necessarily providing more actual content. In some cases that can affect how high the occurrence percentage is. Nevertheless, the chart supports the findings of the qualitative analysis by showing that Boeing discloses their environmental efforts and activities in greater depth than Airbus, and that holds true for the quantity of disclosure as well, as can be seen in **Figure 10**.

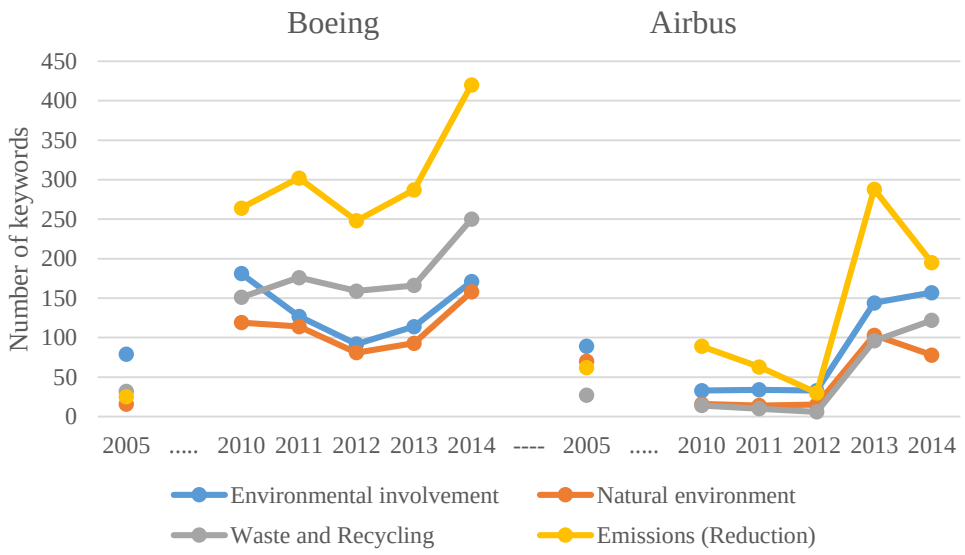

Figure 10: Frequencies of main themes, Pair 3

The frequency chart of Boeing's and Airbus' reporting highlight the focus on reducing emissions even more. Rest of the theme categories are disclosed in quite equal volumes by both of the companies, although "Waste and recycling" stands out a bit in Boeing's reports. That is due to their efforts and collaboration in recycling retired airplanes. Airbus also collaborates in that particular field, but their disclosure about the matter is not as voluminous. The same goes for reporting about

emissions and reducing them. Boeing discloses about their efforts very comprehensively, as **Figure 9** showed, and currently also in great quantities. That is due to the company emphasizing the development of green jet fuels, and increasing the eco-efficiency of their current and in-development aircraft. These specific topics do receive much focus in Airbus' strategy as well, but the company discloses about them in a more straightforward way. Regardless, it is still the most common topic in the European company's reports as well, although there is a decline in 2014.

Considering the effect of reporting on the firms' green images, a conclusion can be made that although aviation accounts for only 2-3% of global CO_2 emissions, but since the public perception of that amount might be higher, it is paramount for the companies to present themselves as active players in reducing the emissions. Of course, the sheer volume of disclosure alone does not make a company's green image stronger, but Boeing's publications do a better job in building and maintaining the image, as the reports assess environmental issues more comprehensively and in greater detail.

5.2.5 Key observations from the quantitative content analysis

The quantitative analysis provided a more scientific view to the data and to how the companies disclose about their environmental efforts and activities. **Table 14** rounds up the most apparent findings from the analysis.

Table 14: Main observations from the quantitative analysis

Company (Green Score)	Depth of reporting (occurrence)	Volume of reporting (frequency)	Most covered theme
Apple (74,50%)	Average, increasing	Low, increasing	Emissions
Nokia (46,50%)	High, decreasing	Very high, decreasing	Emissions
Statoil (61,60%)	High, slightly decreasing	High, increasing	Emissions
Valero (6,60%)	Low, increasing	Very low, slightly increasing	Emissions
Boeing (68,70%)	High, increasing	Average, increasing	Emissions
Airbus (65,90%)	Average, increasing	Low, increasing	Emissions

The table shows that most of the companies are increasing their environmental reporting in both depth and volume. Nokia is an exception, as their reports have recently gotten shorter with notable declines in the use of themes. The corporations that have increased their reporting might see their green images strengthen in the next few years, given that they keep up the trend. Frequency has a larger effect on the companies' green images, as occurrence can be high even with very brief disclosure, but high frequency ensures that there is a lot of actual content.

Considering the companies' Green Scores, they cannot be directly linked to the occurrence and frequency of themes. For example, Apple and Airbus should disclose in greater depth and in higher volume. Valero's score and reporting, on the other hand are linked well– the company's score is very poor, but so is their reporting and green image. Overall, the findings in that matter are similar to those of the qualitative analysis.

The amount of disclosure about "Emissions (reduction)" theme is surprising in its overwhelming amount of use. It is the most common topic in all the companies' reports, although in Valero's case the difference to other themes is very small. The dominance of the theme may be partially explained by that it is the most prevalent

and effective way how companies can battle climate change and reduce their environmental impact.

Although this study only includes six companies, differences and similarities in their reporting are still obvious. Of course, solid generalizations cannot be made because the sample is so low, but the results of the quantitative analysis still provide cues about the companies' reporting habits.

5.3 Comparison of results from qualitative and quantitative analyses

In the following chapters, results from both qualitative and quantitative content analyses are combined and compared between the companies in each corporate pair, between the pairs (industry sectors), and between countries of origin. Charts presenting the occurrence and frequencies of main themes by corporate pairs, theme category and between the U.S. and Europe can be found in **Attachments 2, 3** and **4**, respectively.

5.3.1 Comparison of companies in pair one

The qualitative and quantitative analyses revealed that the companies in pair one, Apple and Nokia, have had a very different approaches to environmental reporting. Currently Apple is increasing disclosure, while Nokia has drastically decreased theirs. The American company only started to provide proper environmental reports in 2014, but the Finnish firm did already in 2005, and while Apple is currently gaining ground quickly with their longer and more thorough reports, Nokia is still far ahead. Next few years will show if the American firm will pass their counterpart in depth and volume.

The emphasis on reporting between the companies is very close to each other. Both focus on making green products. Apple also strongly concentrates on making all their facilities run on renewable energy, while Nokia highlights their efforts in

helping people to make more sustainable choices by using their products and services. Therefore, Nokia's approach is a bit more holistic as it extends more beyond their corporate limits, and the company also lists their environmental data more strictly. Both include external assurance reports, which greatly enhance transparency and their green images, but Apple only started doing so in 2014. On the other hand, in the latest examined report Nokia opted not to include GRI index, which has a slight negative effect on the company's green image. Perhaps that was to keep the report shorter overall, and on the other hand, Apple has never included the index in their publications. The American firm also does not use any case studies in their reports, as opposed to Nokia. Although those can provide deeper insight to some specific efforts by the company, they can often come across as advertising, so leaving them out might be a smart choice.

The use of Facebook differs between the companies, as Apple is not present on the platform at all, and Nokia's environmental communication in Facebook is practically nonexistent. That is somewhat weird given that social media is a quick, cost-efficient and easy way to connect with different stakeholders and a vast number of consumers. Especially the company's ambition to help people make more sustainable choices by using their products and services could greatly benefit from proper utilization of Facebook.

The quantitative analysis also showed differences in the companies' reporting. Nokia discloses more comprehensively and in greater volume, although the decline especially in the frequency of themes seems very harsh. The company is still ahead of Apple in both depth and quantity. The charts also revealed that emissions and ways to reduce them is the most common topic in both firms' reporting. Most of the companies' green efforts in general result in fewer emissions, which is why the theme receives so much coverage.

Considering the companies' Green Scores, it can be concluded that Apple's score is higher than their current level of reporting, and it suggests that the company's reports would convey a stronger green image. Nokia's environmental disclosure and green image are better than what the company's score indicates. Currently,

Nokia's publications emanate a stronger and more genuine care for the environment.

5.3.2 Comparison of companies in pair two

Comparisons of Statoil and Valero are straightforward, as the companies are almost exact opposites of each other in their environmental communication. Statoil's reports are long and comprehensive, while Valero's are very short and superficial, although the firm improved slightly in 2014.

One very distinct difference in the companies' reports can be seen in the attitudes toward governmental actions in battling climate change: Statoil welcomes the efforts, and Valero states that they are engineered to harm the company and the whole industry. Those attitudes have a direct effect on the companies' green images. Statoil emphasizes that they have aims at stopping climate change by e.g. reducing their emissions and through collaboration. Valero's reports focus more on the production of green products, e.g. biodiesel, although the reports are so short that even that does not receive much attention. The same goes to disclosing environmental data, as the American company only occasionally mentions emissions or other factors within text but never properly lists them, whereas Statoil includes absolute levels of the factors in tables. The quantitative analysis showed a great amount of reporting about emissions by Statoil, and the same theme is the most prevalent in Valero's reports as well, but the quantity is still too low to make it clearly stand out.

External assurance has a large impact on the truthfulness of the reports, and Statoil's publications are always externally assured, but lack GRI indexes. Their 2005 report does come with a GRI checklist, so not including them later is somewhat odd. The same year Valero disclosed very little environmental information, and their publications have never had external assurance or GRI indexes. That makes the transparency of their reports poor, which negatively affects the company's green

image. The overall effect on Statoil's environmental image is positive, despite the lack of GRI checklists. However, part of the content in Statoil's reports is case studies, and some of them do come across as means to deliberately present the company in a more positive light. Often that can do more harm than good to the company's green image, but in Valero's case there is no such problem, as they never use such examples. On the other hand, the American company's latest reports utilize green color, which makes them to visually convey stronger environmental image.

Both of the companies are present in Facebook. Statoil is more active, and their messages are rather consistent with the reports, with mostly neutral tone but some of the messages seem more promotional. Valero is not as active in Facebook, but their messages also address the same issues as in their reports, although there is a lot of repetition and the tone is closer to advertising. Statoil utilizes Facebook's two-way feature well, as the company often seeks to stir up conversation between stakeholders.

The quantitative analysis revealed that the difference in both thoroughness and volume of reporting are massive between the two firms. Statoil discloses their environmental information comprehensively and in great quantities, although the trends are currently declining. Valero's publications are very short and superficial, and the separate report in 2014 makes only a minor difference. The companies Green Scores clearly show in their communication, in Valero's case perhaps even better, as their score of 6,60% is very low, and their disclosure very poor. The scores also indicate both of the companies' green images accurately.

Valero needs to improve their reporting in order to stay competitive. So far, their green communication could have often been explained by improved financial profitability that the company may gain by acting green, or by merely complying with environmental laws or regulations. Statoil manages to convey a much more genuine care for the environment, and their communication in the corporate reports has an overall enhancing effect on their green image, although not so much in Facebook. Valero's communication has a negative, but very little effect whatsoever.

5.3.3 Comparison of companies in pair three

The two aerospace and defense companies, Boeing and Airbus, have very similar Green Scores, but there are large differences in their communication. Boeing has provided separate reports in all years except in 2005, whereas Airbus started only in 2013, although the European company oddly published a standalone report in 2005. Boeing's reports are better structured and are easier to read, and Airbus scatters some of the environmental information here and there. The American company also discloses more comprehensively and in greater volume. Both of the aerospace and defense giants emphasize developing and improving their current and upcoming aircraft by e.g. improving fuel-efficiency. Boeing extends their development more to military aircraft as well, and has somewhat more holistic environmental approach than Airbus. The cultural differences are not very obvious in the companies' communication, but one example of that is that Boeing, hailing from the U.S. – where patriotism is highly regarded in some circles – reports more of their military products and also extends their green efforts to cover them more as well.

The few latest reports from both companies include external assurance, but only Airbus provides GRI checklists. Boeing, on the other hand, lists environmental data in absolute levels and in greater detail than the European company, which only includes revenue-adjusted amounts. Although Boeing's listings may be a bit complicated, there is more data available. Overall, the companies have quite a similar effect on their green images considering the listing of environmental data, assurance and GRI checklists. Airbus' reporting is somewhat peculiar, as the company provided data about emissions and such, but later stopped doing that – only to start it again in 2013. However, their 2005 report is slightly better than Boeing's, as the European company disclosed more environmental information that year.

Boeing's reports are more pleasing to the eye, and the company uses more photographs than Airbus, often portraying e.g. one of their newer and more eco-efficient airplanes in-flight. The pictures often link well to textual content of the

reports, and strengthen the image-building effect. Boeing also uses more case studies, and although they give a deeper insight e.g. to what some specific personnel do in the firm, they often come across as purposeful means to highlight the company's abilities. Overall tone of the reports is neutral, as it is in Airbus' publications as well.

Only Airbus is present in Facebook, after joining in the platform in 2014 after reorganization of the company, and posts about same issues that are addressed in their reports. However, the company's environmental messaging in Facebook is quite rare, and thus only has a minor effect on its green image. Boeing could start using Facebook in the future, as it is a quick and easy way to connect with stakeholders and to reap the benefits of the platform considering their green image.

The quantitative analysis showed that Boeing reports environmental information more comprehensively and in more volume, and both companies are increasing their disclosure. The analysis also revealed that emissions is by far the most common topic. The companies may consider it important to present themselves as effective players in reducing GHG emissions from aviation. Boeing also reports notably amounts about waste and recycling, and although Airbus is also active in that matter, the importance of the topic becomes clearer from the American firm's reports. Overall, Boeing's more comprehensive and better structured reports do a better job than Airbus' in building the company's green image. Furthermore, Boeing's high Green Score reflects the quality of environmental disclosure and its green image better than the score of its European competitor.

5.3.4 Comparison between industry sectors

Examining the green communication habits between the industry sectors reveal that differences between the companies in each pair are quite the same in all three industries. **Table 15** shows the essential findings, treating the two firms in each pair as one. Due to the low number of companies, the findings cannot by any means be generalized to apply to whole industry sectors.

Table 15: Main observations between industry sectors

Industry sector	Overall level of disclosure in reports	Overall level of disclosure in Facebook	Most common theme	Essential message
ICT	Good	Nonexistent	Emissions	The importance of eco-efficient products
Oil & gas	Average	Average	Emissions	Presenting themselves as doing "good"
Aerospace & defense	Average	Poor	Emissions	Activity in designing more eco-efficient aircraft

The table shows that overall environmental disclosure, including both comprehensiveness and volume, is not on a very high level. Especially in Facebook it is very poor. The meager utilization of the social media platform is surprising, as it could be easily used to support communication in other media, including corporate reports, and to reach a great number of stakeholders. Only the oil and gas companies' communication in Facebook is on average level, although the message content is somewhat advertising. Overall, the use of the platform is so scarce that it only minimally effects the companies' green images.

In this study, the two ICT companies do the best job in environmental disclosure in their corporate reports, on average, mainly because of Nokia's long and thorough reports. The two other industry sectors are fairly close to one another, but Valero's poor reports decrease the overall level of disclosure of oil and gas industry.

Emissions is by far the most common theme in all the industries. Its importance becomes clear in the reports, and all of the companies except Valero give it great importance in attempts to reduce their environmental footprint. The ICT sector has the smallest environmental impact of the three industries, but Apple and Nokia still see it very important to put a lot of effort to cut their emissions and emphasize their activities in the matter. Also in aerospace and defense industry the importance of reducing emissions becomes clear. In oil and gas, the fact that the companies have

high emissions is commonly ignored, but the theme is still the most covered in that industry as well.

The ICT companies mostly emphasize the importance of manufacturing products with as low environmental impact as possible. The vast amount of people in the world using them daily makes e.g. the tiniest energy-efficiency improvement to have a massive impact in the combined energy consumption of all the particular products. The oil and gas companies, despite Statoil's reports conveying a real caring for the environment, often focus in attempting to present them in good light – as if some activities just happen to have a negative impact on the environment. Often the talk quickly turns to ways how the companies are fixing those situations. Aerospace and defense companies, on the other hand, acknowledge the impact they inflict on the environment. Clear emphasis is on improving the eco-efficiency of their commercial aircraft. The airplanes flying average Joes to vacation represent the front of the companies, so it is justifiable to concentrate on reporting improvements on them the most.

All in all, currently the ICT sector on average conveys the most genuine care for the environment, and is on the highest level of environmental disclosure. That is interesting, as ICT has the lowest environmental impact of the three different industries. However, it needs to be kept in mind that these findings do not apply to the industry sectors in general, as the sample in this study is very small.

5.3.5 Comparison between countries of origin

Analyzing the green communication habits between USA and Europe revealed differences that may better represent the whole population of companies in those countries than do the findings between industry sectors in the previous chapter. However, the sample is so small that any generalizations that are made are still highly uncertain. **Table 16** presents the principal observations.

Table 16: Main observations between USA and Europe

Country	Overall level of disclosure		Legally required	Basic characteristics
	in reports	in Facebook		
USA	Average	Nonexistent	No	More focus on the quintessential message
Europe	Good	Poor	Yes	More complementary information

The qualitative and quantitative content analyses show that the overall level of environmental disclosure is better in Europe than it is in the U.S. However, if the current trend continues, American firms may overtake Europeans within the next few years, although the small sample in this study makes that conclusion ungeneralizable. The legal requirement for environmental disclosure in EU and in Norway manifests in the overall level of reports.

All the firms currently publish separate reports, but the Europeans on average start to provide them earlier than do their counterparts across the pond. The legal requirement in Europe might have an influence on that as well, as standalone reports may better distinguish the particular information from e.g. financial disclosure. In general, publishing independent reports presents a company with a stronger commitment to the environment. In Facebook, the European companies are slightly more active.

Considering the longer and more comprehensive reports provided by the Europeans, and more concise publications by their counterparts in the New World, it could be deduced that companies in the U.S. may want to concentrate more on the actual, quintessential message. European firms provide more overall information in their reports, but also much more complementary content e.g. in the form of case studies. Boeing is the only American enterprise in this study that includes case studies in their reports. Regardless of any complementary information, or perhaps because of it, the European companies' reports on average convey more genuine caring for the environment. In addition, the European firms communicate a stronger green image. Yet these findings cannot be generalized because of such a small sample of companies.

6 CONCLUSIONS

The purpose of this study was to examine how the selected corporations communicate about their green images in annual and sustainability reports and in social media. The data was analyzed to find differences and similarities between the companies, the industry sectors, and the U.S. and Europe. Given that considering the environment is becoming increasingly important for corporations, the significance of proper green communication is also growing. After all, communication is crucial in building and maintaining a strong green image.

Qualitative and quantitative content analyses was conducted to draw inferences from the data. Chapter 1.2. presented three research questions with corresponding research objectives. Based on the findings of the analyses, the research questions are answered below.

Research question 1. How do the companies communicate about their green images?

The analyses revealed that there is no single pattern how the companies communicate their green efforts and activities. The quality of disclosure in the corporate reports ranged from poor to very good. It can be considered that all communication about any environmental issue has an effect on a company's green image, and thus the green images conveyed by the publications also range from poor to very good.

The companies' corporate reports were examined from 2010 to 2014, and also from 2005 for comparison. The analyses clearly showed that the overall environmental disclosure is increasing, and currently all the companies publish separate, independent reports, in which they address their environmental issues. Providing standalone reports immediately improves a firm's green image, as it communicates a stronger commitment to the environment. Publishing a separate report may be the

single most important thing that a company can do regarding communication to enhance their image. In addition, currently the increased disclosure has a more positive effect on the companies green images. In the comparison year of 2005 environmental disclosure was scarce overall, and suggests that being green was far less on the companies' radar than it is in the 2010s. Likewise, the importance of having a strong green image has increased during that time as well.

The quantitative analysis revealed that reporting about emissions and ways to reduce the levels of them is by far the most common theme. In fact, the dominance of that particular theme in the reports is surprising, although cutting emissions is one of the most effective ways by which corporations can reduce their environmental footprint. In addition, large-scale efforts that aim at cutting emissions are often observable to the large public as well, especially when properly communicated. That can enhance stakeholders' perceptions about the firm and thus strengthen its green image.

Considering Facebook, the environmental communication in the media is very poor overall. Only four of the six companies were present in the social media platform during the time of examination, and none of them properly utilized it. Generally the tone of the posts concerning the environment is close to advertising, and in most cases, it has very little effect on the companies' green images. Pomering and Johnson (2009) stated that corporate image advertising is used to create positive attitudes and emotions among stakeholders, but that it does not always bring guaranteed results. Posts with highly advertising tone may have an opposite effect from what a company is aiming for, but in the end, that is always in the eye of the beholder. Naturally, Facebook differs largely from corporate reports, and promotional posts have their time and place. However, the social media platform could also be used to inform stakeholders about the company's environmental efforts in more neutral tone, and in that way let the actual content of the message do the talking.

All in all, the very low use of Facebook is quite surprising, given that it is easy, fast, cost-efficient, and enables the companies to reach a vast number of consumers and other stakeholders. Especially the firms that manufacture products or services used

by the masses would benefit from better utilization of the platform. It cannot be denied that the differences between corporate reports and social media are fundamental, but firms could utilize the latter more to bring attention to shorter-term environmental activities. Yet, the lack of activity in Facebook can only be speculated. Perhaps the companies' managers are afraid of one of social media's features; that anything can go viral in moments. Posting something that stirs up negativity can quickly become very detrimental to the company's image, although by following a properly designed communication strategy those kind of consequences would be very unlikely. Nevertheless, the firms in this study utilize Facebook surprisingly little. If companies invested more in the platform and gave it a real chance in communicating their environmental efforts and activities, they could reach significant benefits.

Research question 2. What are the differences in communication between industry sectors?

The low number of companies limited the examination of differences in communication between the three industry sectors of ICT, oil and gas, and aerospace & defense. However, some differences did emerge, and perhaps the most notable is that the ICT sector discloses most comprehensively and voluminously, and thus has the best overall green image. That is somewhat surprising, as the other two industries have larger negative environmental impacts. Furthermore, it is surprising that oil and gas company Valero's green communication is on such a low level. It could be expected that a firm operating in such a visibly polluting industry would give much more importance to proper environmental disclosure. Prior research has pointed out that firms in controversial industries are more likely to disclose information about the environmental impacts of their activities (Michelon 2011; Kilian & Hennigs 2014). Valero does not fit that description, although oil and gas is the only sector of which both the companies use Facebook. As noted in answering the first research question, however, Facebook is not currently used

enough to have a notable effect on the companies green images, regardless of industry sector.

Differences, although not extremely distinct, also came forth in what the companies in the different industries emphasize the most. In ICT, the importance of green products stood out, and in aerospace & defense the eco-efficiency of commercial airplanes, the products that represent the front of the companies to the large public, was highlighted the most. Giving emphasis to something that is used by the largest number of people has the biggest effect on the aerospace and defense companies' green images. The oil and gas firms represented somewhat of an exception, as the emphasis in their reports was not that clearly on any particular products, manufacturing processes or such, but more in attempting to present themselves in good light. For example, the negative environmental impacts of their activities were almost never mentioned. Instead, the companies concentrated more on highlighting their efforts and activities that aim to turn the negative impacts into positive ones. That perception may be dictated by the fact that the sector is one of the most polluting of all industries, and that ultimately oil and gas companies can never be really green. Lyon and Montgomery (2013) pointed out that for that reason e.g. oil and gas companies may face risks of being labeled for greenwashing. Some might find Statoil's and Valero's reporting habits as greenwashing, but as long as anything that is disclosed can be linked to actual efforts in the real world, the definition of greenwashing is not fulfilled per se.

The most common theme in all the industries was, unsurprisingly, emissions and reducing them. In fact, all six companies reported most about that topic. Industry sector does not have an effect in that observation, although a larger sample might have proved that otherwise. The great amount of disclosure about emissions in the ICT companies' reports was surprising from the same reason as was the overall highest level of disclosure – the industry sector with the least emissions reports it the most. All in all, that particular theme will surely receive much emphasis in the coming years as well, regardless of the industry.

Research question 3. What are the differences in communication between American and European companies?

Comparing the communication based on the companies' home countries, or rather home continents, was a bit simpler than comparison of industry sectors. To begin with, the European companies generally disclose more comprehensively and more in volume than their American counterparts. Although the sample is small, that observation was clear. That is in line with Michelon's (2011) statement that European companies usually disclose the environmental impacts of their business more than firms in America do. Something that very likely has an effect in the level of disclosure are the legal requirements in the EU and Norway, but not in the U.S. Sometimes firms may want to disclose more environmental information purely out of their free will, regardless of whether it is legally required or not. That is a good indicator in distinguishing if being green is part of a company's DNA and whether or not environmental initiatives are part of its overall corporate strategy. On average, the European companies in this study convey a more genuine care for the environment, and include green initiatives more in their activities.

The European corporations in this study started to provide environmental disclosure in independent reports earlier than the American ones. On the other hand, the U.S. firms have increased their reporting in the most recent years, whereas the Europeans have shortened their publications. In the near future, it remains to be seen if American companies publish more comprehensive and longer reports than firms in Europe.

Considering the green images of the companies in both continents, those that come from Europe have stronger images overall. An additional observation emerged that a company's Green Score and the level of its environmental communication do not have a unambiguous connection. Valero's very low score does indicate that the company's environmental disclosure and green image are poor, which they most definitely are, but as seen in this study, some other firms have a higher score than what their communication would suggest, and some the other way around. However, the score's actual effect on the green images was not of particular interest

in this thesis, but instead, how it manifests in the companies' communication and green images.

One significant factor that affects the images is the inclusion of external assurance in the corporate reports, and also the use of case studies. On average, European firms are keener in including assurance, which improves their images, but they also use more case studies, which do provide the reports with more complementary information. The American companies focus more on the actual message itself. In some cases, the more concise reporting may work even better.

All in all, there is room for improvement in the companies' environmental disclosure and how to convey their green images in all the industries and both in the U.S and Europe. The sample used in this study was very small as it included only six companies, so the findings cannot be generalized, but it still provided a valuable outlook to large multinational enterprises' environmental communication habits. The answers to the research questions are summarized in **Table 17**.

Table 17: Summary of the main conclusions of the study

Research question	Conclusion
1. How do the companies communicate about their green images?	• Overall, there is room for improvement in environmental disclosure, although it has improved in the most recent years and thus convey stronger green images. • Overall, poor in 2005. • Emissions the most reported theme. • Facebook utilized very little.
2. What are the differences in communication between industry sectors?	• Surprisingly, the ICT companies' disclosure is on the highest level while highlighting eco-efficient products. • Oil and gas firms ignore the negative environmental impacts that their activities cause. • In aerospace and defense, emphasis on commercial aircrafts' eco-efficiency. • In all sectors, emissions is by far the most common theme.
3. What are the differences in communication between American and European companies?	• The level of environmental disclosure is higher in Europe, but American companies are catching up. • European firms have environmental initiatives embedded deeper in their overall corporate strategy, and have on average, stronger green images.

If one major conclusion has to be made, it would be that even this late in the 2010s, when climate change and being green in general are more on the radar than ever before, corporations still have a lot to improve in their environmental communication. In addition, one more observation emerges that being included in

sustainability ratings, Newsweek's Green Ranking in particular, does not necessarily mean that a company's environmental disclosure is on an especially high level – or that it has a strong green image.

6.1 Managerial implications

The findings of this study can be refined to develop measures how corporations can improve their environmental communication, and when executed well, reach benefits that build and maintain a stronger green image. These measures mainly apply to large companies, but can be modified to suit smaller firms as well.

First, companies need to embed environmental initiatives deep in their corporate strategy. Although increased financial profitability is always desirable, today it is not enough as the only argument for green actions. For companies like Nokia, environmental stewardship has been an essential way of conducting their business for a long time, but for some, making them part of their corporate culture might prove to be a much harder task. It will not happen in a heartbeat, but when it does, the company starts to convey a more genuine greenness, which is important in a world with critical stakeholders and all-seeing public. That then leads to a more holistic environmental approach, higher quality environmental disclosure, and a stronger green image.

Second, the importance of proper communication cannot be underestimated. The world needs to know what a company is doing for the environment. After all, communication is the link that creates perceptions of a company in stakeholders' minds, and from that, they create the company's green image. The communication does not need to be excessive in volume, although very short corporate reports can evoke negative attention. Instead, reports that are reasonable in length and assess the company's environmental issues from many angles work well. It is also important to publish a separate report, as it immediately makes the company to be perceived greener. If a firm operates in a highly polluting industry, it would be advised to admit that their activities cause negative environmental impacts – it is

futile to deny that, and admitting it would make the company's environmental approach more honest. Lastly, there is no need to exaggerate small actions that are a drop in the ocean. Instead, concentrating on the bigger picture is what counts.

Finally, companies should utilize Facebook and social media in general more in their green communication. Perhaps the best way to use them is to communicate about products, activities etc. that are closely linked to the large public – after all, the majority of social media users are average Joes. Firms should also take advantage of the two-way feature of social media, as it is much more beneficial to spark conversation than to restrain it. As was seen in this study, the posts in Facebook are often very promotional. Excessive advertising should be avoided, but if a company is an active social media user with regular green posts, a slightly more promotional message here and there would not hurt. After all, activity in green communication is something that generates environmental associations.

These are only a few steps how companies can improve their environmental communication. With a little adjustment and detailing, it is possible for a large variety of firms in many different industries to adjust the steps to suit exactly them. In conclusion, green corporate culture with proper communication leads to stronger and more positive environmental perceptions and a better green image.

6.2 Suggestions for future research

The connection between corporate communication and green image has received little academic interest, and the topic is not widely researched. Considering the significance of a strong corporate image, and the increasing importance of a strong green image to the overall success of a company, that is somewhat surprising. Climate chance and being green will certainly receive increasing media attention in the future, which makes environmental initiatives to have even greater significance especially to large multinational enterprises. Therefore, this topic can be expected to receive more academic attention in the coming years.

The sample in this study was very small, so even a similar research with much more companies could be conducted. That would make the findings especially more generalizable. In addition, researches with focus on firms from a single industry sector, country or continent would provide deeper insights into companies' green communication. However, limiting examination to e.g. only one industry sector would prevent comparisons to other industries. That may make the research slightly less significant in an academic sense, but considering managerial implications, the best procedures from the studies could be replicated regardless of any missing comparisons. In addition, companies' green communication in other social media platforms provides plenty of avenues for future research. A larger sample in this study may have proved that companies' do utilize Facebook better overall. Thus, a completely new research examining the green communication in Facebook with a much greater number of firms would be worthwhile.

Considering the companies' green images, future researchers could immerse themselves in examining more precise methods how to convey the strongest possible green image through both corporate reports and social media. Alternatively, they could examine how firms in some specific industry sector can utilize the many different social media platforms in the best way possible. Needless to say, this study only scratched the surface, and the academic and corporate worlds offer a tremendous amount of paths to deepen one's knowledge in.

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ATTACHMENTS

Attachment 1. Top Green Companies in the World 2015 (Newsweek 2015a)

Rank	Newsweek Green Score	Company	Country	GICS Sector
1	89.20%	Biogen Inc.	United States	Health Care
2	85.10%	SHIRE PLC	Ireland	Health Care
3	84.20%	Allergan, Inc.	United States	Health Care
4	84.10%	Reckitt Benckiser Group PLC	United Kingdom	Consumer Staples
5	82.60%	Adobe Systems Incorporated	United States	Information Technology
6	81.60%	Swisscom AG	Switzerland	Telecommunication Services
7	81.30%	Unilever PLC	United Kingdom	Consumer Staples
8	81.30%	Broadcom Corporation	United States	Information Technology
9	80.40%	Roche Holding AG	Switzerland	Health Care
10	80.40%	BT Group PLC	United Kingdom	Telecommunication Services
11	79.00%	Atlas Copco Aktiebolag	Sweden	Industrials
12	77.80%	Ecolab Inc.	United States	Materials
13	76.90%	Siemens Aktiengesellschaft	Germany	Industrials
14	76.60%	Compass Group PLC	United Kingdom	Consumer Discretionary
15	75.40%	Novo Nordisk A/S	Denmark	Health Care
16	74.90%	Aflac Incorporated	United States	Financials
17	74.70%	UnitedHealth Group Incorporated	United States	Health Care
18	**74.50%**	**Apple Inc.**	**United States**	**Information Technology**
19	74.50%	MetLife, Inc.	United States	Financials
20	74.20%	DIRECTV	United States	Consumer Discretionary
21	74.00%	NTT DOCOMO, Inc.	Japan	Telecommunication Services
22	73.50%	CVS Health Corporation	United States	Consumer Staples
23	73.20%	Johnson & Johnson	United States	Health Care
24	72.90%	Telefonica, S.A.	Spain	Telecommunication Services
25	72.80%	Schneider Electric SE	France	Industrials
26	72.20%	Bayerische Motoren Werke Aktiengesellschaft	Germany	Consumer Discretionary
27	72.10%	ING Groep N.V.	Netherlands	Financials
28	71.40%	Commonwealth Bank of Australia	Australia	Financials
29	71.40%	National Grid PLC	United Kingdom	Utilities
30	70.50%	AstraZeneca PLC	United Kingdom	Health Care
31	70.30%	Danske Bank A/S	Denmark	Financials
32	70.10%	Prudential Public Limited Company	United Kingdom	Financials
33	69.90%	Australia and New Zealand Banking Group Limited	Australia	Financials
34	69.60%	Amgen Inc.	United States	Health Care
35	69.60%	Toyota Motor Corporation	Japan	Consumer Discretionary
36	69.40%	Electricite de France Societe anonyme	France	Utilities
37	69.20%	Koninklijke Philips N.V.	Netherlands	Industrials
38	**68.70%**	**The Boeing Company**	**United States**	**Industrials**
39	68.50%	Accenture plc	Ireland	Information Technology
40	68.50%	Swiss Re AG	Switzerland	Financials
41	68.00%	Vale S.A.	Brazil	Materials
42	67.90%	CaixaBank, S.A.	Spain	Financials
43	67.90%	The Toronto-Dominion Bank	Canada	Financials
44	67.90%	Assicurazioni Generali S.p.A.	Italy	Financials

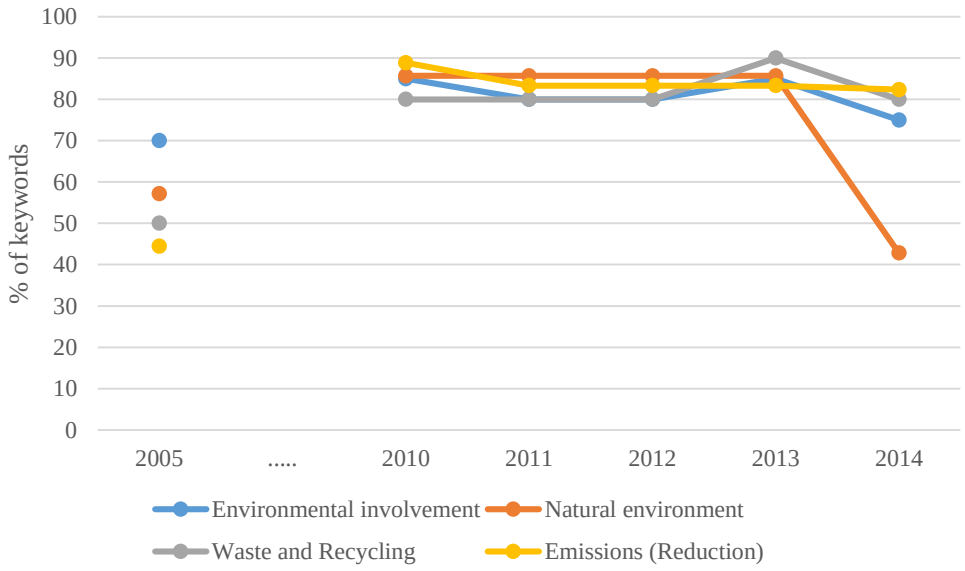
45	67.70%	Westpac Banking Corporation	Australia	Financials
46	67.50%	QUALCOMM Incorporated	United States	Information Technology
47	67.40%	Woolworths Limited	Australia	Consumer Staples
48	67.20%	Skandinaviska Enskilda Banken AB	Sweden	Financials
49	67.20%	Diageo plc	United Kingdom	Consumer Staples
50	67.20%	Hang Seng Bank, Limited	Hong Kong, SAR	Financials
51	66.40%	The Goldman Sachs Group, Inc.	United States	Financials
52	66.30%	Lloyds Banking Group plc	United Kingdom	Financials
53	65.90%	BCE Inc.	Canada	Telecommunication Services
54	65.90%	Actavis plc	United States	Health Care
55	**65.90%**	**Airbus Group N.V.**	**France**	**Industrials**
56	65.70%	The Coca-Cola Company	United States	Consumer Staples
57	65.60%	Vivendi S.A.	France	Consumer Discretionary
58	65.40%	Syngenta AG	Switzerland	Materials
59	64.90%	The Estee Lauder Companies Inc.	United States	Consumer Staples
60	64.90%	L'Oreal SA	France	Consumer Staples
61	64.80%	Credit Agricole S.A.	France	Financials
62	64.50%	Henkel AG & Co. KGaA	Germany	Consumer Staples
63	64.40%	Telenor ASA	Norway	Telecommunication Services
64	64.10%	Nippon Telegraph and Telephone Corporation	Japan	Telecommunication Services
65	63.90%	National Australia Bank Limited	Australia	Financials
66	63.80%	Telstra Corporation Limited	Australia	Telecommunication Services
67	63.80%	Unibail-Rodamco SE	France	Financials
68	63.70%	Hewlett-Packard Company	United States	Information Technology
69	63.60%	PG&E Corporation	United States	Utilities
70	63.40%	Christian Dior SE	France	Consumer Discretionary
71	63.40%	Cisco Systems, Inc.	United States	Information Technology
72	63.30%	Canadian Pacific Railway Limited	Canada	Industrials
73	63.20%	Daimler AG.	Germany	Consumer Discretionary
74	63.20%	AXA SA	France	Financials
75	62.70%	Compagnie Financiere Richemont SA	Switzerland	Consumer Discretionary
76	62.70%	Swedbank AB	Sweden	Financials
77	62.60%	General Mills, Inc.	United States	Consumer Staples
78	62.50%	Industria de Diseno Textil, S.A.	Spain	Consumer Discretionary
79	62.50%	Colgate-Palmolive Company	United States	Consumer Staples
80	62.10%	Medtronic Public Limited Company	United States	Health Care
81	62.10%	Singapore Telecommunications Limited	Singapore	Telecommunication Services
82	62.10%	Orange SA	France	Telecommunication Services
83	62.00%	Kering	France	Consumer Discretionary
84	61.90%	Monsanto Company	United States	Materials
85	61.80%	Danone SA	France	Consumer Staples
86	61.80%	Pernod Ricard S.A.	France	Consumer Staples
87	61.70%	Iberdrola, S.A.	Spain	Utilities
88	61.60%	H & M Hennes & Mauritz AB	Sweden	Consumer Discretionary
89	61.60%	NIKE, Inc.	United States	Consumer Discretionary
90	**61.60%**	**Statoil ASA**	**Norway**	**Energy**
91	61.50%	Novartis AG	Switzerland	Health Care
92	61.20%	Central Japan Railway Company	Japan	Industrials
93	61.20%	Cognizant Technology Solutions Corporation	United States	Information Technology
94	61.20%	Lockheed Martin Corporation	United States	Industrials
95	60.90%	Sampo Oyj	Finland	Financials
96	60.90%	ASML Holding N.V.	Netherlands	Information Technology
97	60.80%	TeliaSonera Aktiebolag	Sweden	Telecommunication Services
98	60.80%	Vodafone Group Public Limited Company	United Kingdom	Telecommunication Services
99	60.20%	Sands China Ltd.	Macau	Consumer Discretionary
100	60.20%	Banco do Brasil S.A.	Brazil	Financials

200	50.30%	Praxair, Inc.	United States	Materials
201	50.20%	China Pacific Insurance (Group) Co.,Ltd.	China	Financials
202	50.20%	Chevron Corporation	United States	Energy
203	50.20%	Deutsche Bank Aktiengesellschaft	Germany	Financials
204	50.10%	Vinci	France	Industrials
205	49.90%	Morgan Stanley	United States	Financials
206	49.70%	International Business Machines Corporation	United States	Information Technology
207	49.70%	Sempra Energy	United States	Utilities
208	49.60%	The Sherwin-Williams Company	United States	Materials
209	49.60%	The Dow Chemical Company	United States	Materials
210	49.60%	Zurich Financial Services AG	Switzerland	Financials
211	49.60%	Illinois Tool Works Inc.	United States	Industrials
212	49.40%	PepsiCo, Inc.	United States	Consumer Staples
213	49.40%	Canadian Imperial Bank of Commerce	Canada	Financials
214	49.30%	Canon Inc.	Japan	Information Technology
215	49.30%	Eli Lilly and Company	United States	Health Care
216	49.30%	AUDI Aktiengesellschaft	Germany	Consumer Discretionary
217	48.90%	Continental Aktiengesellschaft	Germany	Consumer Discretionary
218	48.80%	Coviden Public Limited Company	Ireland	Health Care
219	48.70%	Starbucks Corporation	United States	Consumer Discretionary
220	48.70%	Rio Tinto PLC	United Kingdom	Materials
221	48.50%	Shin-Etsu Chemical Co., Ltd.	Japan	Materials
222	48.50%	Tata Consultancy Services Limited	India	Information Technology
223	48.50%	Canadian National Railway Company	Canada	Industrials
224	48.00%	The Bank of Nova Scotia	Canada	Financials
225	47.80%	TE Connectivity Ltd.	Switzerland	Information Technology
226	47.60%	Glencore PLC	Switzerland	Materials
227	47.40%	Twenty-First Century Fox, Inc.	United States	Consumer Discretionary
228	47.20%	Standard Chartered PLC	United Kingdom	Financials
229	47.20%	SK hynix Inc.	South Korea	Information Technology
230	47.10%	Altria Group, Inc.	United States	Consumer Staples
231	47.10%	GDF Suez SA	France	Utilities
232	46.70%	Target Corporation	United States	Consumer Discretionary
233	46.60%	Heineken N.V.	Netherlands	Consumer Staples
234	46.60%	Fuji Heavy Industries Ltd.	Japan	Consumer Discretionary
235	46.60%	Bridgestone Corporation	Japan	Consumer Discretionary
236	46.60%	A.P. Meoller - Maersk A/S	Denmark	Industrials
237	46.50%	Anglo American plc	United Kingdom	Materials
238	**46.50%**	**Nokia Oyj**	**Finland**	**Information Technology**
239	46.30%	Petroleo Brasileiro S.A. - Petrobras	Brazil	Energy
240	46.30%	The Royal Bank of Scotland Group Public Limited Company	United Kingdom	Financials
241	46.20%	Samsung Electronics Co., Ltd.	South Korea	Information Technology
242	46.10%	Eni SpA	Italy	Energy
243	46.00%	ENEL - SPA	Italy	Utilities
244	45.80%	Canadian Natural Resources Limited	Canada	Energy
245	45.40%	Tokio Marine Holdings, Inc.	Japan	Financials
246	45.30%	ConocoPhillips	United States	Energy
247	45.20%	Baxter International Inc.	United States	Health Care
248	45.20%	Linde Aktiengesellschaft	Germany	Materials
249	45.10%	Taiwan Semiconductor Manufacturing Company, Ltd.	Taiwan	Information Technology
250	44.80%	Barclays PLC	United Kingdom	Financials

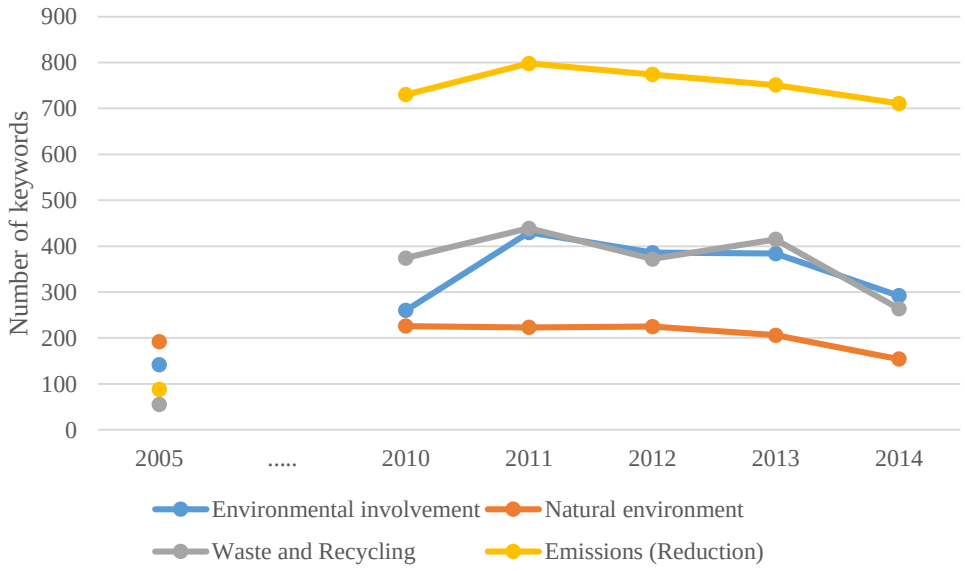
450	15.00%	United Overseas Bank Limited	Singapore	Financials
451	15.00%	Bank of China Limited	China	Financials
452	15.00%	GF Securities Co., Ltd.	China	Financials
453	15.00%	Haitong Securities Co.,Ltd.	China	Financials
454	14.50%	Sun Hung Kai Properties Limited	Hong Kong, SAR	Financials
455	14.30%	CITIC Securities Co Ltd	China	Financials
456	14.30%	Jardine Strategic Holdings Limited	Hong Kong, SAR	Industrials
457	14.10%	China Shipbuilding Industry Company Limited	China	Industrials
458	14.00%	Equity Residential	United States	Financials
459	13.60%	Danaher Corporation	United States	Industrials
460	13.00%	Hon Hai Precision Industry Co., Ltd.	Taiwan	Information Technology
461	13.00%	The Priceline Group Inc.	United States	Consumer Discretionary
462	13.00%	Precision Castparts Corp.	United States	Industrials
463	13.00%	Keyence Corporation	Japan	Information Technology
464	12.70%	Hutchison Whampoa Limited	Hong Kong, SAR	Industrials
465	12.50%	Oil and Natural Gas Corporation Limited	India	Energy
466	12.00%	Berkshire Hathaway Inc.	United States	Financials
467	12.00%	The Swatch Group AG	Switzerland	Consumer Discretionary
468	12.00%	National Oilwell Varco, Inc.	United States	Energy
469	12.00%	Amazon.com, Inc.	United States	Consumer Discretionary
470	12.00%	Luxottica Group S.p.A.	Italy	Consumer Discretionary
471	12.00%	Alibaba Group Holding Limited	China	Information Technology
472	12.00%	JD.com, Inc.	China	Consumer Discretionary
473	11.70%	SAIC Motor Corporation Limited	China	Consumer Discretionary
474	10.70%	Lowe's Companies, Inc.	United States	Consumer Discretionary
475	10.00%	DBS Group Holdings Ltd	Singapore	Financials
476	10.00%	Intercontinental Exchange, Inc.	United States	Financials
477	10.00%	CME Group Inc.	United States	Financials
478	10.00%	Agricultural Bank of China Limited	China	Financials
479	10.00%	Discover Financial Services	United States	Financials
480	10.00%	CK Hutchison Holdings Limited	Hong Kong, SAR	Financials
481	10.00%	Qatar National Bank S.A.Q.	Qatar	Financials
482	10.00%	Energy Transfer Equity, L.P.	United States	Energy
483	10.00%	Dalian Wanda Commercial Properties Co., Ltd.	China	Financials
484	10.00%	National Commercial Bank	Saudi Arabia	Financials
485	10.00%	Synchrony Financial	United States	Financials
486	10.00%	The Blackstone Group L.P.	United States	Financials
487	10.00%	BB&T Corporation	United States	Financials
488	9.40%	Jardine Matheson Holdings Limited	Hong Kong, SAR	Industrials
489	9.00%	Ameriprise Financial, Inc.	United States	Financials
490	8.80%	Phillips 66	United States	Energy
491	8.10%	Industries Qatar Q.S.C.	Qatar	Industrials
492	**6.60%**	**Valero Energy Corporation**	**United States**	**Energy**
493	5.40%	Coal India Limited	India	Energy
494	5.30%	EOG Resources, Inc.	United States	Energy
495	5.10%	Enterprise Products Partners L.P.	United States	Energy
496	5.00%	The Williams Companies, Inc.	United States	Energy
497	5.00%	Kinder Morgan, Inc.	United States	Energy
498	5.00%	Energy Transfer Partners, L.P.	United States	Energy
499	4.90%	General Dynamics Corporation	United States	Industrials
500	0.40%	Hanjaya Mandala Sampoerna	Indonesia	Consumer Staples

Attachment 2. Main themes in the corporate reports, by corporate pairs

Pair one: ICT (Apple and Nokia)

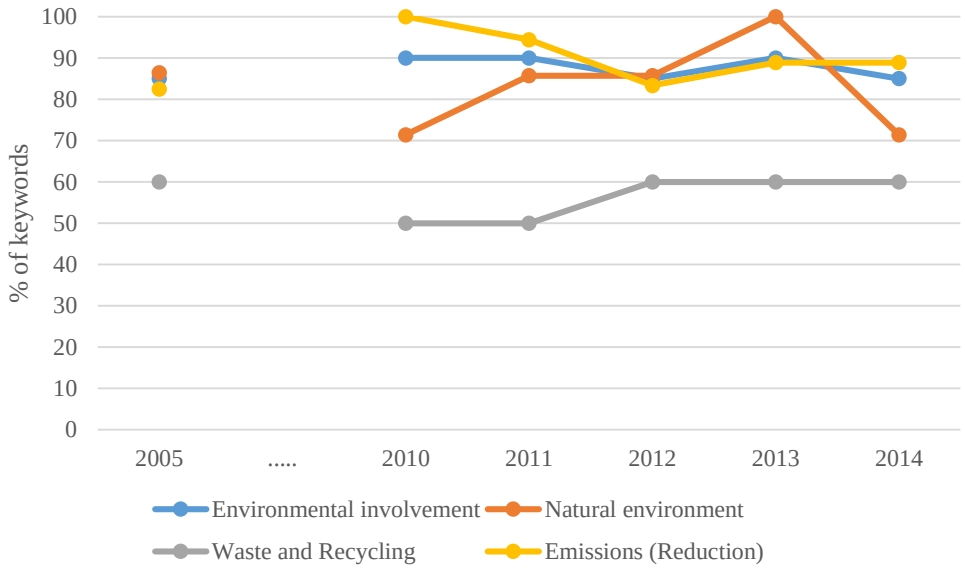


Occurrence of main themes, Pair one

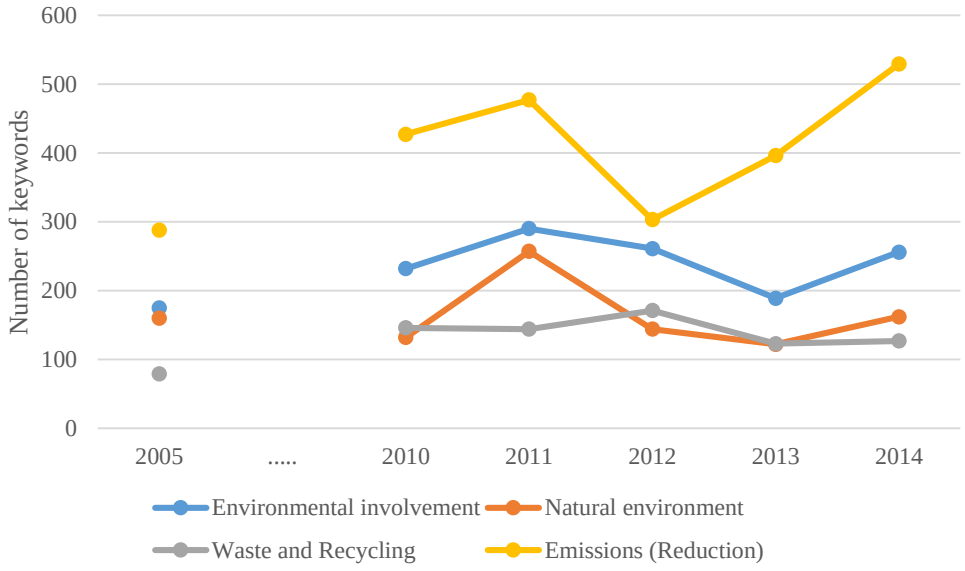


Frequencies of main themes, Pair one

Pair two: Oil and gas (Statoil and Valero)

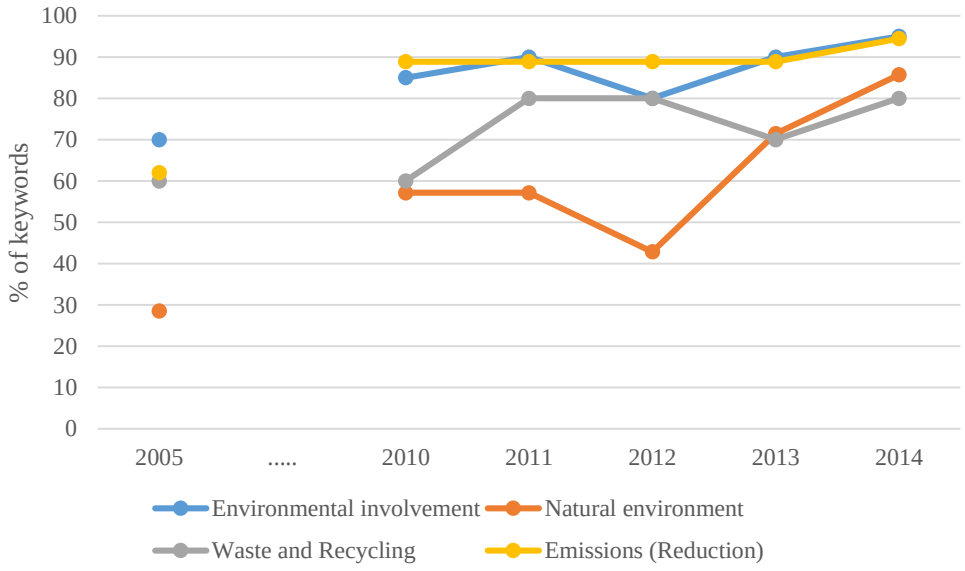


Occurrence of main themes, Pair two

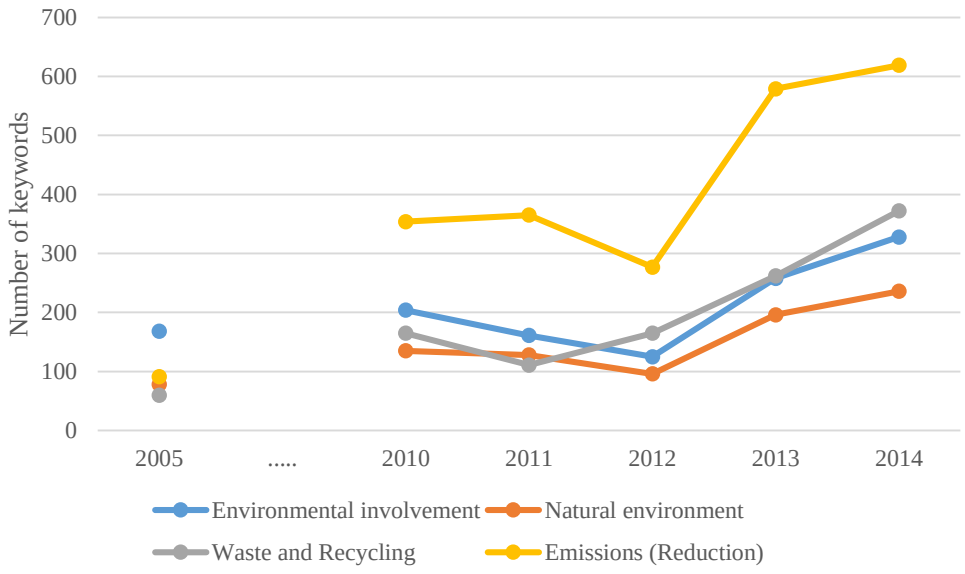


Frequencies of main themes, Pair two

Pair three: Aerospace & defense (Boeing and Airbus)



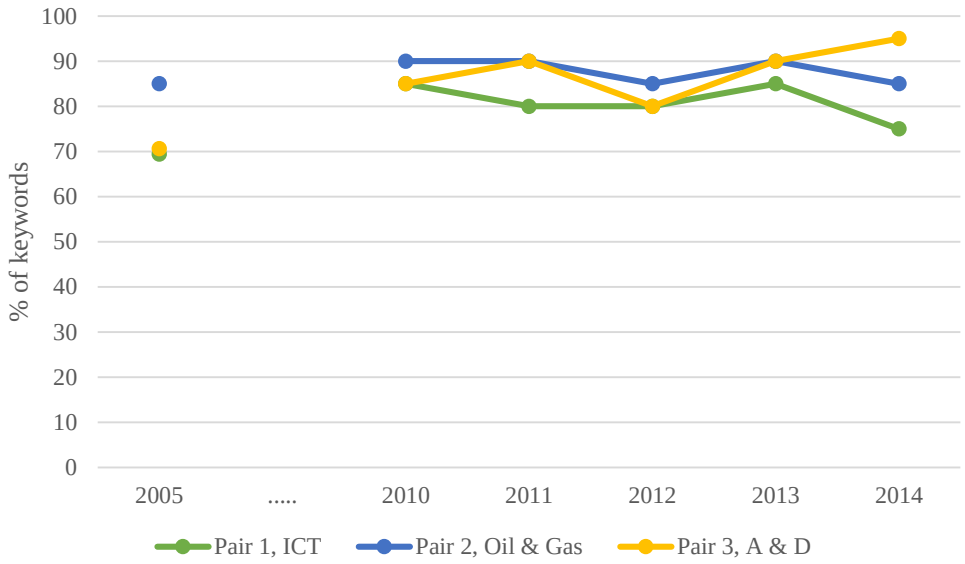
Occurrence of main themes, Pair three



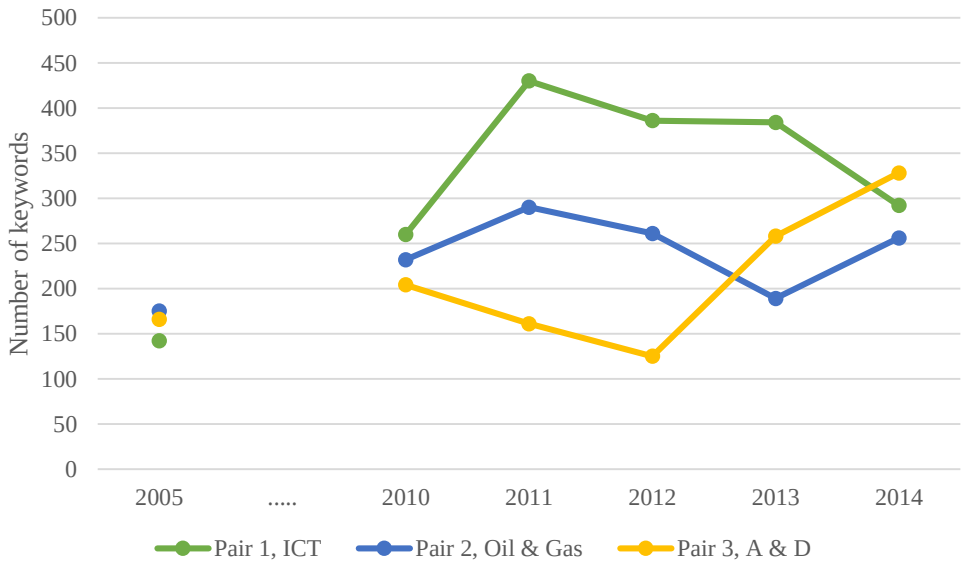
Frequencies of main themes, Pair three

Attachment 3. Main themes in the corporate reports, by theme category per corporate pair

Environmental involvement

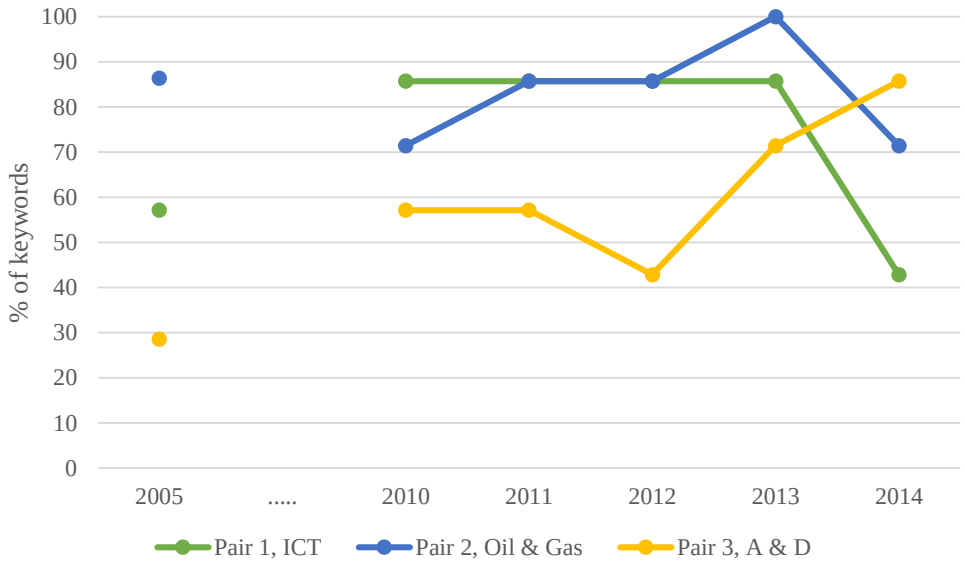


Occurrence of Environmental involvement main theme

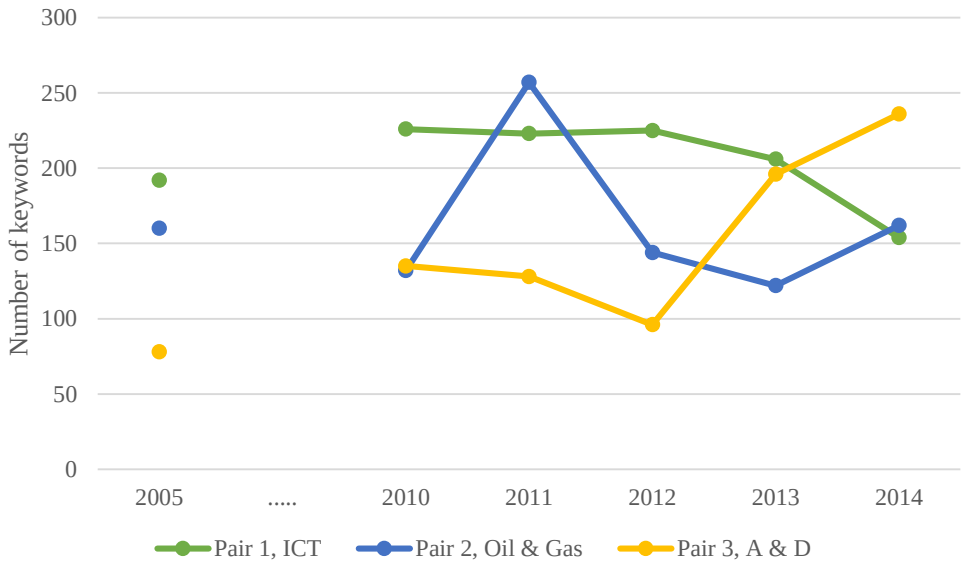


Frequencies of Environmental involvement main theme

Natural environment

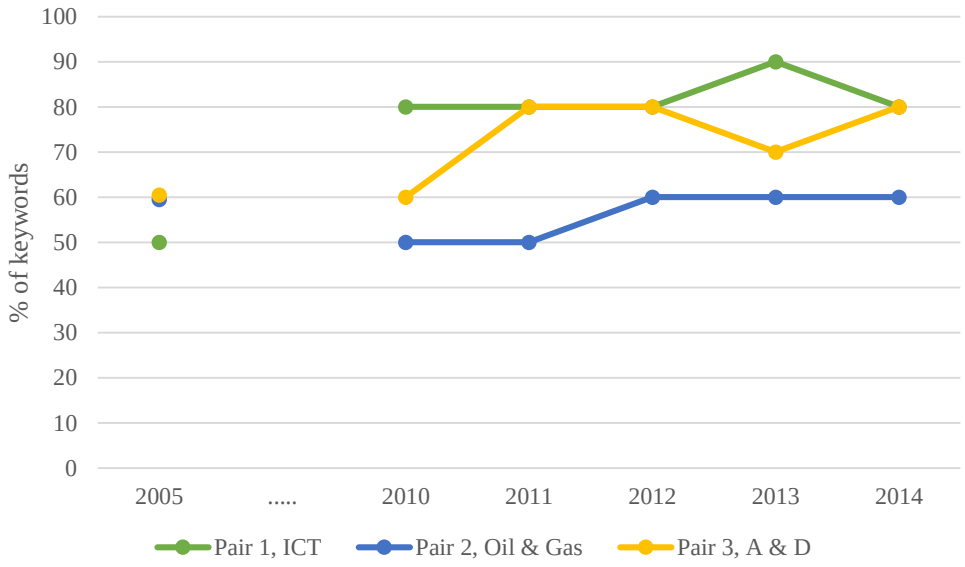


Occurrence of Natural environment main theme

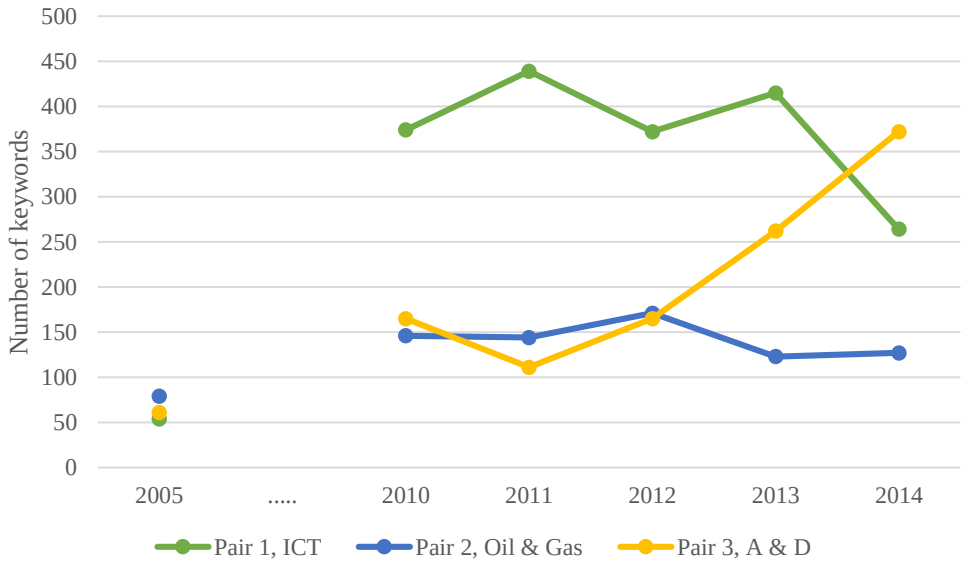


Frequencies of Natural environment main theme

Waste and recycling

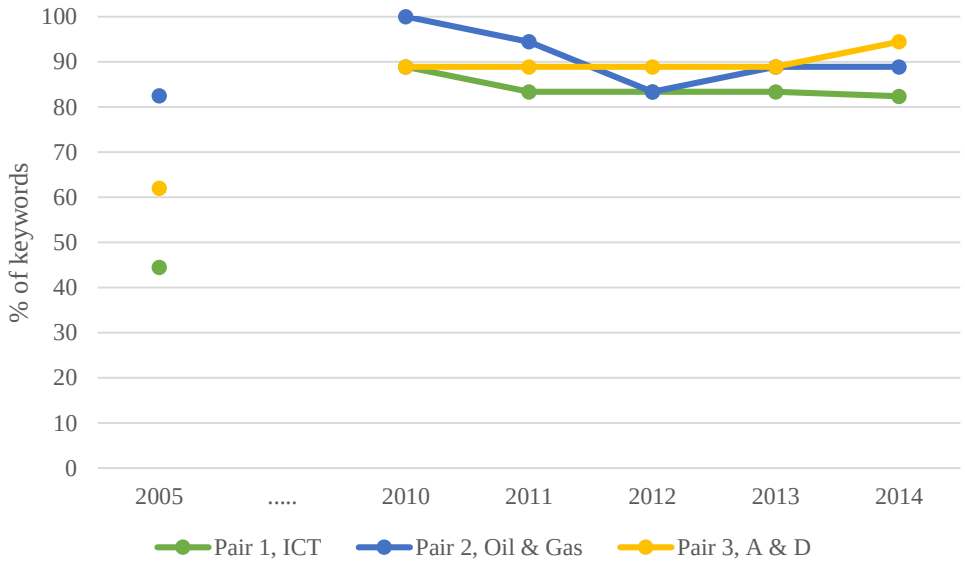


Occurrence of Waste and recycling main theme

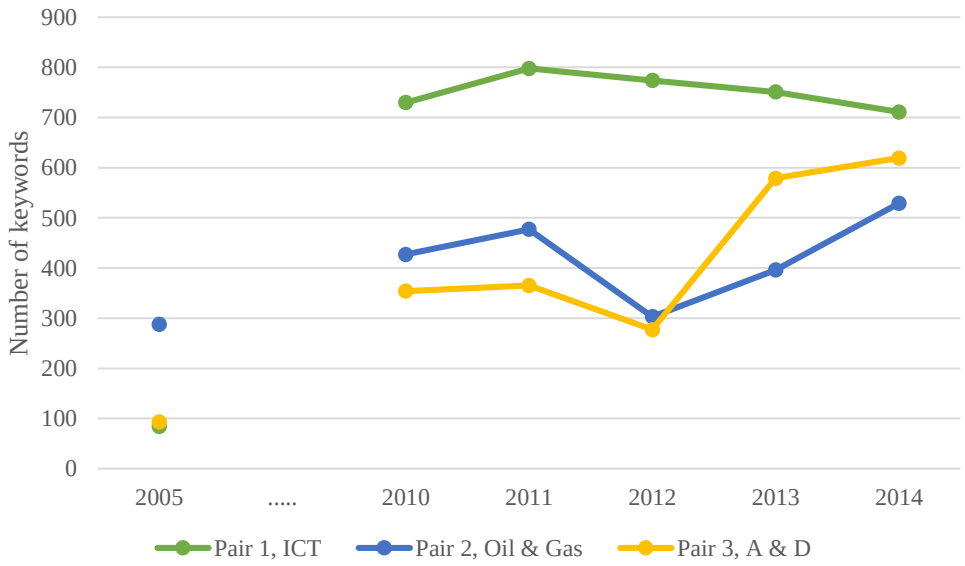


Frequencies of Waste and recycling main theme

Emissions (reduction)

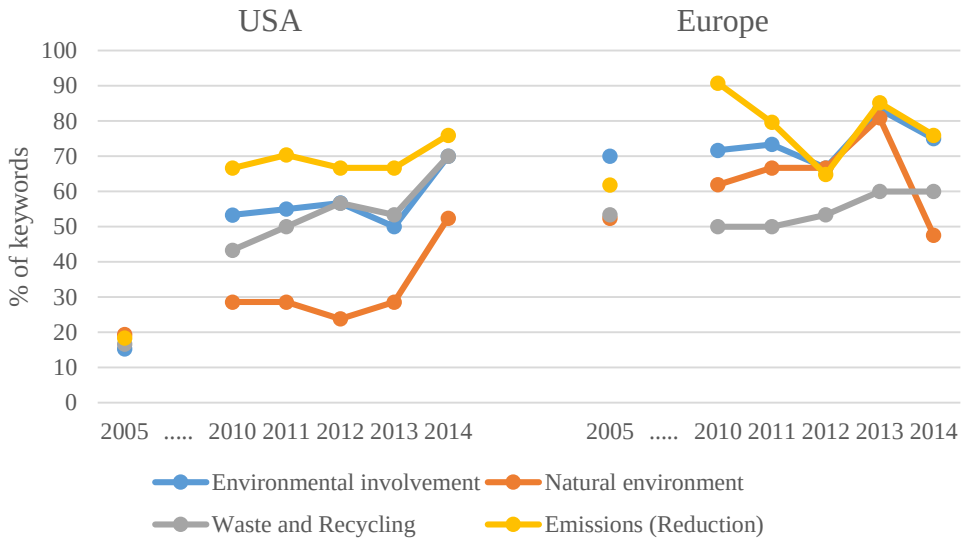


Occurrence of Emissions (reduction) main theme

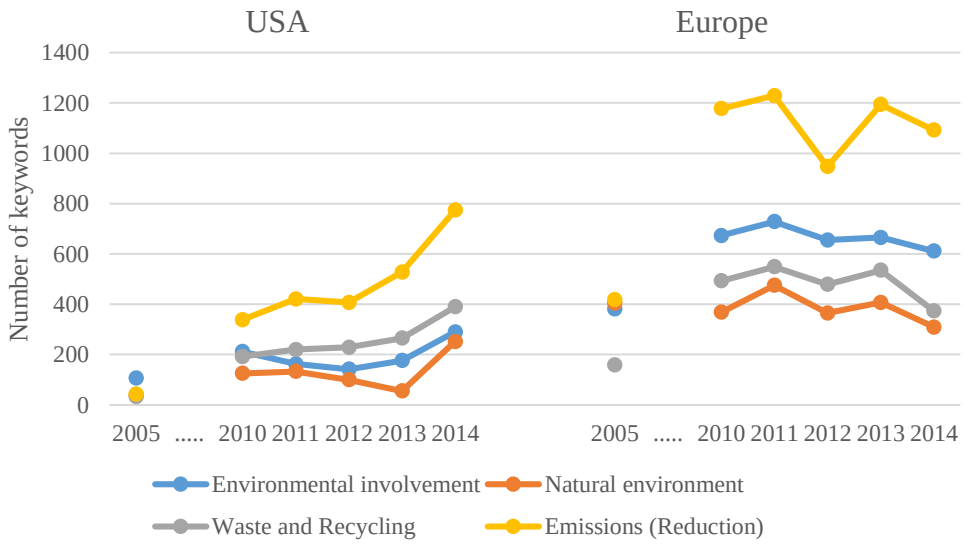


Frequencies of Emissions (reduction) main theme

Attachment 4. Main themes in the corporate reports, USA-Europe



Occurrence of main themes, USA-Europe



Frequencies of main themes, USA-Europe