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Searching for Internal Legitimacy in Climate Risk Management

A Case Study of Commensuration in A Swedish MNC

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ABSTRACT

Climate change is one of the biggest issues of modern times and due to potential significant economic impacts, climate change is nowadays considered to be one of the 21st century's most critical areas in corporate risk management. Previous research stress legitimacy from external stakeholders as the main driver in the adoption of standardized frameworks in corporate sustainability. An increasing investor engagement has resulted in a growing trend of quantification, comparability and measurability in climate risk management. However, research indicate that organizations face challenges when trying to quantify the impact of climate risks. To investigate how climate risks are managed and assessed, a company case study was conducted. In addition, investor demands on sustainability and climate risk information was examined. In line with previous research, our findings show external legitimacy as a main driver for adopting climate risk management in general and standardized frameworks in particular. However, in addition to external legitimacy, internal legitimacy was found to be a major driver for quantification of climate risks in the case company. By leveraging the legitimacy in numbers and the superior position of financial information, internal actors could imitate and incorporate climate risks into processes developed for financial information in a strive to further the status of sustainability and climate issues. Even though the quantification resulted in uncertain numbers, the numbers was of great worth to facilitate organizational action. Consequently, our study complements previous research by showing that both the external and internal dimensions of legitimacy are central drivers of climate risk management. In addition, and contradictory to previous research, a mismatch was identified as investors seek qualitative information as quantification models was argued to be insufficient to capture the complexities associated with sustainability.

Keywords: Climate risk, Risk management, Quantification, Disclosure, Legitimacy, Investors and Communication

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INTRODUCTION

Climate change is one of the most pressing issues facing the modern society (Carney, 2019; Nikolau et al., 2015; Okereke et al., 2012; Wright & Nyberg, 2017). The fast-moving capitalist system with its strong emphasis on quarterly results and short-term financial gains is argued to be the root to social, environmental and economic issues, challenging actors on a global scale (Dyllick & Hockerts, 2002; Porter & Kramer, 2011). Accordingly, private business is claimed to be the main driver of greenhouse gas emissions, simultaneously as corporate investments in green technology are essential in order to decarbonize society. This paradoxical relationship implies that private companies are viewed as both the cause and solution to climate change issues. (Wright & Nyberg, 2017) Hence, the urgency of climate risks, both on societal and corporate level, have resulted in climate change being one of the 21st century's most critical areas in risk management (Anderson & Anderson, 2009) explaining why climate change is being considered a key business risk nowadays (Pattberg, 2012).

Climate risk management and disclosure of sustainability activities is argued to lower business risks (Timbate & Park, 2018), which in turn can explain the wide adoption of sustainability reporting observed in global business over the last twenty years (Chelli & Gendron, 2013; Hahn & Kühnen, 2013). However, lack of generally accepted performance measures and divergence in understandings of the sustainability concepts imply great varieties in information disclosed, resulting in incomplete information and data heterogeneity which in turn undermine comparability and reliability (Boiral et al., 2017; Mynhardt et al., 2017). This phenomenon holds true also for corporate climate risks, characterized by ambiguities and uncertainties to a high extent (Mearns, 2010) implying challenges in corporate climate management and assessment. In an attempt to deal with these complexities, the use of standardized tools and methods to address sustainability and climate change is increasing rapidly (Chelli & Gendron, 2013; Hahn & Kühnen, 2013). Information stemming from sustainability activities are commonly disclosed to public actors and the increasing trend of sustainability reporting is explained by the need for stakeholder acceptance, where corporate disclosures on sustainability is argued to be a tool to build legitimacy (Kitzmueller & Shimshack, 2012). Activities are disclosed in order to demonstrate how the organization meets the norms of the society and actions are hence undertaken to gain, maintain or repair legitimacy (Deegan, 2014). Companies that appear appropriate will receive resources and support from the external audience, crucial for organizational continuity and credibility (Suchman, 1995). This need for legitimacy and acceptance from external stakeholders could therefore explain the rapid increase in corporate disclosures of non-financial information since the 1990's (Beck et al., 2017; Chelli & Gendron, 2013; Hahn & Kühnen, 2013) and why public reporting on sustainability nowadays is institutionalized in many industries (Hahn & Kühnen, 2013; Herremans et al., 2009; La Torre et al., 2018).

The great interest in corporate climate risk management is manifested in a growing number of scientific studies on financial disclosures and climate change (Beck et al., 2017; Eccles & Krzus, 2019; Hahn & Kühnen, 2013; Luft Mobus, 2005; Maas et al., 2016; Stewart & Niero, 2018; Von Alberti-Alhtaybat et al., 2012). The potential negative financial impacts of climate events (Nikolau et al., 2015), have resulted in an increasing investor interest (Li et al., 2019). Moreover, Corporate Social Responsibility (CSR) disclosures are argued to reduce business risks and information asymmetries towards investors, furthermore, being positively related to firm reputation and stock

returns (Timbate & Park, 2018). However, although potentially having a fundamental monetary impact, climate risks are predominantly disclosed separated from financial statements (Li et al., 2019), reinforcing the distinction of economic and non-economic performance (Beck et al., 2017). This has led to calls for standardization of non-financial information (Beck et al., 2017), initiatives especially driven by institutional investors (Depoers et al., 2016; Li et al., 2019). Despite an increasing number of frameworks for standardization, companies are still struggling to quantify the impact and value of corporate climate risk activities (Diaz & Moore, 2017; Goldstein et al., 2019; Maas et al., 2016), resulting in low quality of data (Burritt & Schaltegger, 2010; Mynhardt et al., 2017) and lack of comparability (Maas et al., 2016). This could explain why non-financial issues seem to be of negligible importance and having a low visibility in investment analysis (Levy et al., 2010).

To understand the role of standardization in corporate climate risk management, commensuration will serve as a foundation for analysis. Commensuration is the practice of transforming qualities into quantities and common metrics, enabling categorization and evaluation (Espeland, 2001; Espeland & Stevens, 1998). Ordering, categorization and simplification are essential to make sense out of social life as it reduces perceived uncertainty and increase perceived predictability (Espeland & Stevens, 1998). This streamlining of activities and sorting of information shape cognition, create meaning and facilitate sense-making (Heimer, 2001). The ongoing trend of standardization, observable in numerous initiatives mainly driven by investors, illustrate a strong will to simplify complex non-financial information into common metrics to enhance comparability. In a similar way, quantification is an efficient method to reduce complexities, commonly used in formal decision-making (Denis et al., 2006). The power of numbers lies in the perception of its inherent neutrality (Chelli & Gendron, 2013) and this objectivity is what adds legitimacy to quantification systems (Porter, 1995). The objectivity in numbers is hence explaining why standardization strategies are used to secure legitimacy in organizational processes (Espeland & Stevens, 1998). Furthermore, commensuration is a cornerstone in financial reporting as it facilitates comparability, crucial for evaluation and valuation techniques used by institutional investors (Wang, 2014). Thus, in attempts to increase legitimacy and comparability in decision-making, it is not surprising that the aim for quantification have evolved within the field of climate change risk and sustainability (Kharrazi et al., 2014).

Previous research is commonly conducted on an industry level (see e.g. Amor-Esteban et al., 2018; Chelli & Gendron, 2013; Herremans et al., 2009), providing broad and general insights. However, even though a great interest in corporate sustainability practices in earlier studies, corporate response to climate change have been largely overlooked (Wright & Nyberg, 2017). As a result, corporate responses to the pressure of standardization and quantification in climate risk management have seldom been studied in depth, resulting in motives and actual attempts to manage and communicate climate risk activities have been left out of the scholarly discussion. In addition, diverging investor demands and the usefulness in standardized climate risk information have commonly not been prioritized in research. Drawing on commensuration literature and a case study of a Scandinavian global manufacturing company, the purpose of this study is to investigate corporate climate risk management and investor demands of climate risk information. Therefore, the research question is stated as following: *how do the case company manage and assess climate risks and what type of climate risk information do investors demand?* By answering this question, this study contributes to research on corporate climate risk management by addressing the

shortcomings associated with standardization practices and the value of its results for the receiver of the information.

THEORETICAL FRAMEWORK

Commensuration and the Legitimacy in Numbers

The fundamental human need to make sense of the surrounding world is manifested in commensuration, where social actors standardize and categorize information in order to facilitate understanding of complex realities. This continuously ongoing simplification of events and information is a highly taken for granted social process, making commensuration an essential feature of human life. Thereby, commensuration facilitate sensemaking as the amount of information to be processed is reduced. (Espeland & Stevens, 1998) To illustrate the broad meanings of which the concept encompasses, commensuration is defined as "...a process in which properties normally represented by different units are expressed according to a single, shared metric. [...] Commensuration organizes information so that it is easy to grasp and compare. It transforms qualitative differences into quantitative ones, where differences are expressed as magnitude on some scale." (Espeland, 2001, p.419). The process of commensuration is manifested in numerous continuously ongoing and taken for granted practices. Practical examples of commensuration include prices, ratios, rankings, laws, calculations, social categories and political systems (Espeland & Stevens, 1998), all created to facilitate and simplify everyday life for human actors. All these practices are based on ordering and categorization where differences are transformed into generally accepted magnitudes to enable comparison of diverging features and facilitate the ability to effectively evaluate something in relation to something else (Espeland & Stevens, 1998). This categorization reduces uncertainties and increase the perceived predictability in events and information, also meaning that commensuration is a socially created strategy to impose order and control (Espeland & Stevens, 1998). This streamlining of information shape cognition, create meaning and facilitate sense-making (Heimer, 2001).

Moreover, commensuration constitute the foundation of rationality as rational decision-making is based on evaluations and trade-offs between different alternatives in order to maximize utility (Espeland, 2001). When actors share a conviction of the value in a commodity, complexity can be reduced through standardization (Lakoff, 2005) as social actors are able to evaluate the best possible alternative or solution. Furthermore, once value is standardized and transformed into numbers, numbers itself reduce complexity even further, resulting in shortened decision-making processes (Kalthoff, 2005). By creating a compressed version of reality, this concretization of information facilitates a sense of objectivity adding legitimacy and rationality in formal decision-making (Denis et al., 2006). Therefore, the objectivity in numbers (Chelli & Gendron, 2013; Denis et al., 2006) is what adds legitimacy to quantification systems (Porter, 1995), further explaining the wide adoption of standardization strategies in organizational processes (Espeland & Stevens, 1998). Except adding legitimacy, the objectivity in numbers can be used to justify decisions and convince opponents, why it plays an important role in driving agendas (Denis et al., 2006). Accordingly, as decision-making is commonly based on metrics and numbers, commensuration indirectly play an important role in power and political processes (Espeland, 2001). Numerical systems are furthermore argued to be especially useful in pluralistic, ambiguous and uncertain contexts as it can be used to facilitate action by the creation of routines and order (Denis et al.,

2006; Heimer, 2001). However, the use of numbers is paradoxical and not unproblematic. As numbers are socially constructed simplifications, the objectiveness argued to be inherent in numbers is socially constructed (Porter, 1995). This indicate that the objectivity is actually not objective. Moreover, simplification and quantification of complex realities imply that much information is excluded, further resulting in a loss of objectivity (Denis et al., 2006). Therefore, one should bear in mind that numbers are never free of manipulation (Chelli & Gendron, 2011) and that commensuration never serve as a neutral measurement (Espeland, 2002).

As categorization, standardization and evaluation serves as cornerstones in social life it is not surprising that commensuration has influenced organizational practices and corporate sustainability. Research show that commensuration takes various forms in corporate climate change activities such as categorization, KPI's, measures and metrics, prices and modeling (Wright & Nyberg, 2017) implying a wide and diverse adoption of commensuration practices. In order to streamline these practices, the benefits of commensuration are observable in a number of initiatives aimed to standardize and quantify sustainability and climate change activities. As an example, the rapid increase in popularity of sustainability rankings (Chelli & Gendron, 2013) is argued to be a part of a global movement that redefines accountability, transparency, and governance by the use of quantitative terms and metrics (Sauder & Espeland, 2009). Rankings in the same way as numbers are argued to unite and objectify, leading to increased comparability between organizations (Sauder & Espeland, 2009). These quantitatively based performance measurements create stable systems of consolidated information, comprised of unstable positions (Sauder & Espeland, 2009) which can be especially useful in pluralistic settings (Porter, 1995). Furthermore, as sustainability and climate change are argued to be highly uncertain (Mearns, 2010) the neutrality in rankings, ratings and other frameworks can provide a basis for comparison and evaluation of success (Sauder & Espeland, 2009).

Research on corporate sustainability commonly stress legitimacy as a driving force in the adaptation of organizational sustainability practices (Chelli & Gendron, 2013; Hahn & Kühnen, 2013; Kitzmueller & Shimshack, 2012; La Torre et al., 2018). Legitimacy is described as a resource on which the organization is dependent upon for survival. Actions are conducted in order to gain, maintain or repair legitimacy so as to demonstrate how the organization meet the norms of the society (Deegan, 2014), which is crucial for organizational contingency and survival (Suchman, 1995). The need for legitimacy and acceptance from external stakeholders could hence explain the wide adoption of sustainability practices such as compliance to frameworks, so as the strive for acknowledgement and credibility stemming from certifications, memberships and rankings. Additionally, the legitimacy in numbers could explain the demand for quantification in sustainability and climate risk management, necessary to enhance comparability (Maas et al., 2016). This strive for quantification is observed among sustainability rating agencies, argued to promote an ideology of numbers in order to establish an institutionalized norm in governing social and environmental performance. However, simplification of complex information comes with risks as comparability is achieved at the expense of valuable individual and contextual information being lost. (Chelli & Gendron, 2013) In other words, commensuration "...making visible certain aspects of reality while leaving others in the shadow" (Chelli & Gendron, 2013 p.188). This implies that even though providing numerous organizational benefits, the ideology of numbers may promote a narrow vision of organizational sustainability activities.

Difficulties of Commensuration in Climate Risk Management

Critics of commensuration arise as a consequence of its equalizing effects (Espeland & Stevens, 1998), the loss of elite discretion (Huault & Rainelli-Weiss, 2016) and its mystification of power relations (Espeland & Stevens, 1998) as it emphasizes results rather than processes. Traditionally, commensurability is linked to rationality and incommensurability to irrationality. In other words, incommensurability is connected to chaos and anxiety while commensuration relate to pairing of numbers and measurements, resulting in order (Espeland & Stevens, 1998). To claim incommensurability is to argue that some values should not or cannot be ordinarily compared with other values. Claims about incommensurable values are most often found in borderlines between institutionalized institutions, implying uncertainties of normal mode (Espeland & Stevens, 1998). A prerequisite for commensurability is hence some sort of a normal organizational mode which may not be possible for all parts of the business. As for sustainability and climate change, high levels of uncertainty (Mearns, 2010) result in lack of reliable data (Mynhardt et al., 2017) potentially implying an obstacle for commensuration. Moreover, another challenge when seeking to commensurate climate change information can be found in its wicked nature, as climate change is a long-term concept and strategies are dependent on short-term corporate actions (Burritt & Schaltegger, 2010; Wright & Nyberg, 2017). Worth mentioning, decision-making is not always based on rational aspects and people not solely simply rely on commensuration when making decisions (Morrell, 2004). In line with this, there are claims about commensuration not always being the neutral measurement it is imagined to be (Espeland, 2002), sometimes creating more noise than structure (Heimer, 2001). Espeland and Stevens (1998, p.316) illustrates this critic by stating "...commensuration sometimes responds to murky motives. It may be prompted by a desire to look rational, limit discretion, or conform to powerful expectations".

The challenges of commensuration in corporate climate risk management is discussed in few previous studies (Huault & Rainelli-Weiss, 2011; MacKenzie, 2009; Patterson, 1998). For example, Patterson (1998) illustrate complexities in commensuration of sustainability and climate change. Due to lack of theories and methods capturing the complexities of the information, Patterson (1998) argue that valuation of ecosystems and economic resources cannot be conducted in an accurate manner. In the absence of accurate models, established methods might be used instead. Problems of commensuration arise due to the fact that aspects used as inputs and outputs in models are inherently different, automatically implying questionable validity of the values derived. (Patterson, 1998) Moreover, MacKenzie (2009) stress inability to commensurate sustainability and climate as a result of great variations within categories, further complicating transformation into common metrics. Illustrated in a case study of carbon emission markets, accountants struggled to find a standardized method to treat emission rights. Studying the strive to develop tools for standardization, MacKenzie (2009) observed that it was not possible to make all key aspects the same. Therefore, MacKenzie (2009) argue that it might be tempting to conclude that such markets are inherently flawed due to divergent gas and emission standards, implying that the measuring of emission reductions is not possible. However, as making things the same was not the accurate solution, making things different was suggested to be a better alternative. Thereby, MacKenzie's (2009) findings imply an interesting intervention in the commensuration discussion, as commonly emphasizing standardization, harmonization and streamlining of activities. Aligned with MacKenzie's (2009) study, Huault and Rainelli-Weiss (2011) examined an attempt to create a market for weather derivatives focusing on the commensuration process undertaken by promoters

trying to draw weather risk into the financial world. The results highlight a failure of a commensuration process due to the inability to reach a genuine compromise when getting actors to perceive that the metric provided solutions and met needs. It is concluded that limitations to the thesis of financial theory exists, claiming that all kinds of risks can be transformed into financial risks. (Huault & Rainelli-Weiss, 2011) Once more, these studies illustrate that some aspects may not be possible to standardize. However, although not always possible to commensurate or even standardize sustainability and climate information in a correct or accurate way, commensuration may somehow facilitate organizational action. As exemplified by Millo and MacKenzie (2009), the Black−Scholes model for option valuation was widely adopted even though the model was not accurate. Its popularity could be explained by its ability to connect actors and facilitate actions. Therefore, even though challenges in measuring and evaluating sustainability and climate risks in a correct manner, attempts to commensurate may still drive action by creating awareness and new norms for organizational practices.

METHODOLOGY AND DATA COLLECTION

Methodology of The Study

In order to contribute to research examining the organizational phenomena of corporate climate risk management and the potential value in information stemming from such activities, a qualitative study was conducted. To provide answers to *what* and *how*, further explaining dynamic processes and its underlying motives, a qualitative study is argued to be appropriate. (Gioia & Thomas, 1996; Hinings, 1997; Silverman, 2017) The study took the form of a case study. The in-depth nature of a case study has been debated and have received both criticism and acknowledgement (Flyvberg, 2006). Case studies are useful to capture nuances in phenomenon, and in this paper an instrumental case study was conducted. The aim is to provide insights to a broader phenomenon by drawing on findings from a specific case. Meaning, although the case is studied in depth, the main goal is that the result should be applied and generalized on a larger scale. (Silverman, 2017) In addition, a grounded theory approach was used to assess the empirical findings. The grounded theory approach is specifically suitable for qualitative studies as it eases the handling of large qualitative data sets. This inductive way of working is useful when categorizing and analyzing empirical data (Glaser & Strauss, 1986). This method allows development of theory as it provides a comprehensive understanding of the empirical data when complemented with existing theory (Martin & Turner, 1986).

Setting of The Case Study

The setting of the study is a Swedish global manufacturing company within the consumer goods sector. The company is publicly listed on OMXS30 (OMXS30 Webpage, n.d) and the largest shareholders constitute of large investment companies, pension funds, banks and insurance companies (Annual Report, 2019). Except keeping up with changing market trends, regulation and customer demands, the current business model is energy intensive and highly dependent on natural resources in production such as access to water and fresh fibers. This implies that the current business model is vulnerable to changes in the natural environment, explaining an organizational strive to reduce climate related risks and explore climate related opportunities. Therefore, the organization entailed an interesting setting when studying the phenomenon.

Data Collection Method and Procedure

The data collection methodology of this study consisted of document analysis and interviews. Silverman (2017) note that the combinational use of methods in document analysis and interviews comes with potential risks, as multiple datasets implies risks of time and resource constraints, as well as risks of over-analyzing one dataset on behalf of the other. After careful consideration, this was argued to be a small and manageable risk. This methodological structure is also to be seen in other research (see e.g. MacKenzie, 2009).

Document Analysis

Initially, an extensive document analysis based on previous research and secondary data was conducted. Firstly, in order to gain a basic understanding of the phenomenon of climate risk management, previous research on climate change and its implications on business was collected from academic journals such as Business Strategy and the Environment, Organization and the Environment and Business & Society. Databases, mainly Gothenburg University Library search engine Supersearch have been used. Search words such as *risk management, climate risks, corporate disclosure, quantification, investor,* and *communication* was used. In addition, secondary data in terms of forcing regulation and directives from the European Union was collected at the official website, conducted in order to understand the changing regulatory environment regarding climate change and business. Moreover, secondary data such as reporting standards and guidelines for disclosure on climate change and sustainability was collected from the organizations different websites and databases. Secondary data in terms of case company information such as annual and sustainability reports and public information was gathered from the company website. At last, internal documentation, such as risk reports, internal risk management presentations, assessment tool and guidelines together with internal policies was provided by the supervisor at the case company.

Interviews

Interviews was conducted in order to identify and understand relevant activities within the case company and investor engagement in climate change. The interviews complemented the document analysis by providing insights about contextually dependent organizational phenomenon and processes connected to it (Van Maanen, 2011; Watson, 2011). As interviews potentially reveal more nuanced information in comparison to written text, interviews enabled a broader and deeper understanding of this complex and multifaceted topic, suitable to the qualitative nature of the study. To capture the essence of individual experiences in the organizational context, semi-structured interviews was held. (Patel & Davidson, 2011; Silverman, 2017) The interviews were based on themes and had a number of broad, pre-determined questions which then was elaborated upon by follow-up questions (Patel & Davidson, 2011). Interviews were physically held at the respondent's offices or digitally due to geographical distance. The interview duration was approximately 45-60 minutes.

As the interviews and document analysis was conducted to complement each other, nine candidates from different organizational levels and departments in the case company was selected based on relevant expertise and experience. Additionally, as the demand of climate change information is increasing among investors (see e.g. Goldstein et al., 2019) interviews were held

with three actors from large investment companies in order to broaden the perspective of the study. These actors operate on the Swedish market, whereas one actor has the largest number of votes in the case company. Due to the size of their holding, these financial organizations have substantial impact on the Swedish business community, motivating the interest to investigate their opinions regarding sustainability and climate risk information.

One should be aware of the risk that a smaller sample size might generate a bias in the data collected (Baker, 1987). However, since case company interviews was combined with external interviews and a comprehensive document analysis, insights from different perspective enabled a more objective understanding of the phenomena, also to be seen in previous studies (see e.g. MacKenzie, 2009).

Table 1. Summary of Interviews in Case Company

Department	**Position**	**# of interviews**
Group Function Finance	Director Sustainability Controlling & Reporting	1
Sustainability Controlling & Reporting	Sustainability Reporting Manager	1
Group Strategy & Competitive Intelligence	Business Strategy Director	1
Global Brand Innovation & Sustainability	Director of Sustainability	1
Global Manufacturing	Global Capex Process Leader	1
Internal Audit	Vice President of Internal Audit	1
Group Risk Management Department	Vice President Risk Management & Insurance	1
Tissue Europe Organization Environmental Compliance and Sustainability	Environmental Affairs Manager	1
External Auditor	Associate Partner Auditor Assurance & Sustainability	1
Total		**9**

Table 2. Summary of Interviews in Investment Companies

Reference in Text	**Position**	**# of interviews**
INV1	Head of Corporate Communications and Sustainability	1
INV2	Senior Sustainability Analyst	1
INV3	Director of Business Development	1
Total		**3**

Data Analysis Methods

Document Analysis

Material collected in the document analysis was thoroughly examined in several phases. After identifying and specifying the overarching objectives of the study, the first phase of coding previous research and secondary data included an evaluation of relevance to the study. The coding of the previous research in terms of scientific articles was initiated by evaluating the perspective of

the research, dividing it into the categories of *investors, climate, sustainability and CSR,* and *disclosure and communication*. The coding of the secondary data started with a thorough examination of the documents, key topics and words was selected to fit the purpose of the study. Thereafter, all documents were coded based on key topics and words selected in the previous step. The coding of the secondary data was based on the following codes: *governance, strategy, risk management,* and *metrics and targets.* This enabled categorization into broader themes, such as risk management, corporate disclosure, climate risks and sustainability, and information provided to investors. The categorization of the codes enabled identification of connections between the grouped codes. Once broader categories were created, key quotes and citations was extracted to manifest the main essence of each category. This created a clear overview of the different parts in the document, eased the data analysis process and created a basis for discussion. Important to consider when processing secondary data is produced with a purpose, which may affect objectivity. Lastly, material was analyzed in relation to the primary data collected from the interviews.

Interviews

Material from the interviews was processed in three phases including transcription, coding and categorization, leading up to the final analysis (Martin & Turner, 1986; Silverman, 2017). The first phase included transcription of the interviews held. As the interviews were recorded, focused listening and relevant follow-up questions were possible during interview sessions, later facilitating identification of relevant details that might been overlooked during the interview session. In the second phase the transcribed material was coded and categorized using the same structure used for the document analysis. Categorizes such as *objectives, risk management, awareness and communication* emerged during the coding process of the interviews. Lastly, the empirical data stemming from the document analysis and interviews was analyzed and connected to the theoretical framework in order to increase the level of abstraction and embed the findings into a field level phenomenon (Martin & Turner, 1986).

Ethical Reflections

Ethical aspects associated with interviews need to be considered and managed. First, important to take in consideration is that interview findings may represent subjective interpretations. Second, interviews are complex and non-normal situations for the interviewees, further implying a power asymmetry between the interviewer and the interviewee. To avoid answers being biased to fit the study, trust between the interviewers and interviewees are argued to be essential (Kvale, 2006). Except bias between interviewer and interviewee, "social desirability bias" can arise as the interviewee might feel an unwillingness to criticize aspects in the case company (Nederhof, 1985).

Moreover, the dependency on the case company comes with some ethical considerations. The company provide documents and access to interviews, implying a risk that the study might be skewed to fit the goals and requirement demanded from the company. However, these aspects are taken into consideration when conducting the study as the case company will receive a specific report instead of the academic paper. Additionally, anonymity of the case company was a prerequisite when conducting the study. However, the anonymity demanded only concerned the publication of the company name.

EMPIRICAL SECTION

Climate Risks, Disclosures and Quantification

The urgency of climate change is observable in all dimensions of the society. The threat of climate change is continuously increasing and in 2019 the world observed climate demonstrations as a response to record temperatures in Europe and North America, wildfires in Amazonas and Australia, increasing tropical storms in Asia and rapidly increasing sea levels (Carney, 2019). In the Annual Global Risk Report 2020 published by World Economic Forum, environmental risks constitute the top five risks in terms of likelihood and three out of five top risks in terms of impact. Accordingly, failure in climate change mitigation and adaptation is argued to be the most prominent risks to business and society (World Economic Forum, 2020). This environmental dominance in risk topics has not previously been seen in the risk landscape presented by the organization, implying an important shift and symbolic importance of the need for climate action. Consequently, the private sector is experiencing the impact of climate change more than ever, with challenges ranging from increased operational costs to production disruptions. Accordingly, as the physical consequences of climate change are becoming financially material, investors demand more information on corporate climate risks (Goldstein et al., 2019).

As response to growing societal concerns and pressures on organizational action, CSR has increased in importance and is nowadays constituting as a mainstream business activity (Kitzmueller & Shimshack, 2012; Macagno, 2013). Even though private business' great willingness to engage in CSR, companies struggle with inconsistent understandings of the concepts associated with sustainability and climate (Van Marrewijk, 2003). Hundreds of proposed definitions imply differences in meaning and great ambiguities related to the concepts, complicating operationalization and commensuration of CSR (Bansal, 2005; Van Marrewijk, 2003; Wright & Nyberg, 2017), in turn resulting in difficulties in the measurement of value stemming from such activities (Maas et al., 2016). This lack of consensus and well-developed definitions result in CSR being too broad in scope to be relevant in organizations (Banerjee, 2001), consequently undermining corporate action (Henderson, 2001). As a solution to the ambiguities and challenges associated with corporate sustainability and climate risk management, a number of frameworks has been developed to guide and support companies in the transition to more sustainable business models.

Global Reporting Initiative (GRI) Reporting Standards was founded in 1997 and is the world's most used and recognized framework for sustainability reporting (GRI, n.d). GRI seek to advance sustainable development by providing standardized measures of sustainability, enabling companies to understand and assess social, environmental and economic impacts that the organization face (GRI, n.d). Additionally, standardized sustainability reporting could increase transparency, improve accountability and facilitate both comparability and efficiency in reporting of non-financial information (GRI, n.d). As of today, more than 93 % of the largest companies globally use the GRI standards for sustainability reporting (GRI, n.d). This imply that sustainability reporting nowadays is a widespread organizational practice and reporting according to the GRI standards is institutionalized in many industries, further serving as an important tool to build legitimacy (La Torre et al., 2018). Early on, GRI adopted and incorporated many aspects from financial reporting in order to enable standardization and benchmarking among firms. These similarities with financial reporting are argued to be one important reason to the success of the

framework, leading to legitimization of sustainability reporting in business worldwide (Levy et al., 2010).

In 2001, Carbon Disclosure Project (CDP) was founded out of an institutional investor initiative (Depoers et al., 2016). Corporate disclosure on climate risks is important in investor decision-making, and today investors holding more than 96 trillion dollars have requested companies to disclose through CDP (CDP, n.d). Over the last two decades, the number of actors disclosing climate risks according to CDP has grown rapidly and it is now a globally recognized framework for disclosure of climate risks. The reporting organization fills out a questionnaire on annual basis where both quantitative and qualitative disclosures are compiled and collected in an online database, later made public to those with access to the database. (Depoers et al., 2016)

To drive corporate action for a low carbon economy aligned with the Paris Agreement, Science Based Targets (SBT) was initiated by a number of influential organizations such as CDP and United Nations Global Compact (UNGC) in 2015 (SBT 1, n.d). The overarching vision is to facilitate companies on their journey to reduce environmental impact and limit global warming to 1.5°C (SBT 2, n.d). The reporting organization choose among three the different approaches to set up targets and state activities to reduce emissions in Scope 1, 2 and 3 and these targets can be incorporated in the strategic goal of the organization. As the prevalence of regulation related to emissions of CO2 is increasing, SBT's can be a method to work proactively and hedge regulatory pressures. Other benefits are stated to be improved credibility, reputation and legitimacy towards investors and other stakeholders (SBT 3, n.d).

More recently, in 2017, the Finance Stability Board launched the Task Force on Climate-related Financial Disclosures (TCFD) which is a voluntary climate related disclosure framework targeting financial-sector organizations. The Task Force report provide recommendations for clear, comparable and consistent information about the risks and opportunities of climate change in mainstream financial filings. (TCFD, 2017) The framework was created with the aim to enable financial sector actors such as asset managers, banks, insurance companies amongst others, to achieve greater understanding regarding material risks in their financial holdings. (Carney, 2019; TCFD, 2017) The increased informational demand on investors imply that portfolio companies are being asked to provide better information on measures and responses to climate change to their owners (Larsen & McGeachie, 2017). Moreover, it is claimed that the TCFD framework could be the first industry-led framework for climate disclosure focusing on quantitative aspects and financial impact, potentially resulting in new standards for corporate climate disclosures (Sanderson et al., 2019). However, one major challenge outlined when working with TCFD is the materiality assessment as climate changes have longer time periods than the traditional financial materiality assessments (Eccles & Krzus, 2019).

The use of external verification of corporate climate and sustainability management has increased enormously during the last 20 years (Hahn & Kühnen, 2013; Chelli & Gendron, 2013). Legitimacy is an organizational resource on which the company is dependent on for survival (Deegan, 2014; Suchman, 1995). Acceptance from stakeholders are important to build legitimacy, why corporate sustainability activities are disclosed to external audience (Kitzmueller & Shimshack, 2012). Different institutional pressures can explain divergent adoption of sustainability practices, why national context is an important denominator in corporate sustainability performance among firms (Amor-Esteban et al., 2018). Norms in the institutional context imply that organization's need to demonstrate how they satisfy the expectations of stakeholders, which

may result in varying levels in adoption of CSR practices (Amor-Esteban et al., 2018). As an example, institutionalized norms, regulatory environment and a strong stakeholder orientation have resulted in Scandinavian companies being argued to be in the forefront of sustainability (Vidaver-Cohen & Brønn, 2015).

Furthermore, sustainability reporting could be used as a tool to reduce information asymmetries between company and investors, but also to facilitate capital raising activities (Hahn & Kühnen, 2013; Timbate & Park, 2018). Although important non-financial issues seem to be of negligible importance, having a low visibility in investment analysis (Levy et al., 2010). According to Hahn and Kühnen (2013), information provided by companies can be of different character, ranging from soft to hard. Soft information is typically descriptive and more vague than hard information that tend to be quantitative, specific and with clear connections to performance indicators and monetary impact. Social and environmental information is often softer, making it harder to verify in relation to performance. This differences in type of information implies as challenge, as "information is valuable when it is derived from a very large number of companies and is quantitative in form" (Levy et al., 2010).

Consequently, presentation and communication of climate and sustainability related information have received criticism as being difficult to quantify and evaluate. According to Maas et al. (2016), a great majority of CEOs worldwide perceive sustainability and climate as highly important, however only 38 % state that they successfully quantify the value of such activities. As internal corporate activities and the communication of such activities are tightly interdependent, ambiguities in definitions and measurements of sustainability result in non-financial disclosures being negatively affected. Even though standardization and harmonization efforts, content and quality of information in disclosures differ among firms. To overcome this challenge, effective measurement systems and methods needs to be in place in order to improve evaluation, analysis and communication of non-financial information. (Maas et al., 2016) By doing this, companies could address problems related to poor quality and lack of climate and sustainability data, potentially resulting in reduced information asymmetries, increased transparency and greater effectiveness in communication with investors and other stakeholders (Mynhardt et al., 2017).

Climate change is associated with great uncertainty (Mearns, 2010), implying difficulties to produce reliable data of high quality (Mynhardt et al., 2017). However, uncertainty is argued to be manageable as long as it is quantified, why clear narratives to describe processes to stakeholders are essential (Oppenheimer et al., 2016). Therefore, consistent and comprehensive approaches are required to quantify the uncertainties associated with climate change. Numbers are often considered objective and, in a sense, constitute a norm, as they are seen as an effective tool to understand the ambiguous contexts they contribute to construct (Porter, 1995). Additionally, research state that people are more likely to accept something when they have numbers to lean on (Hansen, 2015; Pollitt, 2011). This is in line with Denis et al. (2006), acknowledging that "the power of numbers lies in their ability to fill the strategic void created by pluralism." (p.350). Not only are numbers argued to affect actions, they contribute in making actions seem legitimate and provides a common language (Brorström, 2018). However beneficial, a quantity always expresses a quality (Brorström, 2018) and numbers alone will never provide enough information to support decision-making (Porter, 1995).

Sustainability and Climate Risks in Case Company

As of today, sustainability is on top all societal actors' agendas and in 2019 climate change issues became even more prominent (Annual Report, 2019; Global Risk Report, 2020). In 2019, the company was ranked top sustainable company within its industry and national context (Röhne, 2019) and sustainability is claimed to be at core in the business model. The importance of sustainability is clearly captured in the mission statement, defined as "To sustainably develop, produce, market and sell value-added [...] products and services" (Case Company Webpage, n.d). Sustainability is a strong and recurrent theme in the annual report, present in CEO message, business idea and strategic goals amongst others (Annual Report, 2018; 2019). Additionally, the case company has committed to work in accordance with a number of well recognized global guidelines. The company's sustainability report is conducted according to GRI (Annual Report, 2019), the company got its CO2 reduction targets approved by SBT (Case Company Webpage, n.d) and the organization is a signatory of the UN Global Compact. In addition, the case company received one of the highest scores in CDP in 2019 (Case Company Webpage, n.d; CDP 2, n.d).

This engagement has resulted in recognition and numerous memberships in leading organizations, indices and ratings. The case company received the highest rating in the MSCI ESG Ratings (Case Company Webpage, n.d) which aims to measure organizational resilience to long-term financial ESG risks (MSCI, n.d). The case company was included in the RobecoSAM Sustainability yearbook in 2019 which it also was named as industry mover (RobecoSAM, 2019). Moreover, the case company was included in the Dow Jones Sustainability Index, both worldwide and in Europe, named industry leader in the Household Products sector (Case Company Webpage, n.d). Additionally, the case company has been listed on the FTSEGood Global Sustainability Index since 2001 (Case Company Webpage, n.d; FTSEGood, n.d) and was awarded gold in EcoVadis 2019 CSR rating (Case Company Webpage, n.d). Furthermore, in order to strengthen the importance of sustainability in all departments, respondents from the case company explained that they underwent a reorganization about two years ago. Previously, the case company had a Senior Vice President of Sustainability and an assigned sustainability department managing existing and proposed sustainability targets. This group was alone responsible for driving the sustainability agenda within the company, sitting separated from other business units. Nowadays, the sustainability organization is integrated into all different parts of the business. Moreover, the Sustainability Reporting Manager explained that "...this is why we, as myself, as a sustainability reporting manager are now a part of Group Function Finance", exemplifying the integration of sustainability throughout the organization.

Motives, Processes and Disclosures

Corporate Motives in Climate Risk Management

The interviews revealed several motives to engage in sustainability and climate risk management. These could be categorized into five main objectives: financial, business continuity, innovations, trends, and external pressure.

First of all, the financial objective in climate risk management is a recurrent theme in the majority of the interviews. As one interviewee stated, "...it always comes down to the financials in the end". Activities are undertaken in order to mitigate and avoid negative financial impacts, increase potential positive financial impacts or achieve both. Tightly connected to financial objectives, business continuity objectives were identified. Aligned with the strategy statement in

the Annual Report (2019), respondents stress that sustainability needs to be built into the overall business strategy in order to ensure ongoing operations and protection against production disruptions. This as production disruptions are argued to be a threat to the ongoing business since these comes with costs and potential financial losses. Third, respondents emphasized that integration of climate aspects into the core of the corporate strategy could result in opportunities for value creation in terms of innovation and product development. The case company emphasis on innovation have so far been successful, creating customer and consumer benefits and reducing environmental impact (Annual Report 2018; 2019). A fourth objective was to keep up with markets and global mega trends, as respondents acknowledged that companies need to engage in sustainability to address market needs to stay competitive. Lastly, an increased interest from investors and external stakeholders imply pressures to engage in sustainability and climate change in the company. Climate change is argued to be "...on top of everyone's agenda" as external stakeholders seek to understand how the case company manage climate risks and acts upon opportunities. This external pressure has twofold consequences, implying that actions needs to be undertaken internally to improve communication externally.

Risk Management Process

Discussing the most pressing climate related risks, changed regulation and compliance requirements was outlined as having most significant impact on the business in a short-term perspective. A majority of the interviewees witnessed about increased regulation especially related to sustainability and climate, requiring corporate action. Regulatory examples included CO2 emissions, restrictions of certain materials, ban of single use products, fees and tariffs and tougher requirements in regard to non-renewable energy sources. Changed regulatory environment was argued to be a risk mainly due to imposing increased costs and need for organizational adaptation to changes in the external environment. Moreover, financial risks in terms of increased interest rates, taxes or fees was emphasized as other major risks. Additionally, market risks such as changing customer and consumer preferences was acknowledged as main risks for the case company. Events that could interrupt and negatively affect the business such as fires, earthquakes, flooding and extreme weather events was also highlighted as significant risks in the interviews. The access to natural resources essential for production, such as water and fresh fiber, could furthermore constitute important business risks. Lastly, due to the energy intensive nature of the case company, the access and cost of energy could be a big a concern.

In general, risk management is a complex process and interviewees explained that the process starts with a comprehensive data collection. In principle, the first step is to identify material risks. When key risks are identified, a strategy is put in place to approach the risks identified. The strategy should include business goals and once these are defined, targets that supports the strategy are developed. With targets in place, measures to assess the risks in relation to the overall business can be developed. To support the risk management process and overall strategy, frameworks and supporting functions such as policies and guidelines have to be put in place. This can be risk specific governance documents including information regarding steering, acceptance criteria and tolerance levels of the risks. By following this systematic approach, controls can be implemented to ensure that the company do not diverge from the plan. Lastly, the impact of potential risks are most often measured in terms of impact on Earnings before Interest and Tax (EBIT) and the case company strive to classify risk as either sales or costs per standard (Company CDP Report, 2019).

More specifically focusing on the different parts in the risk management process, the respondents conclude that all risks are assessed by an examination of the potential risk, based on the likelihood, impact and preparedness of the risk. The risk management process takes its stand in a matrix, developed in an Excel-based tool. A predefined list of risk topics is sent out to the business units on annual basis, assessing risks based on importance to the specific business area. Risks are ranked from 1-5 where the probability of the risk occurring within the five coming years is assessed, ranging from less than 10 % to over 80 %. (Business Risk Assessment Tool, 2019) Based on this, potential impact is evaluated based on financial, operational, strategic and compliance criteria. Each impact is measured in terms of Return on Capital Employed (ROCE), EBIT or Cash Flow. (Business Risk Assessment Presentation, 2019) The result of the impact analysis is then categorized in different levels of action in a risk matrix, which later is transferred into a readiness matrix and separate mitigation plans are developed. (Business Risk Assessment Tool, 2019) It was claimed that processes are working especially well for risks measured in terms of financial impact as there are many controls in place to ensure that data provided is of high quality.

Presentation and Quantification of Sustainability Activities

Sustainability activities are mainly reported in the Annual and Sustainability Reports. Respondents state that information disclosed in the Annual and Sustainability Report is of very general character and the connection to financial impact is seldom strong. Climate risks and opportunities tend to be briefly described, more focusing on overarching processes then specific and quantified details. The sustainability report is created in accordance with the GRI standards, using guidelines and standardized metrics for CSR activities provided in the framework. The metrics is generally of qualitative character, interpreted and adapted to fit the organization. In addition to the strategic sustainability goals and targets reported according to the GRI, the yearly CDP report is argued to play an important role in communication of climate activities. The CDP questionnaire includes information on concrete actions to mitigate climate risks and explore opportunities, also covering explicit calculations and descriptions of potential financial outcomes (Case Company CDP Report, 2019). Furthermore, as the SBT is incorporated into the overarching business strategy of the case company, progress is reported upon these targets in the annual report and are shown as a percentage of accomplishment in relation to goals set for different time horizons. (Annual Report, 2019; 2018) In addition to the SBT, other CO2 emission, recycled and renewable material in packaging, recycling of production waste, amount of certified fresh fiber and water usage targets are incorporated into the strategic goals of the company (Annual Report 2018; 2019). The presentation and reporting on these aspects are all specified in percentage terms, where the goal and outcome are set in relation to each other.

Respondent outline difficulties in quantifying sustainability and climate activities due to uncertainties in the information and limited knowledge in management of such activities. Attempts to manage these uncertainties result in ad hoc processes leading up to the final result. One respondent explained how these quantification process may take place, illustrating the work behind a corporate wide plastic reduction target. To illustrate, the strategic goal of the proportion of packages produced by renewable or recycled material is set to 85 % by year 2025 and where the outcome year 2019 amounted to 68 % (Annual Report, 2019). Product owners and internal sustainability experts met at a workshop and the process was initiated with a current state analysis, where historical data on the usage and recycling of plastic was presented. At this point in time, the

use of recycled plastics in packaging was non-existing. The historical data got verified by examining the perceived feasibility in numbers presented in order to make sure that the number made sense in relation to product category size and amount of production. Once the historical data had been verified, this data was used to create a baseline. The Sustainability Director initiated a discussion regarding each product categories capacity to convert to recycled plastic by saying "what if you were able to use x percent reused plastic?". When agreeing on a feasible number, the Sustainability Director then pinned the hypothetical number into an interactive tool, resulting in bars changing in a Excel-tool. "That was how we came about the 25 % reduction in plastic". This conceptual tool played a significant role as no one had the exact number on beforehand and a concrete number was needed in order to set a strategy. Lastly, it helped to conduct a prognosis and set a target. The Sustainability Director highlighted that the teams could not beforehand say that 25 % was a good number, neither could they give any reasonable numbers out of nothing. It was therefore argued to be a top down and bottom up approach at the same time. After the reduction target was set, the product owners went back to their business units and thought about the feasibility of this number and then started to build their own roadmaps, breaking down their individual targets into sub-targets. The plastic reduction target is nowadays a part of the strategic goals of the case company.

Limitations in Current Processes

Although well-working processes to assess financial risks and risks with clear financial impacts, difficulties were stated to occur when striving to apply current processes to climate and sustainability related risks. Furthermore, lack of reliable data complicates both assessments and connections to financial performance and position. The financial impact stemming from climate and sustainability activities is argued to be difficult to specify, demonstrate and describe, consequently undermining data quality. Stronger connections to financial impact was therefore argued to be crucial in order to really incorporate these principles into the already existing sustainability and climate reporting processes. Another challenge highlighted in interviews stem from lack of controls and common definitions, which may undermine the quality of information provided due to differences in interpretation of information throughout the organization. Respondents claim that financial reporting have robust processes in place in terms of routines, processes and strict regulatory disclosures requirements. This was a great contrast to existing practices for sustainability, why respondents acknowledged that reporting of non-financial data needs more established procedures in place in order to achieve the same standard of disclosure as financial data. Moreover, different time horizons were identified as another big challenge when trying to incorporate climate risks into already existing risk management processes. Current risk processes in the case company only have a time horizon up to a couple of years, whereas climate aspects may have very long-term consequences. This imply difficulties when bringing back the climate risk or opportunity and converting it to concrete actions today. Therefore, although a will to quantify and provide detailed information, respondents acknowledge climate and sustainability being highly complex topics and that all things are not possible to transform into numbers.

Investor Perspectives on Sustainability and Climate in Corporate Disclosures

Investor Interest in Sustainability and Climate Change

As emphasized by the External Auditor, the most important target group for corporate disclosures are the investors due to their role as providers of capital. Hence, investor opinions regarding corporate disclosure on sustainability and climate risk activities is of great interest. As shown in investor interviews, climate risks and opportunities are climbing on investor agendas worldwide. Respondents state that the number one objective in addressing climate and sustainability is to ensure long term value creation (INV1 Annual Report, 2019; INV2 Webpage, n.d; INV3 Company Report, 2019). As outlined by one respondent, long term financial value creation is not possible to achieve if portfolio companies do not act responsible. Furthermore, a corporate willingness to change and ability to act upon opportunities related to climate and sustainability (INV1 Annual Report 2019) are claimed to be deal breakers when conducting new investments. To accurately capture and evaluate the business opportunities that this transition period reveals is however claimed to be highly complex.

Investors state there is no recipe of how to address sustainability and climate change in a right way. One respondent summarizes the investment company's perspective as "...to us, genuine sustainability is entirely integrated in what an organization does - everything. It is important as a part of the strategy of the company, how they work and how they are setting up goals". As strengthened by other respondents, it comes down to investors striving to understand if and how a company really work with these issues in a genuine way. However, as the investors do not have full insight into the organization, investors may be highly dependent on corporate reports disclosing internal activities. Company assessments analyses are based on whether a company seem to work with sustainability in a genuine way, why insight into internal processes are important in order to evaluate a company. This require targets, measurement and recurrent evaluations to enable benchmarking both over time and towards other organizations, implying need for both quantitative and qualitative data.

Investor Evaluation of Corporate Sustainability

Evaluations of current and potential portfolio companies tend to differ depending on type of ownership, geographical distance and number of companies in the investor portfolio. All investor respondents stressed the importance of evaluations based on a holistic understanding of the company, its business model and overall engagement in sustainability. However, this require a somewhat close relationship and engagement in the company (INV1 Webpage, n.d), often meaning frequent dialogues and physical meetings (INV1 Annual Report, 2019). These assessments tend to be more qualitative in nature, incorporating softer information such as analyses of board and management, strategy and actual actions undertaken. This high level of engagement is clearly in line with all the investors long-term active ownership strategies. One respondent compares this investment strategy with other asset management companies, holding hundreds of companies in their portfolios. Direct contact and high engagement are much more difficult with such setups, implying a reliance on quantitative data and external verification such as ratings, rankings and frameworks. However, these working methods comes with a challenge "To rely on this, you need knowledge about the underlying models. Furthermore, a lot of information is lost. The score does not really say what leads up to the score". Another respondent adds to this by saying: "Of course, there are times and cases when standards, ratings, rankings and certifications can be useful. The

problem is that we ourselves are ranked by these agencies and you get a bit scared when you see the rationale behind it. You have to take it with a pinch of salt, these are very square and narrow methods to make evaluations. There is no qualitative aspect integrated at all, it is more or less just check-the-box." Hence, to make proper evaluations, soft information from interaction and engagement in combination with hard, quantitative data is argued to be necessary.

Investor Opinions on Sustainability in Corporate Disclosures

All respondents agree on frameworks for external communication being useful to some extent, but primarily when presenting information. The internal processes and those being conducted in a genuine and structured manner, with support throughout the entire organization, are what truly matters rather than presenting exact numbers in external disclosures. Frameworks for disclosing information are described more as a tool to capture large amount of data in a compressed and comprehensive way, rather than having good scores or rankings in external frameworks as end goal. More specifically, it is the information in the framework resulting from an extensive internal work that matters. One respondent outlined a risk with frameworks and scores, as it does not necessarily tell anything about the quality in internal process, only who put the most time and effort into answering the questions in the frameworks. "Therefore, we strive not to use such standards or ratings. It is not sure that so much detailed information is the best way to do business".

Moreover, there is somehow a consensus regarding the importance of external publication of sustainability and climate related information in corporate disclosures. One investor argues "...if an organization genuinely address sustainability it will affect the entire business and over time be incorporated into the general descriptions". Respondents acknowledged that there are some key difficulties in assessing quantitative climate data in sustainability disclosures. For example, some data such as energy consumption is relatively easy to access, whereas data on suppliers, carbon footprints and end of life products might be more difficult. Respondents confirmed that this difficulty arise as a consequence of the lack processes capturing these dimensions, resulting in information presented being based on assumptions. This was captured by one respondent stating that "The major challenge is that the data quality on produced climate data can be questioned as the data in fact is based on calculations, that are based on estimates, which are based on assumptions." Lack of consistent methods imply that climate data might be very volatile when studied over time. This could stem from companies making continuous corrections and developing calculations, estimates and assumptions over time. However, according to the case company external auditor, external communication is mainly about providing an awareness rather than exact numbers and measures. Accordingly, qualitative aspects could potentially be what communicate both awareness and authenticity to investors. A strong emphasis on the importance of soft information and qualitative aspect was clear in all investor interviews, where several respondents noted that there is a need for more context and explicit information in the annual reports and statements regarding climate change from the CEO. Lastly, one respondent forecasted that there probably will be increasing reporting requirements on climate data. Not necessarily more explicit numbers on for example waste, rather more data and reporting on concrete climate actions being undertaken by the portfolio companies.

DISCUSSION

Standardization to Build External Legitimacy

Previous research tend to stress external legitimacy as an explanation and main driver in the increase of corporate disclosures on non-financial information (Hahn & Kühnen, 2013; Herremans et al., 2009; Kitzmueller & Shimshack, 2012; La Torre et al., 2018) as well as to the use of standardized tools and methods, observable in business worldwide (Chelli & Gendron, 2013; Hahn & Kühnen, 2013). As legitimacy is considered to be a resource on which the organization is dependent upon for survival (Deegan, 2014), this explain why companies devote significant resources to communicate actions undertaken to meet the society's norms of sustainability (Chelli & Gendron, 2013).

The need to make sense out of the complexities characterizing sustainability have resulted in commensuration taking various expressions in the case company. Information from corporate activities are categorized, ordered and standardized in order to simplify uncertainties associated with climate change (Espeland & Stevens, 1998; Espeland, 2001). In the case company, commensuration is mainly exemplified in compliance to standardized sustainability frameworks and incorporation of climate risks into general risk management processes. Commensuration, manifested in these simplification processes, aim to facilitate an internal understanding and create external awareness through categorization and ordering of information (Espeland & Stevens, 1998). Once collected and ordered, this data is later disclosed to external stakeholders in public filings. The systematic approach of simplifying complexities and reducing noise is argued to be fundamental when streamlining activities (Heimer, 2001), important to facilitate understanding and later also organizational action. The need for commensuration in terms of alignment and simplification was also observed in during the interviews. A clear example of how commensuration takes form is the use and compliance to well-established frameworks for external verification, such as sustainability reporting according to GRI, climate related disclosures aligned with CDP and carbon emission reduction targets approved by SBT. All frameworks aim to increase comparability by standardization, using clearly specified questions and measures (CDP, n.d; GRI, n.d; SBT, n.d; TCFD, 2017). Practically, this imply that extensive and diverse information stemming from various corporate activities is collected, compiled and presented to investors and other stakeholders in a comprehensive and coherent format. Accordingly, respondents emphasized that these frameworks serve as major communication channels when disclosing information. This entire process facilitates sense-making and action internally in the organization and can provide understanding of internal actions once disclosed to external stakeholders.

The benefits stemming from the systematic approach provided in the frameworks can explain the global trend of sustainability reporting, ratings and rankings observed in business during the last 20 years (Chelli & Gendron, 2013; Hahn & Kühnen, 2013). These externally provided frameworks provide guidance in commensuration of highly complex topics, leading to streamlining both within and across organizations. This ordering of information facilitates the incorporation of climate risks into existing practices, creating some sort of business as usual from which decision can be made and actions taken. As exemplified in the case company, the use of external frameworks mean that the organization take advantage of commensuration in terms of its ability to standardize information, enhance comparability and create order in sustainability

activities. This is further strengthening what is previously emphasized in research regarding standardization and comparability (Espeland & Stevens, 1998; Maas et al., 2016).

Furthermore, respondents confirm what is discussed in previous studies regarding the great ambiguities associated with sustainability and climate (Boiral et al., 2017; Mearns, 2010; Mynhardt et al., 2017). The lack of coherent understandings of the broad range of aspects included in the sustainability concepts result in absence of consensus in understandings, which is argued to undermine action (Banerjee, 2001; Bansal, 2005; Henderson, 2001; Van Marrewijk, 2003). Respondents stress that the ambiguities stemming from various definitions and management approaches internally risk resulting in diverse actions being taken, if any actions are undertaken at all. Therefore, the lack of coherent understandings was outlined as a major challenge for the development and improvement of climate risk management in global organizations such as the case company. Furthermore, as stated in research, commensuration enable the creation of a common language (Brorström, 2018) facilitating broad understanding, resulting in improved efficiency in decision-making and organizational action (Espeland & Stevens, 1998; Heimer, 2001; Kalthoff, 2005), as a result of communication through generally accepted standards. The importance of commensuration as a mean of communication was confirmed by the interviewees, stressing the importance of organization wide shared definitions and understandings in order to manage and assess climate risks. If successfully establishing metrics that are generally accepted throughout the organization, communication can flow more efficient, also facilitating decision-making and action. Hence, findings indicate the great role of commensuration in organizational communication.

Moreover, in line with research (Chelli & Gendron, 2013; Hahn & Kühnen, 2013; Herremans et al., 2009; Kitzmueller & Shimshack, 2012; La Torre et al., 2018) the importance of legitimacy from external stakeholders was clearly visible in the interviews, as respondents outlined the need to be perceived as accountable especially by customers and consumers. Interviewees recurrently stressed the will to appear accountable, requiring some sort of external acceptance. This desire motivated corporate engagement in sustainability and climate risk management in accordance with guidelines provided in external frameworks. Furthermore, the institutionalization of external verification in sustainability (Chelli & Gendron, 2013; Hahn & Kühnen, 2013) imply that the legitimacy associated with the form of commensuration promoted in the frameworks is of non-negligible importance (Hahn & Kühnen, 2013; Kitzmueller & Shimshack, 2012). As legitimacy is considered to be a resource on which the organization is dependent upon for survival (Deegan, 2014), this explain why companies devote significant resources to communicate actions undertaken to meet the norms of corporate sustainability institutionalized in the society (Chelli & Gendron, 2013). In line with research, the respondents recurrently stressed the organization's extensive work for external acknowledgement, resulting in high scores in prominent sustainability rankings, indices and ratings so as recognition in a number of prestigious awards. This is evidence of actions undertaken in order to build and maintain legitimacy, furthermore, manifesting how the organization meet the norms of the society. Thereby, the desire of the case company to increase visibility of its sustainability engagement through external verification approaches to gain legitimacy was not surprising. Rather, it confirms what is already stated in research regarding external legitimacy from stakeholders as a main driver for corporate sustainability (see e.g. Hahn & Kühnen, 2013; Kitzmueller & Shimshack, 2012; La Torre et al., 2018).

The incentives to use standardized frameworks are hence twofold. First, the commensuration provided in these external frameworks facilitate sense-making by categorization,

ordering and the creation of a common language. This will turn enable more efficient decision-making, consequently driving corporate action. Furthermore, the frameworks serve as an important channel of communication with external stakeholders. Second, due to the fact that the frameworks have become an institutionalized practice when managing sustainability and climate risks, the adoption of frameworks entails verification and legitimacy from external stakeholders.

Quantification and Imitation of Financial Processes for Internal Legitimacy

Besides commensuration in terms of standardized frameworks purposed for external verification and legitimacy, there have been extensive discussions in accounting research regarding the need for comparability and measurement of non-financial information (see e.g. Maas et al., 2016). This is in line with the findings presented in this paper as the case company recurrently strive to commensurate sustainability in quantitative terms in order to increase comparability.

Except the legitimacy stemming from commensuration in terms of a common language provided in external frameworks, commensuration in terms of quantification might also add legitimacy in formal decision-making (Espeland, 2001). As sustainability commonly have been managed separately from ordinary business activities, this legitimacy is well-needed to increase the priority of the topics internally in organization. Therefore, as numbers and metrics commonly play an important role in rational decision-making (Espeland, 2001), it is not surprising that this type of commensuration has influenced the management of sustainability and climate in business. The legitimacy in numbers can explain the strong will to add quantification and numerical measurements to the already existing standardization in the case company. However, interviewees stated that there is currently a lack of well-functioning methods to quantify all sustainability and climate change activities and aspects in the organization. According to the respondents, there is a strong drive to quantify sustainability in business overall, however this is something that many organizations struggle with, also being confirmed in research (Diaz & Moore, 2017; Goldstein et al., 2019; Maas et al., 2016). Furthermore, respondents witnessed about non-coherent definitions, complicating internal work and providing one explanation to the difficulties associated with quantification of sustainability and climate risks. This presents a practical example of the importance of commensuration in corporate activities.

As shown in research, there is clear connections between commensuration, uncertainties in information and organizational action. Uncertain climate change information (Mearns, 2010) result in difficulties to concretize and quantify, further resulting in lack of reliable data (Mynhardt et al., 2017) which potentially undermine corporate action (Henderson, 2001). Simultaneously, quantitative information is argued to facilitate organizational action (Amor-Esteban et al., 2018), mainly due to the perceived objectivity in quantitative information (Denis et al., 2006). This objectivity creates a sense of rationality as numbers are viewed as transparent and consistent (Denis et al., 2006), which in turn might create a perception of reliability in processes. The reliability stemming from the objectivity in numbers is further what adds legitimacy and trustworthiness to internal methods, explaining why respondents doubted the quality in existing processes for sustainability, as these tend to be vaguer and more qualitative in nature. Furthermore, research show that people tend to rely on quantitative information and numbers in decision-making (Hansen, 2015; Pollitt, 2011), making quantified information powerful when driving agendas and convincing opponents (Denis et al., 2006). Hence, quant-based processes and tighter connections to financial position could be of great importance when driving the sustainability agenda internally in the case

company. An example of how this is illustrated in the case company is that all sustainability related goals in the Annual and Sustainability Report is presented in quantitative forms. This confirms that quantification is advantageous in pluralistic and ambiguous settings (Denis et al., 2006), hence also desirable in climate risk management as it tends to be characterized by high degrees of uncertainty. The inherent power and legitimacy in quantification and numbers (Brorström, 2018; Denis et al., 2006; Hansen, 2015; Pollitt, 2011) could therefore explain the motivation to quantify climate risks in the case company, mainly as a tool to increase the importance of such activities internally. Altogether, the ambiguous and complex nature of sustainability have commonly resulted in qualitative assessments and descriptions, which can explain why it has played a negligible role in corporate decision-making. Lack of numbers have hence undermined the perceived importance of sustainability in the case company, explaining the inferior position of non-financial information in contrary to financial information and resulting in low status on corporate agendas. Therefore, quantification could serve as a tool to increase its status and importance in internal decision-making.

Moreover, financial motives appeared to be a strong underlying incentive in managing climate risks, perpetrating the respondent's reasoning when discussing corporate sustainability and climate risk management. As outlined by several interviewees "it all comes down to the financials in the end". One explanation to this phenomenon could be that climate change is becoming an increasingly important part of general business risk management (Anderson & Anderson, 2009; Pattberg, 2012) mainly due to potential increases in operational costs, resulting in increased financial risks. As general business risks in the case company are measured in terms of their potential financial impact, such as EBIT, ROCE and Cash Flow, this illustrates a tight connection between risk management and financial position. Moreover, as respondents considered climate constituting for substantial business risks nowadays, measurement in terms of financial impact was outed to be desirable also for climate risks. The strong consensus about the importance of connecting climate change activities to financial performance indicate that financial information has a superior position in the case company. Hence, the perceived objectivity and legitimacy in numbers (Espeland & Stevens, 1998; Porter 1995) and the observed superiority of financial information could motivate the emphasis on climate risks being measured in financial terms. Thus, stronger connections to financial performance was viewed as an attempt to increase legitimacy in climate information and improve its status in internal decision-making. Another example of actions undertaken to improve the status of sustainability was evident in the recent reorganization, conducted with the purpose to integrate sustainability into general business processes to a higher extent. Taken together, this could legitimize and motivate corporate sustainability in general (Rowley & Berman, 2000) moving these topics higher up the corporate agenda.

Another explanation to the financial orientation when managing climate risks was centered around internal work methods. Processes to manage financial information was argued to be objective and tangible in contrary to non-financial information, often characterized by multifaceted definitions, as acknowledged in research (Bansal, 2005; Van Marrewijk, 2003). The concreteness in financial information was argued to result in smooth processes and efficient internal decision-making, which can be explained by numbers facilitating organizational order and routines (Heimer, 2001). In contrary, the lack of quantified information in climate risk management could explain the challenges associated with intangibility, causing confusion and resulting in diverse action plans. This explain why the respondents recurrently stressed the desire to use quantitative measures and

existing financial processes to manage sustainability and climate risks. Interviewees also acknowledged that non-financial information do not have as established processes in place as financial information, why incorporation of quantitative aspects into non-financial information could improve comparability and accountability in disclosures to investors and other stakeholders (Sauder & Espeland, 2009). The respondent's will to use numbers is to be seen as attempts to rationalize and concretize the many ambiguities associated with non-financial information. Aligned with research, commensuration could facilitate the creation of stable systems when dealing with unstable information (Sauder & Espeland, 2009) which is commonly achieved by the use of quantification. Hence, the benefits of incorporation into and imitation of financial processes explain the case company will to align climate risk management with its financial processes.

The Uncertainty in the Certain Number

Previous section emphasized the will to quantify climate risk information as a result of the legitimacy in numbers and superiority of financial information in the case company. However, practical organizational level examples are lacking in research, why this section illustrates how attempts to quantify sustainability takes place in the case company. This aim to fill a gap in previous research, mainly providing industry-level analysis (see e.g. Amor-Esteban et al., 2018; Chelli & Gendron, 2013; Herremans et al., 2009) or just examining the quantification models (see e.g. Auffhammer, 2018; Diaz & Moore, 2017).

However desirable, there are a number of challenges associated with quantifying climate information. Stressed in both research and interviews, climate risks are highly uncertain (Boiral et al., 2017; Diaz & Moore, 2017; Mearns, 2010; Mynhardt et al., 2017) explaining the gap between the will to take action the actual actions undertaken. The major obstacle in the case company was argued to be a result of lack of knowledge and processes to manage such risks. The shortcomings in processes was stated to be mainly a problem associated with different time-horizons and insufficiency in accounting tools, as the long-term result of an organization's sustainability engagement is dependent on short-term corporate decisions (Burritt & Schaltegger, 2010). As sustainability is a long-run concept while financial decision-making only looks a few years ahead, this clearly illustrate the wicked nature (Wright & Nyberg, 2017) of sustainability in business. As in the case company, financial processes have a three to five-year horizon, implying that existing methods are insufficient to capture the long-term complexities of sustainability. Therefore, respondents stressed that in order to incorporate climate risks into the general risk management processes, time horizons of the assessments have to be extended. Moreover, there are differences in the collection and use of information. The robustness in financial processes highlighted in the interviews could be a result of systematic data collection conducted on regular basis, which is also to be seen in research (Burritt & Schaltegger, 2010). In contrary, the collection of non-financial data tends to be infrequent and gathered on an ad hoc basis to serve specific purposes, due to lack of well-established reporting cycles (Burritt & Schaltegger, 2010). This is in turn affect the data quality resulting in calculations being based on estimates and assumptions, also highlighted in research (Auffhammer, 2018; Mynhardt et al., 2017), and this phenomenon was also to be seen in the organization. Accordingly, interviewees outlined that the lack of concrete data internally result in calculations of sustainability often being based on assumptions.

The use of estimates and assumptions is clearly illustrated in a trial and error situation during a workshop, when the plastic reduction target was to be set. Due to the uncertainty

associated with prognosing potential future outcomes, the Sustainability Director simply asked the group "what if you were able to use x percent reused plastic?". The feasibility of different alternatives was discussed, and outcomes were reasoned around, resulting in suggestions being turned down by subjective opinions, such as being too high or too low. Lastly, the suggested reduction targets agreed upon for each product category was then simply pinned into a calculation tool and the total reduction target amounted to 25 %, which then was adopted as a general target throughout the company. As illustrated in the example, this number was a result of a process subject to personal opinions and perceptions and calculations simply were based on estimates and assumptions. As a result, the legitimacy and rationality stemming from a perception of objectivity in numbers originates from a constructed than an inherent objectivity. This imply that numbers do not serve as a neutral measurement (Espeland, 2002), but are rather created to look rational (Espeland & Stevens, 1998). However, as people tend to rely on numbers in decision-making (Hansen, 2015; Pollitt, 2011), numbers can be used to convince opponents and drive agendas (Denis et al., 2006) illustrating the power that commensuration entails (Espeland, 2001). This example clearly illustrates this phenomenon and can explain the strong will to increase the use of numerical information in climate risk management. Moreover, even though a great uncertainty in the certain number used in decision-making, imprecise numbers may still facilitate sense-making (Espeland & Stevens, 1998) and organizational action (Denis et al., 2006). As demonstrated in the case company, a number created out of subjective interpretations and calculations based on estimates and assumptions was incorporated into the strategic goals of the case company, facilitating organizational wide uniting and later driving strategic action. This example clearly illustrated how numbers could be used to drive corporate action and increase the status of climate related information internally in the organization.

As in line with research (Brorström, 2018; Porter 1995), the plastic reduction target served as a tool for communication both internally and externally which also indicate the power in a number developed under very ad hoc procedures. However, even though a number of advantages stemming from quantification and simplification of information, it is important to acknowledge that some aspects might be too unique to standardize and value in relation to something else. Social and environmental values might be determined in various dimensions, implying great ambiguities and difficulties to assess in purely monetary terms, why such aspects potentially not should be subject to the trade-offs that commensuration requires (Espeland, 2001). Moreover, the incommensurable characteristics of sustainability imply that simplification could result in insufficient methods and metrics, implying corporate sustainability being difficult to manage on an organizational level anyway (Banerjee, 2001; Bansal 2005; Henderson, 2001; Maas et al., 2016; Van Marrewijk, 2003). Quantification may thereby result in flawed results and important dimensions in information being lost (Kharrazi et al., 2014), also shown in studies of the carbon emission markets (MacKenzie, 2009) and the creation of weather derivatives (Huault & Rainelli-Weiss, 2011). An ambiguous input such as complex climate information might not even be possible to transform to into a measurable and static output (Patterson, 1998). Therefore, quantification might not always be the desired solution to ambiguities associated with corporate sustainability.

In sum, the reasoning in the case company is much in line with what previous research states regarding challenges in quantifying sustainability and climate (see e.g. Diaz & Moore, 2017; Goldstein et al., 2019; Maas et al., 2016). Findings from interviews confirm the importance of commensuration in sustainability and climate risk management, as a mean to order and simplify

complex information to facilitate organizational action. Commensuration in the case company is most clearly visible when disclosing information in standardized measures, as a result of compliance and reporting in accordance with frameworks for external verification. Additionally, the institutionalization of frameworks in corporate sustainability over the last twenty years imply that adoption of frameworks is tightly connected to organizational legitimacy from public stakeholders. Moreover, the power and legitimacy of numbers in internal sustainability and climate risk management was clearly visible in the case company. As shown in previous research and illustrated in the plastic reduction target example, numbers drove action by the creation of an anchor facilitating sense-making, from which actors could orient themselves and decisions could be made. This was valuable independent of the accuracy in the number, also shown in the Black-Scholes model where the wide adoption of the inaccurate model was explained by its ability connect actors and facilitate actions (Millo & MacKenzie, 2009). This clearly demonstrate how numbers can be used to create a basis for human understanding of complex information. In addition, except the facilitation of action, these examples provide a great example of the inherent legitimacy in numbers.

Taken together, the findings revealed another dimension of legitimacy associated with commensuration. The power in numbers and the legitimacy associated with it explain the will and attempts to quantify climate risk management in the case company. The need for internal legitimacy was interpreted as the main driver for quantification of sustainability activities and climate risk management, as quantification adds power and legitimacy to internal processes. Thus, the strive for numbers is to be seen as a mean to increase the status of non-financial information internally implying that sustainability and climate risks could climb the corporate agenda. However, the desire for the legitimacy associated with numbers risk to come on behalf of the accuracy in the information. As shown, current methods to produce quantified climate data of high-quality result in a certain number being produced in a very uncertain way. This depict the difficulties in transforming qualitative measures into quantitative metrics, as commensuration seem to be better functioning for financial information than non-financial information. Consequently, the uncertain nature of climate related information imply that the numerical output of a quantification process might be highly unreliable as the number most certainly will be based on estimates and assumptions. Ironically, this imply that even though perceived to be certain by its very own nature, the number produced entail great uncertainties although concrete and measurable. Although insufficiencies in quantifying non-financial data, the legitimacy associated with numbers was perceived to be more desirable than the actual accuracy in the numbers being used.

The Mismatch in Corporate Sustainability Disclosures

Somewhat surprisingly as representants of a very quant-based and financial oriented industry, investors were not overly enthusiastic about quantification of sustainability as information valuable for decision-making might disappear in the simplification process. According to one investor, inter-dynamic relationships and contextual dependencies risk to be lost when pressing complex information into narrow and square models. In contrary to research (Levy et al., 2010; Wang, 2014), the respondents stressed the importance of qualitative aspects in sustainability assessments. The investors highlighted the need for a holistic understanding of the business, requiring soft information (Hahn & Kühnen, 2013). Research state that quantification always express a quality (Brorström, 2018), while findings from the investor interviews show that these qualities are not

fully captured in the simplified measured and models used in sustainability analyses. The awareness about the shortcomings in commensuration, in terms of information being too simplified to add value in decision-making, indicates that some aspects could and should not be subject for commensuration. Accordingly, this is in line with Espeland and Stevens (1998) arguing that some values cannot simply be compared with other values. Furthermore, these findings indicate that some investors demand soft information to a greater extent than expected in contrary to the general perception of a high investor dependency on hard information, clearly connected to financial performance measures (Hahn & Kühnen, 2013).

The commonly stressed comparability aspect outlined by the critics of corporate sustainability reporting (Hahn & Kühnen, 2013; Levy et al., 2010; Maas et al., 2016; Mynhardt et al., 2017) were furthermore not considered as that important among the investors. Researchers tend to outline the lack of quantitative data for analysis (Mynhardt et al., 2017), stemming from lack of well-defined measures and metrics as the reason to sustainability and climate data not playing a significant role in investment decisions (Levy et al., 2010). In contrary, respondents acknowledged that all companies are different and face different challenges, emphasizing the uniqueness of each firm as something positive even if complicating comparison and benchmarking. This clearly illustrate a paradox in the sustainability reporting discussion, as researchers on the other hand stress the need for quantification and comparability (Levy et al., 2010; Maas et al., 2016, Mynhardt et al., 2017) in order to reduce information asymmetries between the firm and its investors (Mynhardt et al,, 2017). In addition, consistency and clear narratives are outlined as crucial denominators in successful investor communication when dealing with uncertainty (Oppenheimer et al., 2016), however there seem to be a mismatch in what narratives are produced and what is truly valuable to investors. A great emphasis on numbers and narrow models is observed in the academia and within the case company, but investors interviewees argued that numbers are too simplistic to capture all valuable dimensions of sustainability. These findings indicate that the consistency and clear narratives promoted in academia and corporate discussions do not apply on all investors as long-term, active investors seek unique and qualitative information in corporate disclosures. A higher level of engagement in portfolio companies is further explaining why investors interviewed not solely rely on simplified and quantified data in sustainability assessments.

Furthermore, the investors discussed the usefulness in sustainability rankings, ratings and scores. The investors agreed upon the increasing quantification in government of social and environmental performance have resulted in an ideology of numbers, confirming what is found in research (Chelli & Gendron, 2013). The investors discussed the shortcomings in sustainability ratings, stressing the fact that it implies very square and narrow methods for evaluation. Commonly, it does not incorporate any qualitative aspects at all, meaning that it is more or less just check in the box. This is clearly in line with Chelli & Gendron (2013), stating that sustainability ratings promote a very narrow picture of reality as only some dimensions are made visible while other are left in the shadow. Another challenge when discussing frameworks and methods for external verification is the focus on getting good scores as a tool to gain legitimacy from the external audience. One interviewee outlined that this one-sided focus risk to result in companies only prioritizing aspects of sustainability that is included in rankings for external verification. This can consequently result in a very narrow focus, negatively streamlining corporate activities and creating an attitude of only what is measured matters.

A future-orientation and a corporate willingness to change was further argued to be essential to investors. The respondents stressed the importance of transition to sustainable business models and the ability to seize opportunities, requiring a future-oriented approach which is difficult to measure today. These aspects were interpreted as highly intangible, rather dependent on organizational creativity and flexibility than the measurement of activities conducted in the present. Mearns (2010) stated that commensuration require activities that somewhat constitute as a normal organizational mode. As opportunities and transition is in the future, this might imply difficulties to commensurate as this is not a part of current normal organizational mode. Moreover, as stated by one respondent, quantitative data is only possible to derive from past and current activities, saying nothing about future opportunities for value creation.

Worth mentioning, the emphasis on qualitative information in investor decision-making could be related to type of ownership and time horizon in holdings. All investors interviewed represented organizations being long-term active owners, holding few companies and having relatively large voting rights. The continuous engagement in portfolio companies could hence reduce the dependency on quantitative scores when conducting analyses. In contrary, investors holding hundreds of companies in their portfolio have to rely on quantitative data and scores in assessments as direct engagement would be difficult, if not impossible. The strong focus on commensuration and comparability stressed in research (Levy et al., 2010; Maas et al., 2016, Mynhardt et al., 2017) could hence potentially be driven by demands from institutional investors requiring quantitative models to deal with uncertainties and ambiguous realities (Oppenheimer et al., 2016; Porter, 1995) in large holdings. It can also explain the rapid growth in importance of sustainability rankings, discussed by Chelli & Gendron (2013). Further, this illustrates interesting differences between investor ownership strategies and a divergence in the incorporation of soft and hard information in investment analyses (Hahn & Kühnen, 2013). Hence, a more nuanced picture of investor demands is necessary in order to support future development and prevent further mismatch in corporate sustainability and climate risk disclosures. Additionally, this is related to contextual factors why institutional context needs to be taken in consideration when conducting research.

To summarize, this study revealed interesting investor perspectives on commensuration of sustainability and climate change. Even though representing a very quant-based industry, investors interviewed stressed the importance of qualitative information in sustainability assessments. Despite witnessing about an ideology of numbers (Chelli & Gendron, 2013) in the industry, investors interviews stated that many quantification models are insufficient to capture the complexities associated with sustainability. This reasoning clearly confirm that some aspects might be too unique to standardize without valuable dimensions being lost. However, these findings were related to the long-term active ownership strategy of the investor respondents' organizations. The strong focus on commensuration and comparability in research (Beck et al., 2017; Levy et al., 2010; Maas et al., 2016; Mynhardt et al., 2017) could hence be driven by investors with large portfolios, shorter time horizons and portfolio companies in different national contexts explaining the dependency on simplified and quantified corporate data in analyses. The findings from this study show on heterogeneous informational demands in sustainability and climate assessment, as investors with an active ownership strategy have a higher level of engagement in portfolio companies, which further undermine the importance of externally verified quantified information. Rather than making use of simplified quant-data, these investors emphasized the importance of

data with qualitative characteristics. This as simplification comes on behalf of essential dimensions of sustainability being lost. The findings also confirm that the strive for quantification and the superiority of numbers observed within the case company solely is driven by the desire for internal legitimacy rather than satisfying investor demands, at least in the context of which the case company operates. Quantification is hence conducted in order to increase the status of non-financial information internally, to enable sustainability and climate risks to climb the corporate agenda. Commensuration in terms of quantification have previously in research been motivated by demands from investors, however, this study reveals that the emphasis on quantification is rather about producing numbers to drive actions internally.

CONCLUSION

Research on corporate climate risk management has mainly been conducted on industry level (see e.g. Amor-Esteban et al., 2018; Chelli & Gendron, 2013; Herremans et al., 2009). Previous studies tend to stress the difficulties in management of sustainability as a result of the ambiguities related to the concept (Bansal, 2005; Van Marrewijk, 2003). The many uncertainties associated with sustainability and climate change (Mearns, 2010) could potentially have a negative impact on internal processes, resulting in lack of reliable data (Mynhardt et al., 2017). Consequently, researchers propose standardization and quantification as a solution to the challenges related to corporate sustainability (Chelli & Gendron, 2013; Goldstein et al., 2019; Hahn & Kühnen, 2013; Maas et al., 2016). In addition, an increasing investor interest in climate change and need for comparability in corporate disclosures can further explain this development (Depoers et al., 2016; Levy et al., 2010; Li et al., 2019). Based on this, this study seeks to add to previous research by an in-depth case study of organizational attempts to standardize and quantify climate risks, also providing valuable investor insights regarding information disclosed. The research question was stated as following: *how do the case company manage and assess climate risks and what type of climate risk information do investors demand?*

As of today, the assessment and management of sustainability in general is mainly taking place in CDP, GRI, SBT and the strategic goals of the case company. Commensuration is visible in standardization and categorization of sustainability and climate information in according with external frameworks, facilitating internal understanding by simplifying complexities and providing a common language. Besides the benefits stemming from commensuration, the need for legitimacy from external stakeholders could explain the wide adoption of standardized frameworks for external verification, as previously confirmed in research (see e.g. Kitzmueller & Shimshack, 2012). As climate risks are becoming increasingly important business risks, the risk of negative financial impacts originating from climate events are increasing accordingly (Nikolau et al., 2015). As a consequence, the respondents acknowledged the need to manage and assess climate risks in the same way as general business risks. Moreover, the superior position of financial information in the case company could explain the strive to imitate and incorporate climate risks into processes developed for financial information. This paper found that quantification and tighter connections to financial measures could serve as a legitimating process, resulting in sustainability climbing the corporate agenda. However, incorporation of ambiguous climate change information into simplified financial processes could result in great uncertainties in the perceived certain numerical output. Although imprecise, this uncertain output was proven to be of great worth to facilitate

organizational action. Hence, findings highlight that the strive to imitate financial processes in climate risk management show on the internal search for legitimacy in non-financial information rather than correct quantifications and numerical outputs.

The emphasis on quantification of sustainability and climate risks observed in the case company was aligned with what research argue about reduce uncertainty in order to improve comparability (Levy et al., 2010; Maas et al., 2016; Mynhardt et al., 2017), however it was not in line with investor demands on information disclosed. In contrary to research, investors interviewed highlighted the importance of qualitative information in management of sustainability and climate risks. Hence, the study reveals a divergence in the perceived value of qualitative data, where investors emphasize its importance while the case company favor quantification through a quite narrow focus on connection to financial performance indicators. Investors argued that quantification models are insufficient to capture the complexities associated with sustainability, explaining the need for qualitative information to develop a holistic understanding of the business. This clearly illustrate a mismatch between the case company perception of informational demand from investors, and what information investors actually demanded. This phenomenon was further related to ownership strategy, highlighting heterogenous investor demands in climate risk disclosures.

Taken together, there seem to be two dimensions of legitimacy when seeking to commensurate sustainability and climate risks in the case company. The first dimension of legitimacy found in the study is legitimacy associated with frameworks for external verification. This form of legitimacy is outlined as a major incentive to engage in sustainability according to research (see e.g. La Torre et al., 2018), hence not a surprising finding when analyzing the case company. Second, it was evident that financial information has a superior position in corporate decision-making. This is argued to be related to the objectivity stemming from quantification, providing a common language and adding legitimacy. By imitating financial processes and by incorporating qualitative, ambiguous information into narrow and concrete quantitative methods, sustainability and climate change information can take advantage of legitimacy associated with financial data. Thereby, the use of established methods for financial information and the strive for quantification can hence serve as a legitimating process for sustainability and climate risks, increasing its status internally in organizations. These two dimensions of legitimacy clearly illustrate how commensuration of sustainability and climate information could serve different purposes. Commensuration in terms of quantification, similar to financial information, is important to build legitimacy internally, whereas commensuration in terms of standardized information when complying to frameworks rather is important to gain legitimacy externally.

This study contributes to research on corporate responses to climate change which is a largely ignored area within sustainability research. Moreover, this study adds a micro perspective in contrary to industry level analysis often provided in previous studies. This approach has revealed valuable in-depth insights about incentives in commensuration and quantification of climate risks. In addition, this paper contributes to research by identifying another dimension of legitimacy in the sustainability discussion. Rather than solely emphasizing the external one, this study finds internal legitimacy associated with commensuration and quantification as a mean to increase the status of sustainability and climate risks, enabling these to climb corporate agendas. Additionally, the importance of numbers was found to be more about driving corporate action, than necessarily

producing accurate numbers. Moreover, this study highlight heterogeneous investor demands when it comes to the nature of information required in sustainability assessments.

At last, suggestions for further research on the topic of climate risk management is to investigate the effects and outcomes of this internal legitimacy, used to drive agendas within organizations. More specifically, observe ongoing practices in organizations to understand how quantification is used to build legitimacy in internal decision-making. Moreover, quantification processes and the role of numbers in strategies and corporate action could be studied to gain a deeper understanding of organizational behavior in general. Additionally, heterogenous investor demands in corporate disclosures and the influence of institutional and contextual factors could be examined to broaden the discussion regarding commensuration of sustainability, important for future development of corporate climate risk management practices.

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