THE GOOD, THE BAD, THE CONFUSING - FINNISH BUSINESSES' PERCEPTIONS ON CLIMATE COMPENSATIONS

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Author: Laura Hildén
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Supervisor: Stefan Baumeister

JYVÄSKYLÄN YLIOPISTO

ABSTRACT

Author
Laura Hildén

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Companies face several indirect and direct climate-induced risks. Moreover, the role of businesses in climate change mitigation has been increasingly acknowledged and companies face a lot of expectations from the stakeholders to manage their emissions and to provide climate-friendly products for their customers. Consequently, companies have introduced ambitious sustainability and carbon management strategies and have started to investigate new ways to reduce their carbon footprints. Voluntary climate compensations are an emerging option for companies to neutralize their emissions and reach calculatory carbon-neutrality. However, companies have not yet widely adopted voluntary climate compensation as a part of their strategies, because there are significant uncertainties. Services are of variable quality and there is lack of standards and commonly agreed practices. Also experts and policy-makers still disagree on the proper usage of climate compensation. It is evident that for voluntary climate compensations to reach their full potential in climate change mitigation, more knowledge and shared understanding to support the work is needed. This research contributes to closing the gap and investigates the status quo of voluntary climate compensations among major Finnish companies. Both sustainability strategies and usage of climate compensations are assessed. Moreover, the attitudes and concerns of companies towards climate compensations form a major part of the research. The objective is to highlight the issues and opportunities of the field. For the purpose of this research, 27 semi-structured theme interviews were conducted among Finnish companies operating in different industries. The data was analysed with qualitative content analysis. The theory section discusses sustainability strategies, environmental management approaches and carbon management to provide background for the analysis. Additionally, the compensation markets and different logics are presented. It was noted in the research that voluntary climate compensation market in Finland is still in its infancy. However, companies are assessing possibilities to compensate, but have not yet acted upon it mainly because they do not have enough incentives or because they have concerns over reliability and usefulness of the services. Approaches varied between companies. Companies that had compensated had mainly compensated only part of their emissions, although majority of the interviewees stated that they could be carbon neutral overnight, if they chose to compensate.

Key words: sustainability strategy, carbon management, climate compensation, carbon offsets

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Yrityksiin kohdistuu ilmastonmuutoksen seurauksena lukuisia suoria ja epäsuoria riskejä. Lisäksi yritysten tärkeä rooli ilmastonmuutoksen hillinnässä on viime vuosina laajasti tunnistettu. Yrityksiltä odotetaan päästövähennyksiä ja niiden tuotteiden toivotaan olevan ilmastoystävällisiä. Yritykset ovatkin omaksuneet kunnianhimoisia vastuullisuus- ja päästövähennysstrategioita vähentääkseen aiheuttamaansa ilmastokuormaa. Vapaaehtoiset ilmastokompensaatiot ovat yksi nouseva keino laskennallisen hiilineutraaliuden saavuttamiseen ja päästöjen mitätöimiseen. Yritykset eivät kuitenkaan vielä laajamittaisesti hyödynnä kompensaatioita, sillä kompensointiin koetaan liittyvän useita epävarmuuksia puuttuvien standardien ja yhteisten käytäntöjen vuoksi sekä vaihtelevalaatuisten kompensointipalveluiden vuoksi. Jaettua näkemystä kompensaatiopalveluiden käytöstä ei ole myöskään asiantuntijoiden tai päättäjien keskuudessa. Jos vapaaehtoisia kompensaatioita halutaan hyödyntää ilmastonmuutoksen vastaisessa työssä mahdollisimman tehokkaasti, tulisi tietopohjaa ja yhteistä näkemystä uskottavasta kompensoinnista vahvistaa. Tämän tutkimuksen tavoite on osaltaan lisätä tietoa ja ymmärrystä aiheesta kuvaamalla, miten vapaaehtoisia päästökompensaatioita suomalaisyrityksissä tällä hetkellä käytetään. Lisäksi kuvataan yritysten asenteita ja epävarmuuksia kompensaatioihin liittyen ja pyritään tunnistamaan alaan liittyviä haasteita ja mahdollisuuksia. Tutkimusta varten haastateltiin 27:aa yritystä eri toimialoilta. Aineistonkeruumenetelmänä käytettiin puolistrukturoitua teemahaastattelua ja aineisto analysointiin sisällönanalyysin avulla. Tutkimus nojaa aiempaan kauppatieteelliseen strategiakeskusteluun asettaen aineiston ja tulokset osaksi laajempaa tutkimusperinnettä. Teoriaosio keskittyy erityisesti vastuullisuusstrategioihin sekä ympäristö- ja päästöjohtamiseen, mutta käsittelee myös kompensaatiomarkkinoita ja -keinoja. Tutkimuksessa huomattiin, että vapaaehtoisten ilmastokompensaatioiden käyttö on Suomessa vielä alkutekijöissään, vaikka yritykset ovatkin selvittäneet kompensaatiomahdollisuuksia. Syynä on insentiivien puute sekä epäluottamus kompensaatiopalveluita kohtaan. Kompensaatiokäytännöt vaihtelevat yrityskohtaisesti. Yritykset, jotka olivat jo ostaneet kompensaatioita, olivat kompensoineet pääasiassa jotakin tiettyä osaa yrityksen päästöistä. Monet haastateltavat totesivat, että kompensaatioiden avulla olisi periaatteessa mahdollista saavuttaa hiilineutraalius hyvin nopealla aikataululla.

Asiasanat: vastuullisuusstrategia, päästöjohtaminen, päästökompensaatio

Säilytyspaikka Jyväskylän yliopiston kirjasto

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1 INTRODUCTION

1.1 Research background

Climate change is undeniably the most burning topic of our time and requires urgent action from all actors of society. Climate is warming at a worrying speed because of human activity that stretches the planetary boundaries. To succeed in limiting global warming to 1.5°C compared to pre-industrial times, production and consumption patterns must change quickly and drastically. Government responses, change of consumer behaviour, and companies' pro-activeness have led to increased carbon management efforts of the companies.

This thesis studies companies endeavours for mitigating climate change, focusing primarily on carbon management strategies, more precisely on voluntary climate compensations. Voluntary climate compensations refer to actions taken voluntarily by an actor to repair the atmosphere's damage caused by its activities. In other words, an emitter aims to indemnify the emissions caused by removing an equivalent amount of emissions from the atmosphere through emissions reduction projects, which are usually designed for either capturing carbon or avoiding emissions. As a result of compensation, the organisation's calculatory carbon footprint is reduced or even neutralised. (Seppälä, Saikku, Soimakallio, Lounasheimo, Regina & Ollikainen, 2019.) By definition, carbon footprint is "a measure of the exclusive total amount of carbon dioxide (CO_2) emissions that is directly and indirectly caused by an activity or is accumulated over the life stages of a product" by Weidmann and Minx (2008, p. 4). The concept and its applications are discussed in more detail in chapter 3.

When discussing climate compensations, it is to be noted that there are two similar concepts used interchangeably, even though their meanings differ slightly. *Carbon offsets* are defined as "a reduction in GHG emissions - or an increase in carbon storage that is used to compensate for emissions that occur elsewhere" (Broekhoff, Gillenwater, Colbert-Sangree, & Cage, 2019, p. 6). *Carbon offset credits* represent a "transferable instrument certified by governments or independent bodies to represent an emission reduction of one metric tonne

of CO2, or an equivalent amount of other GHGs" (ibid, p. 6). Carbon offset credit is an equivalent concept for Verified Emission Reduction (VER), and it is typical to see both of them used simultaneously (Alhola, Judl, Norris & Seppälä, 2015.). In addition to these two interchangeably used concepts, there is also a relatively fresh concept of *carbon insetting*, which refers to a more hands-on approach that some companies take to compensate for their emissions with projects completed inside their value chain (Weber, 2018). "Climate compensation" or simply "compensation" is used in this thesis to cover all these, and other concepts are used only when referring to a more detailed aspect.

There are two main mechanisms for compensating the emissions: The first is to absorb greenhouse gases from the atmosphere by increasing carbon sinks. The second one is to take action, which reduces the corresponding amount of emissions elsewhere. In principle, there are two markets for carbon offsets: a larger compliance market, i.e., emissions trading system, which is based on the Kyoto Protocol, and a much smaller voluntary market. However, nowadays, these two also overlap sometimes. In this thesis, the focus is primarily on voluntary climate compensation markets. The different methodologies and procedures of climate compensations are discussed further later on as well as the mechanisms of the voluntary compensation market.

Climate compensations are a somewhat controversial topic, and the practices are often confusing, which diminishes the credibility and effectiveness of the compensations. There have been critical discussions about the role of climate compensations in climate change mitigation work, and the opinions vary. This research provides some insights into Finland's context and adds up to the discussion about compensations' role. The focus is primarily on companies' perceptions about and usage of climate compensations, through which the significance of climate compensations is assessed. To link the discussion to the larger picture, companies' sustainability and carbon management strategies are discussed.

1.2 Context of the study: wicked climate crisis

Climate change is a significant subject to address, as its importance is high, both for the future of humankind and planet Earth. The importance of studying companies' carbon management actions and climate work is best explained through a brief review of (anthropogenic) climate change and the associated greenhouse gas effect.

Climate change is the most burning topic of our time. Actions are needed urgently in all society sectors and immediate actions are needed from all actors (Hamrick & Gallant, 2018). Climate activists and politicians push the change of production and consumption patterns. The changes needed are significant in scale and somewhat fundamental in nature: they are linked to questions like energy and food production, transportation, and raw materials. This goes without saying that changes of this scale require a lot of effort and cooperation be-

tween different actors of the society. Thus far, the development has not moved in the right direction. Despite significant breakthroughs, such as the signing of the Paris Agreement with ambitious 1.5°C targets, and progress made, for instance, in the relative and absolute usage of renewable energy, technological developments, and increased introduction of circular business models, the GHG emissions still continued to grow in 2019. (Carillo Pineda & Faria, 2019.)

The changes need to be implemented as fast as possible. However, it is not a simple task to set the emissions to zero, and hence it can be expected that the transition takes time. That was recently seen as the COVID-19 pandemic shut down the majority of the modern economies. Even though traffic and consumption drastically dropped over night worldwide, the emissions did not decrease nearly enough to stop global warming and mitigate climate change permanently. That was because structural issues such as land use, energy consumption, and production patterns could not be changed even in such an exceptional situation. That is because of policy barriers and path dependencies. (Klenert, Funke, & Mattauch. 2020) No matter what happens, humankind needs food and energy to survive. Shutting down the factories, stopping energy and food production is not an option - the society has to keep on running, and people's basic needs have to be met. What is needed for radical emissions reductions is a structural change – restructuring our current economic system, shifting away from fossil fuel usage, and improving energy-efficiency – which is always complicated to implement. Structural change is driven by politics but executed by economic actors. Some time is required for production patterns to adapt to the transition after policies or financial measures have been implemented. Sufficient transition time is a requirement to keep business profitable and society functioning. (Kollmuss, Zink & Polycarp, 2008; Bayon, Hawn & Hamilton, 2009.)

In the upcoming future, it is expected that the regulation tightens, and financial or political incentives and sanctions for business operations increase at a faster pace. Signs of that have already been seen across the globe as an increasing number of states and other actors have introduced long-term climate objectives to reach net-zero emissions. (Carillo Pineda & Faria, 2019.) For example, in Finland, an ambitious target to become a carbon-neutral society by 2035 and carbon-negative quickly after that, was set after parliamentary elections of 2019. Soon after that, the European Union published a union-wide carbon-neutrality target to make the whole union carbon-neutral by 2050. To reach such ambitious targets, the government needs to engage all relevant stakeholders and all sectors of society. A road-map work towards climate-neutrality was started in all major sectors of the society. (Finnish Government, 2019; EU, 2020.) These targets and concrete paths to reach them play a significant role in climate change mitigation and set new roles for companies and drastically change the operational environment posing a regulatory risk to companies. Companies have already now addressed the regulatory risk and have taken actions to minimize the risk by adapting their operations (Bui & de Villiers, 2014).

Simultaneously with political decisions, consumers have increasingly started to make climate-sound decisions. According to a recent survey from IP-

SOS, globally, almost 69 per cent of consumers had started to change their consumption habits because of climate concerns and altered the products and services they consume (IPSOS, 2019). Consequently, the companies have increasingly introduced ambitious sustainability and carbon management strategies and voluntary environmental initiatives to improve their environmental performance and announced long-term emission reduction objectives they aim to reach (e.g., Carballo-Penela & Castromán-Diz 2015). That is illustrated, for instance, by the quickly increased number of signatures for a global corporate responsibility initiative UN Global Compact's Business Ambition for 1.5°C campaign, which calls business actors to commit to set ambitious, science-based emission reduction targets. In less than a year over 300 companies signed the commitment to align their businesses with the 1.5°C targets. (UNGC, 2020a; UNGC, 2020b).

The role of companies and their actions in climate change mitigation cannot be undermined. It is particularly important to study companies' role in climate change mitigation because they can be seen as a tremendous driving force of climate change. According to Heede (2013), as much as 2/3 of all carbon dioxide and methane emissions caused since the industrial revolution could be traced back to only 90 corporations in 2010. Hence, it seems evident that companies' carbon management actions play a vital role in climate change mitigation. Increasingly, companies acknowledge that reaching the Paris Agreement targets is not possible without ambitious efforts from all sectors of society. Reducing emissions might no longer be enough. Hence, the companies should also consider how they could reduce GHG emissions from the atmosphere through capture and storage initiatives, i.e., by increasing carbon sinks or removing emissions elsewhere. In most cases, companies decide to invest in these projects to compensate for their own residual emissions, but it is also possible to invest in these projects as goodwill.

1.3 Sustainability and raising concern over climate change

Although this research focuses on environmental sustainability and climate change mitigation, it is worth understanding the more general framework behind companies' sustainability efforts. Initially, climate action is based on the idea about sustainable development, which according to UN's Brundtland Commission's widely used definition is: "*Development that meets the needs of the present without compromising the ability of future generations to meet their own needs*". The concept was first initiated by the United Nations (UN) in its 1987 Conference on Environment and Development (UNCED). It was created to illustrate the principles for solving the topical societal challenges. (Burton, 1987.) The basic idea that has remained unchanged throughout the years is that economic development should be conducted in a way that does not deploy natural resources or adversely affect the well-being of people. (Schaltegger, Burritt & Petersen, 2003.) Since the late 1980s, the development has, however, not pro-

gressed in the desired direction. As of today, humankind is in the middle of an urgent sustainability crisis. Human activities are pushing the planetary boundaries in many critical areas. (IPCC, 2018.)

Sustainability is often operationalized through three core areas, so-called pillars, that are economic development, social development, and environmental protection. These pillars form a basis for understanding sustainability; for example, various standards and schemes have been shaped around these three mutually-completing pillars. The three pillars also affect the way we understand corporate sustainability. (Purvis, Mao & Robinson, 2019.) These three pillars are also tightly integrated into today's most commonly used sustainability framework, Sustainable Development Goals (SDGs), introduced by the international community to respond to the ever-emerging global sustainability crisis and accelerate change. The 17 goals and 169 sub-targets cover economic, social and ecological sustainability. The objective is to reach all SDGs by 2030. (UN DESA, 2020.) SDGs are generally used as a framework for corporate sustainability. Most of these targets have clear linkages to corporate action, but not all SDGs are relevant from a company perspective. Generally, companies pick those targets that are the most relevant for their business and shape their sustainability strategies around those targets. (Weinhofer & Hoffmann, 2010.)

Climate change is at the heart of the concept of sustainable development as it is primarily a question about resource use, prioritization, and reorganisation. If the crisis cannot be solved, "the ability for future generations to meet their own needs" is seriously threatened. Although all SDGs are equally important and mutually-completing, companies' role is especially crucial in SDGs focusing on climate change mitigation, biodiversity conservation, resource use, and the introduction of new innovations. This research focuses only on the pillar of environmental sustainability, more precisely on climate change mitigation, as that is a dominant theme in companies' sustainability strategies and a pillar to which companies can significantly contribute.

As a result of rapidly escalating anthropogenic climate change (IPCC 2018), companies face increasing physical threats and regulation risks that threaten their existence and competitiveness. States across the globe have announced ambitious carbon-neutrality targets and action plans to limit global warming. Simultaneously to tightening legislation and the introduction of ambitious climate change politics, salient stakeholders such as shareholders and customers pressurize companies to reduce their emissions (Jeswani, Wehrmeyer & Mulugetta, 2008.). That is because it is seen that companies can accelerate the climate change mitigation work by taking pro-active measures, while the environmental legislation still lacks considerably behind from science-based biodiversity and climate change mitigation targets (Blowfield, 2015). Therefore companies face significant external pressure to adopt sustainability strategies and act upon solving the sustainability crisis.

Moreover, as Porter and Reinhardt (2007) point out, no company is safe from the impacts of climate change and resulting environmental and economic shocks, and far-reaching regulation introduced by governments may become

costly for the business sector, if precautions are not taken. Therefore companies should make a risk assessment of their vulnerabilities and start reducing those vulnerabilities by acting to mitigate climate-related costs and risk in its operations throughout the supply chain. That is crucial for every company to ensure operational effectiveness and business continuity. (ibid.)

The focus of this thesis is on corporate perspective and corporate strategy in general. Different types of corporations and their business models are not separated. There are several, complex and inter-dependent factors that affect the profitability of a green transition of a corporation. Studying the financial policy instruments and legislative developments in detail is beyond the scope of this thesis. Also studying the expectations of salient stakeholders in detail is beyond the scope.

1.4 Research questions and methodology

One of the research objectives was to get an understanding of the Finnish companies perceptions on and usage of climate compensations. Even though the basic principle behind climate compensation is relatively simple, the reality is more complicated. There still exists too little research about climate compensations and, therefore, a lack of shared understanding. Moreover, there are uncertainties regarding the calculations behind the compensations as well as the reliability of different service providers and offset mechanisms. This thesis contributes to closing the gap.

The aim is to shed light on different views on climate compensation, their justification, usefulness, and to create a shared understanding of what should be improved on various organisations that provide climate compensation services. On the one hand, an interest has lain in the companies' attitudes to use climate compensation as a measure in achieving their climate targets. On the other hand, the sustainability and carbon management strategies of companies have been studied to link climate compensations as a part of the broader discussion. In order to investigate the role of compensations in the broader framework, i.e. as a part of corporate sustainability, environmental management and carbon strategies, it was vital also to analyse the different strategies and approaches companies have taken towards climate change mitigation. To answer these questions, two research questions were posed:

RQ1: What kind of approaches do Finnish companies have towards climate change mitigation and adaptation and what kind of carbon management strategies are followed in Finnish companies?
RQ2: How do Finnish companies view voluntary climate compensations?

For the purpose of this thesis, 27 business representatives were interviewed. The data collection method used was a semi-structured theme inter-

view. The data was then analysed partly with data-driven and partly with theory-driven content analysis.

1.5 Structure of the work

This research opens with a literature review and a theoretical framework for the research. The theory section first discusses the bigger picture and gradually proceeds to more detailed ideas. The literature review starts with the general discussion about corporate sustainability and then gradually proceeds to carbon strategy and the role of compensations in the carbon strategy and sustainability work as a whole. This approach allows discussing climate compensations in context. That provides a framework for assessing the different approaches Finnish companies have towards climate compensations.

After presenting the theoretical framework, climate compensations are discussed on a more detailed level. This chapter provides an outlook on different compensation methodologies, including both insetting and offsetting projects, and a brief introduction to most common services. Furthermore, the differences between voluntary and compliance markets are explained. This section serves as an essential backbone for the analysis as it explains the logic of diverse climate compensations and available options.

In the next section, semi-structured theme interviews as a data collection method and qualitative content analysis as a data analysis method are presented together with the data set. After the methodology, results are presented, and finally, the study closes with conclusions and discussion.

This Master's Thesis was written as a part of The Finnish Association for Nature Conservation's (Suomen Luonnonsuojeluliitto) sub-organisation Hiilipörssi's broader research project "On our way to carbon neutrality," which was funded by Kone Foundation. Previously, a research report utilising the same data, and analysis has been published in Finnish as a part of the research project. However, this thesis primarily presents an independent study with a more defined research question and more narrow framing. It also more closely follows the scientific conventions. It is to be noted, however, that similarities with the previously published report may occur.

2 CORPORATE SUSTAINABILITY

2.1 Concept of corporate sustainability

Corporate sustainability (CS) is a broad concept that covers all aspects of sustainable development in corporate operations. Companies have different approaches and strategies for sustainability work, and these different sustainability agendas and policies can be understood through different lenses. Some of these definitions are more ambitious – CS can be understood vaguely as *"inclusion of social and environmental concerns in business operations and in interactions with salient stakeholders"* (van Marrewiijk & Werre, 2003, p. 107), whereas some see that CS is a similar concept to sustainable development and simply means that company's operations are such that they can also continue in the future since they are not deploying resources and destroying the ecological foundation for operations. Some have stated that a sustainable company should adopt the UN's principles of sustainable development as part of its operations and commit in action that does not violate any of those principles (Könnölä & Rinne, 2001).

Given the diverse nature of business actors and numerous different approaches to sustainability, van Marrewiijk and Werre (2003) reasonably suggest that it would not be rational to have only one definition and method, as there is no one-size-all concept for CS because contexts and value systems differ heavily from one operational environment to another. According to Marrewiijk and Werre (2003, p. 107): *"There is no standard recipe, corporate sustainability is a custom-made process"*. Nevertheless, there are still some commonly used approaches that provide important background for general sustainability work.

One of the most common ways to address CS from the environmental perspective is to measure the company's footprint, which can be understood to include both the caused emissions and other negative externalities, and its handprint, which can be understood through positive impact companies create through their actions. (Tynkkynen & Berninger, 2017.) Handprint describes the potential positive environmental impacts created by company's activities. It can

be understood for instance through the concept of carbon handprint, which equalizes the climate change mitigation potential of a product. The concept is used to describe the emission reduction of customer's activities occurring as a result of consuming a handprint solution instead of an alternative solution delivering the same function. If a company produces products with a large carbon handprint, it can be said to have a big handprint as it manages to decrease climate impact of its customers. (Pajula, Vatanen, Pihkola, Grönman, Kasurinen & Soukka, 2018.) In other words, companies with a large handprint provide their customers with products that enable minimizing the climate impact. Tynkkynen and Berninger's (2017) approach provides a clear guideline for companies' sustainability work: the aim should be to minimize footprint and maximize handprint.

Close concept to handprint is the concept of shared value introduced by Porter and Kramer (2011). At the core of the concept is the idea that if companies link their business strategies to corporate social responsibility (CSR), they can gain competitive advantage. What is noteworthy in this approach is that it sees the competitiveness of a company and the health of communities - and the planet - surrounding it as mutually dependent. This approach challenged the then-dominant CSR premises that tended to put business against society and instead acknowledged the inevitable tradeoffs between short-term profitability and meeting the environmental and social objectives or standards. However, the shared value approach perceives that companies gain competitive advantage in the long run if they integrate social value proposition into corporate strategies. (ibid.)

Tynkkynen and Berninger (2017) have described the different stages of CS work and further operationalized the concept of CS. They see a causal linkage between CS and CSR, CS being a more fundamental approach than CSR. However, even CS is not the final step in a company's sustainability journey. For them, CS is a sufficient level, but what would benefit both the company and the society and planet more is *net positivity*. Tynkkynen and Berninger (2017) understand the sustainability process as follows: the first step of the journey is net negativity. In this phase, corporate operations cause more harm than good, and a company has a careless attitude towards sustainability. The second step is continuous improvement. Many companies are still in this phase. In the continuous improvement phase, companies aim to improve their performance a bit from here and there but still lack comprehensive, strategic-level actions. The third step is CS, which means that corporate operations are such that they can also continue in the future without destroying the ecological foundation. In other words, sustainable business action has a net effect of zero: it does not cause more harm than good. Although this would be a sufficient level, Tynkkynen and Berninger (2017) list one more step, net positivity, which is an ideal state and benefits the company and the planet even more. In net positivity, a company avoids causing further harm and attempts to indemnify for the previously occurred damage. Net positivity goes beyond CSR and fundamentally changes the way of doing business. A net positive company creates more posi-

tive than negative externalities in all critical sectors of society. Its strategy is centred around the idea of doing more good than harm. (Tynkkynen & Berninger 2017.)

This discussion about the nature of corporate sustainability illustrates that there is no common understanding on the matter. Instead, companies have adopted diverse approaches to their sustainability work.

2.2 Corporate sustainability as a part of strategy

Climate change will "dramatically reshape the business world" (Porter & Reinhardt 2007, p. 26) and as a result, new risks and opportunities for companies will emerge (Lash & Wellington, 2007). Thus it is no wonder that the urgency of climate change and the private sector's critical role in tackling the challenge has nowadays been widely acknowledged in companies. Previously, they have even systemically opposed climate change mitigation actions. Daddi, Todaro, De Giacomo and Frey (2017) note that corporations decided to strongly oppose - and succeeded in slowing down - introducing international climate policies back in the days of Kyoto negotiations in 1997. The situation has drastically changed in the recent decades. As a result of increased public pressure, accumulated scientific knowledge on planetary boundaries, tightening regulation, emerging expectations of salient stakeholders and customers, and changing market powers, many companies have started to take climate change and sustainability more seriously and have integrated such approaches into their strategies. An increasing number of companies have even taken proactive approaches and started implementing environmental practices that go far beyond existing environmental regulation. Such practices include reducing energy consumption, proposing green products or technologies for consumers, and minimizing ecological footprint. Investments in low carbon technologies and renewable energy usage have been accelerated, especially by those that have significant emissions. (Albertini, 2013; Kolk & Levy, 2001.)

Customers and investors are increasingly expecting businesses to manage their carbon risks and opportunities (Defra, 2019). In a warming climate with constant re-allocation of resources and market shares, carbon risk management and sustainability work are also reasonable for business continuity and success. Nevertheless, more ambitious sustainability work does not necessarily improve a company's financial performance (Albertini, 2013). Hence, it is interesting to investigate what motivates companies to take sustainability actions beyond legislation and what kind of strategies are applied.

Corporate sustainability and climate change mitigation efforts have been studied through different lenses. Some authors explain sustainability efforts through brand management efforts, i.e., as a means to improve brand reputability (see Brouhle & Harrington, 2009). In contrast, other authors see it as a management issue (see Jeswani et al., 2008). Some have focused primarily on companies' role in political processes, i.e., in lobbying for or against international

climate policies (see Levy and Egan, 2003). Others have underlined the importance of stakeholder engagement. Salient stakeholders, including inter alia investors, customers, NGOs, suppliers, and competitors, increasingly expect companies to act on climate change mitigation and adaptation (see Busch and Hoffmann, 2013.) In this research, the focus is on the dimension of CSR and sustainability strategies, which are inseparably linked to the market and strategic questions (see Banerjee, 2008; Weinhofer & Hoffman, 2010).

As Bansal (2005) and Sharma (2000) have noted, the relationship between corporate environmental management and corporate financial performance is not clear from the manager's perspective. Much research about the relationship between corporate environmental performance and financial performance has been conducted, but there is still no consensus about the matter. Whereas some studies indicate that environmental performance positively affects economic performance, others have found a neutral or even negative relationship. (Albertini, 2013.) One way to explain this uncertainty related to corporate environmental management and financial performance is through uncertainty and increased production costs. Significant investments and remarkable modifications to manufacturing processes are needed to reduce emissions and other pollution or increase energy-efficiency or switch from fossil fuels to renewable energy sources. As these increased production costs often cannot be moved straight to product selling prices, financial performance may weaken temporarily (Klassen & Whybark, 1999.) Even though investments to better environmental performance may benefit the corporation in the long run, instant effects are usually not observed, which increases the uncertainty of outcomes (Aragon-Correa & Sharma, 2003; Hart, 1995).

Despite somewhat contradictory views and research conclusions, according to Albertini (2013), there seems to be a clear positive relationship between corporate environmental management and corporate financial performance. According to Porter and van der Linde (1995), pollution is a sign of an incomplete, inefficient, or ineffective use of resources. Hence, minimizing pollution and waste also creates cost savings through increased productivity and efficiency, created by better usage of inputs, which makes raw material and waste disposal costs lower. Furthermore, other research indicates that corporate environmental management may improve the company's financial performance through more efficient use of resources, which allows the companies to save in costs significantly. (Porter & van der Linde, 1995; Hart, 1995.)

Forward-facing companies that base their strategy-formulation processes on megatrends and evolving social developments may also gain competitive advantage in the long run. Companies can gain competitive advantage in the market through a "first-mover" strategy in emergent green market products if they manage to integrate the green brand to their products through design and manufacturing processes (Hart, 1995), but also because the global trends indicate that ever-tightening regulation will be introduced across the markets (see for instance carbon neutrality objectives of significant markets China and EU) and changes in production patterns will be required from all actors sooner or

later. That diminishes the significance of costs caused by the transition and strengthens the advantage of a forerunner. (Busch & Schwartzkopf, 2013.)

CS (or CSR) can also be either reactive or proactive preparation for upcoming changes. Juholin (2003) has assessed that environmental responsibility emerged partly due to companies facing unprecedented crises in their operations and operational environment. Consequently, the stakeholders and even the companies started questioning the old patterns and initiating new ones (ibid.) That was the case, for instance, in the 1970s, when the global energy crisis hit the world economy, increasing oil prices globally and initiating the global environmentalist movement. Both the energy production and consumption patterns were questioned, and knowledge increased globally. As expertise and criticism increased, public pressure increased, and consequently, also legislation was updated. (Juholin, 2003.) In such a case, proactive companies gained a competitive advantage as they were well prepared for the upcoming changes.

Companies integrate sustainability into their strategies in different ways, to which also contextual factors affect. Hoffman (2006) has found that companies that face physical, climate change driven threats to their operations or existence are more eager to act than those whose operations are relatively resilient. In addition to the financial and physical motives, ethical motives and external pressure from salient stakeholders might play a significant role in defining, when, and how companies decide to engage in environmental response. Companies will also take more ambitious and comprehensive actions if the legislative and political environment demands more from them. Also, the characteristics of a company influence the response. Such characteristics include historic environmental performance, industry affiliation, geographical location, and size of a company. (Bansal & Roth, 2000; Weinhofer & Hoffmann, 2010; Gonzalès-Benito & Gonzalès-Benito, 2006; Delmas & Toffel, 2004; Clemens, Kenny & Moss, 2007.)

2.3 Corporate sustainability matrix

The framework of CS is very broad, and companies have adopted very diverse approaches for their sustainability work and sustainability strategies and management. As it was illustrated, CS covers a wide range of different aspects. There is a clear need to define how the issue is assessed in this thesis. Van Marrewiijk and Werre's (2003) corporate sustainability matrix provides a useful background for this thesis's purposes. The matrix is used to categorize the research respondents to gain a deeper understanding and more detailed knowledge of the studied matters.

The matrix is built upon the three pillars of sustainability: social, environmental and economic sustainability, or in other words, upon the three Ps, people, planet and profit. The matrix holistically and multi-dimensionally describes the different strategic approaches corporates take towards sustainability. It illustrates the different ambition levels and motivations for incorporating sus-

tainability approaches in strategies. Every company can choose an ambition level that suits the organization. The choice is often linked to the awareness of a company and its surrounding circumstances. However, some external drivers are also concerned, for example, the operational environment, company's objectives and expectations of salient stakeholders and other contextual factors. The matrix highlights that all aspects of CS are linked to each other and describe sustainability work's complexity on different levels. (Van Marrewiijk & Werre, 2003.)

The subject of this research is climate compensations since the most important sustainability pillar from the perspective of this research is environmental sustainability, i.e. planet. Climate compensations may have implications also for the aspects of profit and people. However, to keep the focus narrow enough, compensations are investigated only through the lenses of environmental sustainability, more precisely through climate change-related sustainability. However, investigating a company's sustainability through the whole matrix would have provided interesting insights and could have altered the categorization, especially when it comes to the dimension of profit. Such grouping would have been out of the scope of this thesis, and the gathered data did not provide enough background information for making such categorizations. Hence, it was decided to focus only on environmental sustainability.

The matrix as a whole is shown in Appendix 1. Table 1 below shows the planet-specific parts of the matrix, which are utilized to support the analysis.

Table 1 Corporate sustainability matrix, environmental sustainability (van Marrewiijk & Werre, 2013.)

Category	Description	Environmental Management	Neighbourhood
Pre-CS (red)	Corporate has no ambition towards sustainability, but it might take some sustainability actions if external drivers force it to do so.	Long-term consequences are not worried about, and the environment is exploited for the sake of a short-term profit.	-
Compliance-driven CS (blue)	Corporate respects the limits posed by regulation and authorities. It might do some charity work. CS is seen as a duty or as correct behaviour, which is the driver for action. Corporate's main task is to create economic welfare around it.	Compliance is mainly defining the actions taken. Some simple improvements might be made.	Compliance with relevant regulation and possibly some charity actions.
Profit-driven CS	Social, ethical and ecological aspects are integrated into	If environmental measures are taken,	Reputation building through high

(orange)	business operations and decision-making, but only if it has a positive effect on the bottom line. Hence, CS is motivated by profitability.	they must directly (e.g. energy efficiency, or efficient use of raw materials) or indirectly (reputation management) improve financial profitability.	visibility projects might be carried out.
Caring CS (green)	Economic, social and ecological aspects all have intrinsic value and the company balances between them. CS actions go beyond compliance and profit-seeking, and the actions are motivated by a belief in the sustainability objectives.	Eco-efficiency.	Neighbourhood development is supported by the company.
Synergistic CS (yellow)	Ecological, economic and social solutions are in the right balance, and the company creates value for all of these areas. Corporation operates together with stakeholders, and the cooperation is beneficial for all. Sustainability itself is important, and it is the inevitable direction progress takes.	Adverse environmental impacts are minimized. Insight is used in systemic interdependencies.	A belief that everyone is stronger together and the company and its stakeholders win together.
Holistic CS (turquoise)	Sustainability is the only option, and hence sustainability is integrated into every aspect of the organisation. Organisation's objective is to contribute to the life of every being and entity now and in the future as it is seen that everything is interdependent. An organisation and all of its employees have universal responsibility towards every other being.	The objective is that a zero impact on the environment is caused. That applies to all aspects of operations, from emissions to the extraction of raw materials.	-

What is noteworthy in the matrix is that there is a clear difference between a strategy of a company that has put sustainability in the core of its business operations and a company that only does the bare minimum to live up to the emerging regulation and a company that focuses merely on marketing because it wishes to gain brand value, but is not willing to make profound changes.

The next sections of this literature review dive into more detail and discuss environmental sustainability, especially environmental strategy and carbon management strategy, which is the focus of this thesis.

2.4 Environmental management and environmental strategy

Corporate environmental management is a roof concept that embraces both environmental management and environmental performance as well as environmental disclosure (Albertini, 2013). Corporate environmental performance describes the effects that the corporation's activities and products cause on the natural environment. Corporate environmental performance is an output of environmental management. (Klassen & Whybark, 1999.) Environmental management, in turn, refers to the technical and organisational activities, which corporations take to reduce their environmental impacts and to minimize the adverse effects on the natural environment (Cramer, 1998). Climate change is an essential part of today's environmental management and environmental strategies (Busch & Schwartzkopf, 2013).

Corporate environmental management has been operationalized in various ways. According to Klassen & Whybark (1999) and Hart (1995), the practices can be divided into pollution control, pollution prevention, and product stewardship. Pollution control refers to activities, which aim to keep the pollution below limits. That includes, among other things, waste removal treatment and disposal and end-of-pipe approach. Pollution prevention is a self-explanatory term – it refers to activities that aim to optimal use of resources (e.g., water, raw material, energy) to reduce or eliminate the creation of pollutants. (Klassen & Whybark, 1999; Hart, 1995.)

Environmental management has strategic significance for a company. It can generate competitiveness, as it generates cost-savings through more efficient use of resources in production processes, which reduces the total production and management costs. In addition to cost-savings, successful environmental management might also provide new market opportunities for a company if it decides to follow a differentiation strategy and succeeds in introducing new, green products or services. (Hart, 1995; Ayres & Ayres, 2002.)

Orsato (2006) has further studied the different dimensions of strategic significance of environmental management. This outline for four different strategic approaches to environmental management explain the various approaches adopted also by the companies studied in this thesis and provides background for understanding the strategic potential related to climate compensations. Moreover, carbon management strategies which are further explained in the next chapter 3 and serve as an important starting point for analysis, are derived from Orsato's thinking. Orsato's (2006) mapping of the strategic approaches include eco-efficiency, beyond compliance leadership, eco-branding strategy, and environmental cost leadership strategy. The eco-efficiency strategy focuses on optimizing company's environmental impact through new initiatives and

innovations related to environmental matters. The objective of beyond compliance leadership strategy is to establish a reputation of a green company, which requires investments beyond the required level. In the core of the eco-branding strategy is the introduction and selling of new, ecological, and premium-priced products or services. Companies with environmental cost leadership strategy aim to develop innovations, improving the product's ecological performance, and lowering consumer prices. (ibid.)

3 CARBON MANAGEMENT AND CARBON STRATEGY

3.1 Starting points for carbon management

It is evident that the transition to a low carbon economy is necessary to mitigate climate change and to keep the planet habitable. Through a well-managed transition to a low-carbon economy, it is possible to reduce carbon emissions enough and enable companies to benefit from new emerging opportunities. (Defra, 2019). Efforts to achieve net-zero emissions and align corporate actions with 1.5°C targets are slowly becoming the new normal in the changing world. Governments are seeking to mitigate the effects of climate change with far-reaching regulation (Porter & Reinhardt, 2007), which is already drastically changing companies' operational environment.

The national and international pressure for all actors to reach for carbon neutrality has gradually increased. That, together with existing regulation and mechanisms such as EU's emissions trading scheme (EU ETS), has further increased the need for companies to manage their emissions and calculate their carbon footprints. Carbon management and carbon accounting are also risk management measures for companies in a world that changes rapidly due to climate change and its consequences. Climate-related risks include changing carbon credit prices in emissions trading, uncontrolled emission levels, sanctions, changes in competitiveness, and all manufacturing related risks such as fluctuating fuel prices and price of available equipment, societal pressure, and customer reactions (Bui and de Villiers, 2014), as well as physical risks that vary from the availability of resources such as water and energy to the reliability of infrastructure, the stability of supply chains (Porter & Reinhardt, 2007) to security conditions (Schultz & Williamsson, 2005). Response to climate change has become a question of business continuity and competitiveness. Companies that fail to take sufficient action will face the most significant consequences of the scrutinizing, regulating, and pricing greenhouse gas emissions progress. What is shared by all companies is that a new approach for carbon management is

required. Business managers should treat emissions as expensive, as that will inevitably become a reality. Otherwise, companies should tailor their approaches to climate change according to their business and strategy. (Porter & Reinhardt, 2007.)

Moreover, as noted in previous chapters, consumers are increasingly interested in sustainable and green products and demand companies to introduce new, more sustainable products. Finnish consumers, for example, are increasingly expecting, wishing, and demanding more carbon-neutral products and services and more transparency, affecting their purchase decisions (Seppälä, Alestalo, Ekholm, Kulmala & Soimakallio, 2014).

As a result of these developments, the voluntary carbon management that goes beyond the required level has become more common, and companies have addressed climate change mitigation in various ways. Companies have, for instance, started to voluntarily calculate carbon footprints for their products or services, set ambitious climate targets for their operations, and introduced carbon management strategies with variable approaches. Carbon management strategies often contain similar elements to environmental management strategies (see Chapter 2.4), but consider the emissions life-cycle wide and allow compensating. (Busch & Schwartzkopf, 2013.) Busch and Schwartzkopf (2013, p. 8) have defined carbon management strategy as *"any corporate effort, which addresses and reduces the impact of a firm's business activities on climate change."*

On the contrary, Porter and Reinhardt (2007) see that a strategic approach to carbon management goes beyond operational effectiveness and climate-related risk management. Companies with a strategic approach to climate change seek competitive advantage through various strategic-level decisions and activities and might redirect their businesses. For example, they can reposition themselves, lead the restructuring of their industries, innovate and offer new products to satisfy climate-induced demand. Strategic-level activities are more fundamental and pro-active than risk management activities. (Porter & Reinhardt, 2007.)

In this research, the more operational definition by Busch and Schwartzkopf about carbon management strategy is used. Hence, all company's climate change-related efforts are understood as a part of carbon management strategy, irrespective of whether they were planned as operational effectiveness or risk management measures or to gain competitive advantage.

3.2 Carbon strategy in practice

Companies have various approaches and diverse motivations for carbon management work, and hence also the ambition level and contents of such strategies vary. According to Porter and Reinhardt (2007), even if a company was not interested in climate change mitigation per se, it should be interested in remaining competitive. They see that implementing best practices in managing climate-related costs is the least every company should do as emissions costs will

inevitably increase in the future. The bare minimum risk management measure would be to enhance the effective use of resources, i.e., stop producing excessive, unnecessary emissions, whose price will undoubtedly increase in the future. (ibid.)

An important starting point for carbon management and climate strategy work is defining the objectives of such work. Companies are often expected to follow science-based guidelines provided by national or international climate change experts, such as GHG protocol. Climate strategies and targets should be science-based. Carbon management differs from general environmental management, mostly by its approach to climate compensations. According to Busch and Schwartzkopf (2013), carbon management strategies include an option for compensations, which lack from more general environmental management. Carbon management also assesses the LCA expectations and demands from stakeholders. (ibid.)

Most often, the first long-term objective of a company is either to reach carbon neutrality or even carbon negativity. To meet those targets, the essential first step is to create a shared understanding of the definition of carbon neutrality and how to reach it. The concept of carbon neutrality has been used already for a long time in public discussion and climate policy to refer to an ideal state. However, it has not been unanimously defined but has been defined differently by different actors, and the term's content and scope vary remarkably. The concept has not been defined in the context of climate policy either, even though it would be imperative to unify the content, calculation methods, scope, and compensation methods and practices. The lack of common definition is problematic as actors can declare carbon neutrality on their terms, without any external validation. There are no unified national standards for calculating emissions. There is also a lack of common practices in defining which actor of the value chain is responsible for the emissions. (Seppälä, Saikku, Soimakallio, Lounasheimo, Regina & Ollikainen, 2019.) The next sub-chapter 3.3 discusses these complex and carbon footprint calculations in more detail.

Generally, carbon, or more comprehensively, climate neutrality refers to a situation in which the greenhouse gas emissions caused by an individual, product, service, organisation, municipality, region, state, or a group of states do not contribute to global warming (Seppälä et al., 2019). In other words, carbon neutrality equals zero net greenhouse gas emissions to the atmosphere. A commonly agreed view in the literature is that carbon neutrality can be achieved through a three-step process of calculating, reducing, and compensating a certain actor's greenhouse gas emissions. (Alhola et al., 2015.) However, as Alhola et al. (2015) point out, understanding carbon neutrality goes beyond the three-step-process in today's business life. Businesses assess carbon neutrality as a long-term strategic vision rather than as a short term process based strictly on the three steps of calculating, reducing, and compensating.

Ekkel (2020) has illustrated setting up credible climate targets and strategies and the role of climate compensations as a part of that work. Her summarization on the matter is best illustrated through Figure 1 below.

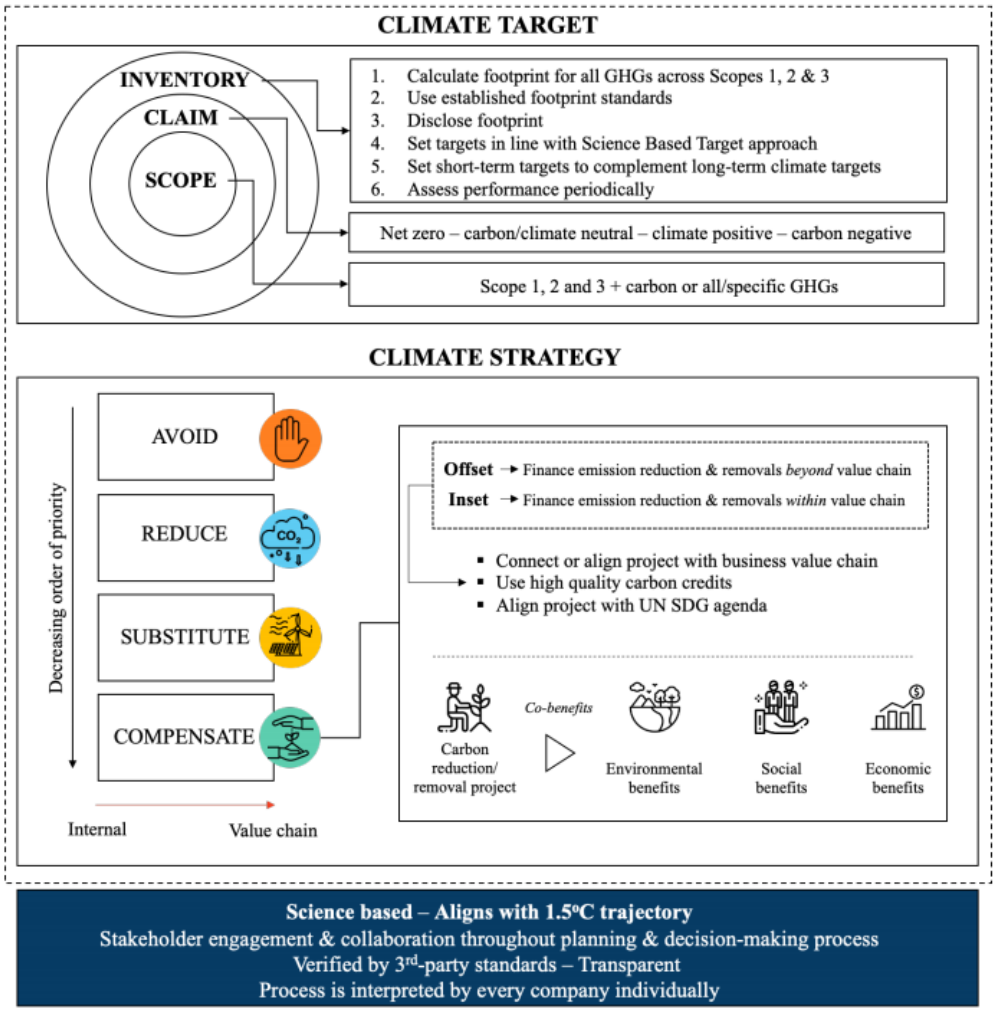

Figure 1 Corporate climate strategies summarized (Ekkel, 2020)

3.3 Emissions calculations and road to carbon neutrality

Achieving carbon neutrality might be significantly easier for some companies than for others. The determining factors include the industry and size of a company as well as the degree of internationalization of a company and its markets. The first step on a journey to carbon neutrality should be calculation and measurement, which require transparent accounting of emitted emissions. A company should gain a comprehensive understanding of its emissions (Alhola et al., 2015.)

A company's emissions can be calculated following the common guidelines. These guidelines are science-based and provided by national and international climate change experts and authorities, such as GHG Protocol, which provides a global standard for measuring, managing, and reporting on GHG emissions. (Alhola et al., 2015.) Carbon footprint is a widely used tool for quantifying emissions of a company. While it according to a commonly used defini-

tion covers the total direct and indirect CO2 emissions of a company or a product (see e.g. Weidmann and Minx, 2008), the definition is too narrow. The problem of the definition is that it excludes other climate-warming gases than CO2 (El Geneidy & Baumeister, 2020). In practice, also other greenhouse gases are included in carbon footprint, which is usually expressed in terms of CO2 equivalents, meaning that other included greenhouse gasses have been converted to CO2 equivalents based on their global warming potential (Weidmann & Minx, 2008).

An essential step in carbon footprint calculations is to draw system boundaries. When calculating carbon footprints, companies must first decide what to include in the calculations. These narrowings create system boundaries - or "scopes" - which are based on life cycle thinking and describe what is included and what is excluded from the carbon footprint throughout a product's lifecycle "cradle-to-grave." (El Geneidy & Baumeister, 2020; Weidema, Thrane, Christensen, Schmidt & Løkke, 2008; Matthews, Hendrickson & Weber, 2008.) There are three generally used scopes: scope 1, including direct emissions, i.e., emissions directly owned or controlled by a company. These include, for instance, emissions from company-owned properties and vehicles. Scope 2 covers indirect, energy-related emissions created by purchased energy, e.g., electricity, cooling, and heat. An organisation does not own or control the activities, but these emissions are still closely associated with the organisation. Other indirect emissions to which the company can influence in different value chain stages are calculated to scope 3. In other words, all other emissions that are emitted as a consequence of action taken by a company should be calculated in scope 3 if they are not included in scope 2. Scope 3 emissions include, for instance, waste disposal and usage of sold products. (Alhola et al., 2015; El Geneidy & Baumeister, 2020.)

Including scope 4 in carbon footprint calculations is proposed by some climate change mitigation experts as it would allow companies to go net positive (see Molloy, 2020). It is still rarely included in carbon footprint calculations and the views on its contents vary. Scope 4 is the best estimate about avoided emissions (Draucker, 2013), and as such, it can be seen to cover the climate compensations a company has invested in. If a company cannot reduce or prevent all of its emissions, it should include them under scope 4 and compensate them. This is not yet a generalized view, but used here as it is seems important to include also emissions reductions in carbon footprint calculations for the purpose of this thesis. Scope thinking is illustrated in Figure 2 below.

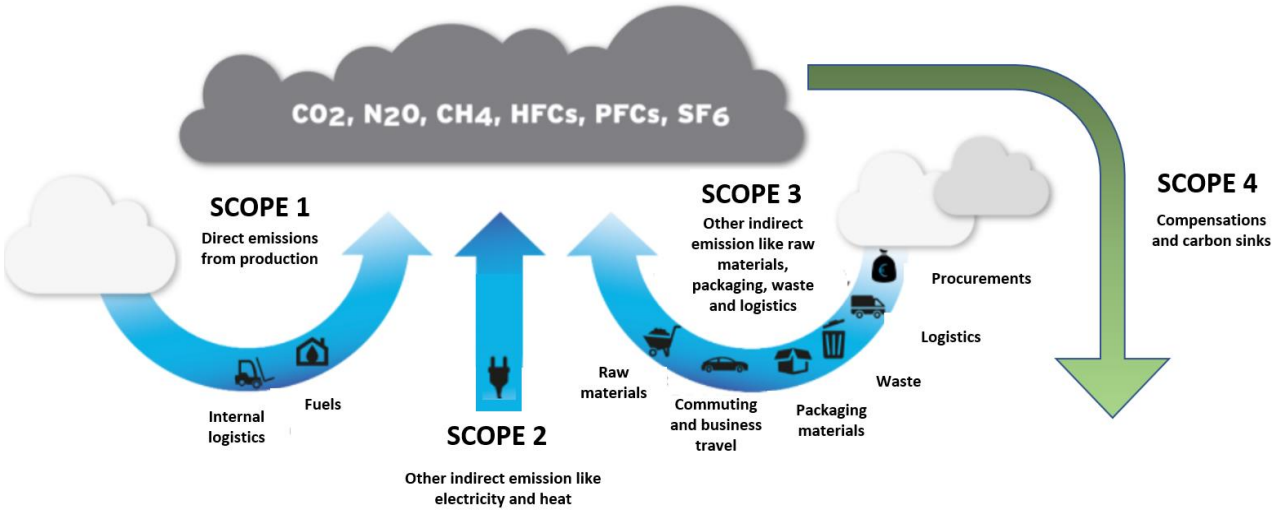

Figure 2 System boundaries in carbon footprint calculations

International standards standardize the carbon footprint calculation, but there is still room for methodological choices. Although guided by GHG protocol and international standard ISO-14067 and ISO 14040/14044, companies themselves have the power to define what they include in their emissions calculations; some might focus only on scopes 1 and 2 and leave scope 3 entirely out of calculations. Scope 3 emissions are challenging to calculate, as there are often difficulties in acquiring reliable data. Consequently, it is tempting for companies to exclude scope 3 emissions from carbon footprint calculations. The size and contents of scope 3 can vary from company to company and between different industries. As scope 3 covers all raw material and sub-contracting of production and services, it plays a crucial role in overall carbon performance. Consequently, the company's carbon performance might look very different depending on whether scope 3 is included or not and how broadly it is included if it is. Research has pointed out that scope 3 emissions are significant, and hence it would be crucial to include scope 3 emissions in carbon footprint calculations. For example, it has been noted in the United States that as much as 60% of industry's total emissions would fall under scope 3, which indicates that results might be alarmingly misleading if system boundaries are too narrow. (Matthews et al., 2008; Larsen, Pettersen, Solli & Hertwich, 2013; Alhola et al., 2015.) According to Seppälä et al. (2014), scopes 1-3 should be formed to provide a realistic picture of the company's emissions. In other words, scope 3 should be broad enough to cover all life cycle emissions of a product or a service. Comprehensive carbon footprint calculations footprint should cover all life cycle emissions across geographical borders. Moreover, a company should understand, which of its business partners emissions in the supply chain are caused by its actions and consider both the direct and indirect emissions, as emissions can be generated either under the direct control of the company or induced by it through its procurement decisions (Porter & Reinhardt, 2007). If a company

wishes to claim carbon neutrality for external purposes, it must get external validation for its claims (Alhola et al., 2015).

Hildén, Levula, Ugas and Sulkava (2019) noted that many companies beneficially define system boundaries. For instance, they left out emissions caused in the value chain by their sub-contractors and did not take into account the emissions caused by the product after purchasing. In that way, the companies can reach carbon neutrality more effortlessly than they otherwise would. Moreover, it might be complicated and expensive to gather reliable data on emissions from the value chain's subcontractors (El Geneidy & Baumeister, 2020). There is also a conflict of interest: if data is not available, it cannot be included in the carbon footprint calculations, which means that the total carbon footprint of a company is smaller than it would be if the data were available. If the data were acquired, a company would be paradoxically punished as its carbon footprint would appear to be more significant. (Ottelin, Ala-Mantila, Heinonen, Wiedmann, Clarke & Junnila, 2018.) Whether or not the consumption-caused emissions should be included in company's carbon footprint is a debated question, but for instance Alhola et al. (2015) have argued that also the usage of sold products or services should be included in the calculations as scope 3 emissions.

As illustrated, there are still many shortcomings in carbon management strategies and calculations. That underlines the importance of discussing carbon management as part of the bigger framework, CS. Environmental aspects are an integral part of CS, and through the more rooted framework of CS it is possible to assess the various environmental actions and motivations of companies on a more general level. That provides valuable insight also for assessing the actions and strategies related to climate change mitigation and adaptation.

3.4 Climate compensation as part of carbon strategy

Despite the continuous debate and slowly progressed generalization of sustainability and environmental management approaches in business, the strategic approach to these issues lacked long in the business sector and has emerged only recently (Kolk & Pinkse, 2004). As of today, there seems to be a consensus about the strategic importance for businesses to address climate change mitigation in their operations and on a strategic level (see Bush & Hoffmann, 2007; Jones & Levy, 2007; Kolk & Pinkse, 2004; Busch & Schwartzkopf, 2013), but despite that, discussion about carbon management strategies and their impact on company's competitiveness has remained on a moderate level. Busch & Schwatzkopf (2013) have identified two dominant features that characterize successful carbon management strategy and boost competitive advantage: The first is the establishment of a new tool for carbon management, external climate compensations that was born as a result of developments in global climate policies, especially Kyoto protocol and EU's Emission Trading Scheme (ETS). These external climate compensations allow companies to compensate for the caused emissions by reducing emissions elsewhere. (ibid.; Kolk & Pinkse, 2005.) The

introduction of such external compensation services has provided a new tool for companies' carbon management efforts. Companies are now somewhat effortlessly capable of reducing the negative externalities caused by their operations by buying allowances from an external actor - at least calculatory. By purchasing such compensations, a company can avoid reducing its negative externalities internally. Instead, they buy a corresponding emissions reduction from another actor that has reduced negative impacts. (Busch & Schwartzkopf, 2013.)

The second identified factor supporting successful carbon management work is adopting a life-cycle approach to meet stakeholder expectations. Stakeholders increasingly expect companies to assess ecological, including climate change-related, impacts life cycle wide instead of limiting the analysis only to the traditional gate-to-gate approach. Companies have responded to the demands and have increasingly started to adapt the life-cycle approach for their environmental management strategies. Deriving from this notion, they have identified eight different carbon management strategies based on Orsato's grouping of four different environmental management strategies. (Busch & Schwartzkopf, 2013.) Their approach provides a valuable framework for understanding climate compensations' role in the company's climate work. Unlike most of the environmental strategies, it allows the utilization of climate compensations. The framework is presented below in Table 2. Notably, these strategies can be used simultaneously by the same company, and specific actions naturally fall under more than one category (ibid.).

Table 2 Carbon management strategies (Busch & Schwartzkopf, 2013)

	Strategy	Description
Reduction strategies	Carbon efficiency	Efficiency increases in internal processes or within the supply chain to reduce a company's environmental impact.
	Carbon-cost leadership	Focuses on products that are competitive in both price and ecological performance. Fewer CO2 emissions are positively correlated with lower costs.
	Low-carbon image	Applicable by companies which could seek to cover investments in low carbon (production) technologies by increased prices or improved carbon image with accompanying increases in sales.
	Low-carbon labelling	Applicable by companies with the ability to increase the climate-friendliness of their products, which needs to be adequately communicated in markets with a high willingness to pay for such products.
Compensation strategies	Abatement efficiency	Focuses on carbon compensation as an option to keep abatement-costs as low as possible, where accepted by the companies' stakeholders and the legal environment.
	Compensation-cost leadership	Compensation of GHG emissions from processes and services through the company, which generates a cost advantage on the customer side.
	Climate-neutral image	Aims to improve a company's climate image without changing internal processes, e.g., through the compensation of GHG emissions to enhance a climate-friendly reputation.
	Climate-neutral labelling	Companies can establish a premium price for carbon-neutral products for which customers are willing to pay.

Research shows that engagement in climate compensations generates competitive advantage, at least in a short time horizon, and compensations are indeed used to gain short-term competitive advantage. However, the full potential of climate compensations is still not exploited, mainly because there is a lack of clearly expressed opinions from salient stakeholders, discouraging companies from taking compensation action. (Busch & Schwartzkopf, 2013.)

4 CLIMATE COMPENSATIONS - DIFFERENT LOGICS AND METHODOLOGIES

4.1 Compliance and voluntary compensation markets

Economic measures are seen as an effective way to reduce GHG emissions and change consumption and production patterns and a global carbon tax has been proposed to set a price for caused negative externalities (Kemp & Never, 2017; Newburger, 2019). However, as long as there is no global carbon tax, ways to set a price on GHG emissions have been investigated. Setting a price on GHG emissions could correct the market failure caused by negative externalities. Market failure occurs when either a producer or consumer fails to take into account the true cost of production, i.e. consequences to other people or environment.

Climate compensations are one example of such initiatives aiming at correcting the market failure. Climate compensations aim simultaneously to set a price on emissions and to reduce GHG emissions at the lowest possible cost. In this thesis, also emissions trading, sometimes called carbon trading or carbon market, is understood as a form of climate compensation as the polluters are subjected to pay for the emissions caused. Moreover, the logics of emissions trading and voluntary climate compensation are in many ways similar to each other.

In addition to the emissions trading i.e. *compliance compensation market*, there is also a separate, yet partly overlapping, voluntary climate compensation market. The voluntary market is still emerging, and it is remarkably smaller in size compared to the compliance market. The voluntary compensation market enables economic actors to neutralize either the totality or part of their emissions by purchasing carbon credits from service-providers. In this thesis, the primary focus is on voluntary carbon offset markets.

The role of climate compensations in climate change mitigation and in reaching the 1.5°C target is a heavily debated topic, although emissions trading has been in place already since the late 1990s'. While some climate experts ar-

gue that the role of compensations is essential, others see that emissions trading has historically been ineffective. Voluntary climate compensation, in turn, is in the eyes of critics seen merely as an act of purchasing good conscience. (Hildén et al., 2019; Jaehn & Letmathe, 2010.) The debate focuses specifically on justification of using voluntary climate compensation services and on the uncertain effectiveness of both emissions trading and voluntary compensation. A consensus lies on that voluntary climate compensation should be utilized only as a complementary measure, and primary measure should be to reduce emissions internally as much as possible (Seppälä et al., 2015).

Emission trading systems have been utilised as a mechanism to reduce GHG emissions globally ever since the publication of IPCC's 2007 report urging for faster emission reductions (Jaehn & Letmathe, 2010). All systems share the basic idea of setting a price on emissions. The idea follows the principles of environmental economics: if for emissions are set a price and polluter pays, the environmental externality is internalized in company's cost structure. As a result companies are steered away from polluting activities and motivated to reduce their emissions. One of the dominant emissions trading systems is EU ETS built upon the Kyoto Protocol and started in 2008. Besides EU ETS, other major emissions trading systems include for example those of China, California, South Korea and Canada. EU ETS is a mandatory carbon market program, to which certain heavily polluting sectors are obliged to participate. EU ETS covers various sectors, for instance, power and heat generation, energy-intensive industry sectors, commercial aviation, aluminum production and production of nitric, adipic and glyoxylic acids and glyoxal. In some of these sectors, however, only plants above a certain size are required to participate. Some companies might also be excluded from EU ETS, if national governments subject them to fiscal measures with similar impacts. (Engels, 2009; Hopwood, Unerman, & Fries, 2010; Alhola et al., 2015; EU, 2020; Jaehn & Letmathe, 2010).

EU ETS follows the principle of "cap and trade," which means that the maximum annual total amount of participants' greenhouse gases have been pre-defined. The maximum amount, "cap," is reduced gradually, which should cut the total emissions. Participating companies are granted emissions allowances within the cap, and they can trade them with other participants according to their needs. Moreover, the participants can also purchase extra credits from international emission-saving projects, if needed, but the number of these additional credits is limited to preserve their value. These international projects are carried under the Clean Development Mechanism (CDM), which was agreed on in the Kyoto Protocol. CDM is based on the principle of burden sharing and hence all CDM projects take place in in the so-called Annex B countries, i.e., in the developing countries, and aim at producing emissions reductions there for instance through projects related to electrification, renewable energy and eco-efficiency. Companies must cover all its emissions with allowances yearly, or they are subjected to heavy fines. However, if a company underspends the allowance budget, it can either keep the spare allowances and use them to cover its future emissions, or trade the excess allowances to another company follow-

ing the market price. The system is designed to be as flexible as possible to allow companies to cut emissions as cost-effectively as possible. If market prices increase, like they are expected to in the future, high allowance prices should also motivate companies to invest in cleaner technologies. (EU, 2020.)

EU ETS has been criticized for its inefficiency caused by too low prices of carbon credits and excessive allocation of free carbon credits (Bayer & Aklin, 2020), but it is forecasted that its effects will become more significant in the future (see EU, 2020; Bayer & Aklin, 2020**)**.

Despite criticism, it appears that EU ETS has managed to cut carbon emissions in the region (EU, 2020), and for example Labatt and White (2007) have recognized emissions trading as one of the most effective ways to reduce greenhouse gas emissions. Also Gray (2011) refers to the carbon market as the dominant mechanism to tackle the threat posed by climate change and sees that it has a significant role in mitigating climate change. However, Schultz and Williamson (2006) underline that EU ETS alone is an insufficient mechanism for solving the climate crisis.

Emissions trading has formed a basis for voluntary climate compensation markets, which have emerged to supplement the compliance carbon market and to provide a larger pool of economic actors a chance to compensate for their residual emissions. Voluntary climate compensation enable companies to offset caused GHG emissions by achieving emissions reductions elsewhere. In practice, climate compensations are implemented by acquiring Verified Emissions Reductions (VERs), which are offered by various service-providers and created in diverse emission removal projects, which are usually outside the Kyoto Protocol. However, companies often wish to acquire only VERs certified by an external party, such as Gold Standard and VCS. (Seppälä et al., 2015.)

Although in both compliance and voluntary markets GHG emissions are set a price, and the logics are somewhat similar, there are substantial differences between the two. The most significant difference is that at least for now, the carbon credit prices in the voluntary compensation market are not fluctuating on a market basis, unlike in the emission trading. That is because there is, in principle, an unlimited amount of carbon credits available for purchase. Moreover, as the term reveals, purchasing voluntary climate compensations is not mandatory, and companies have the freedom to decide whether or not to offset their emissions. Therefore, it can be argued that voluntary climate compensations do not have similar pricing power and cannot create corresponding pressure due to lack of regulation. If companies decide that they are not willing to pay for voluntary compensations anymore because of too high prices, they just simply stop purchasing them.

Emissions trading and voluntary climate compensations are not mutually exclusive. Also some of the companies interviewed for this research are involved in EU ETS. However, as EU ETS does not cover all of their operations, some of those companies were also either already voluntarily compensating or planning to compensate for outside EU ETS emissions.

4.2 Offsets and insets

When discussing voluntary climate compensation from the company perspective, it is possible to make a distinction between two courses of action: carbon offsetting and carbon insetting. These two concepts are very close to each other, the main difference being the context of the compensation: carbon offsetting happens outside the direct sphere of a company, whereas carbon insetting takes place within the company's value chain. Nevertheless, both activities are designed to reduce the carbon footprint of a company and are not mutually exclusive. (Weber, 2018.)

Carbon offsets have traditionally been and still are the dominant way for compensating. Carbon offset refers to a reduction of GHG emissions achieved in another place to compensate for emissions caused elsewhere. Offsets are typically measured in carbon credits and one carbon credit equals one tonne of carbon dioxide-equivalent (CO2e) removed. (Goodward & Kelly, 2010.) In other words, carbon offsets aim at neutralizing the damage caused by GHG emissions released by taking neutralizing actions elsewhere. Such actions can include for instance planting of trees or investing in renewable energy production the core idea being that an equivalent amount of GHG emissions would be removed from the atmosphere. Most often, companies pay for a third party to take care of the actual carbon offset.

As all carbon removal actions organisations take do not fall under the definition of carbon offsets, the concept of carbon insetting has been introduced. Whereas carbon offsets, by definition, refer to actions taken outside the organisation, carbon insetting covers the various actions companies take to neutralize the caused emissions in their direct sphere of influence, for instance in the value chain. In practice, a company does not only purchase carbon offsets from other entities or invest in pre-existing projects, but instead takes independent action by developing emission reduction or carbon sequestration projects and invests in them in its direct sphere of influence. Insetting projects can include land-purchasing for carbon sink purposes or collaboration with (usually NGOs) partners to develop compensation projects directly linked to corporate operations. Most of the insetting projects are linked to agriculture or forestry, but there are also several other options. (Banerjee, Rahn, Läderach, & van der Hoek, 2013; Weber, 2018.) A company wishing to inset may for instance sponsor a smallholder farmer in dual-purpose cattle production (Phelan, 2015).

Weber (2018) has argued that insetting is a significant shift in how organisations deal with sustainability, as companies that decide to inset have often more hands-on approach to sustainability work. Moreover, the invested funds remain within company's value creation cycle and might create business value through enhanced reputation and support the actors in the value chain. Phelan (2015) has recognized various benefits of insetting: insetting helps companies to strengthen their supply chains and enable achieving a status of an environmental leader in their respective industries, and moreover, it solves some of the is-

sues related to reliability, permanence and long-term effectiveness of carbon offsets. However, insetting opportunities are more limited and the field is even less developed and standardized than that of carbon offsetting, which might cause issues. Moreover, insetting requires significantly more resources and effort than offsetting and might not be a feasible option for the smaller companies.

4.3 Climate compensation services

As mentioned, climate compensations are a controversial topic dividing climate change experts. The experts' views on carbon offsets vary on general level, but also between different methods and services. The main concerns are related to the effectiveness and permanence of compensations. (Hildén et al., 2019.)

Climate compensation can be implemented through various mechanisms and logics, and there is a wide range of service-providers. Acceptability and effectiveness of different compensation methods and projects vary, and also different kinds of challenges are linked to each of the methods. Hence, it is essential to make a distinction between different compensation methods and discuss them separately to allow a more detailed and practical assessment about voluntary climate compensations. However, the basic principles of climate compensations apply to all projects. The basic logic is illustrated in Figure 3 below.

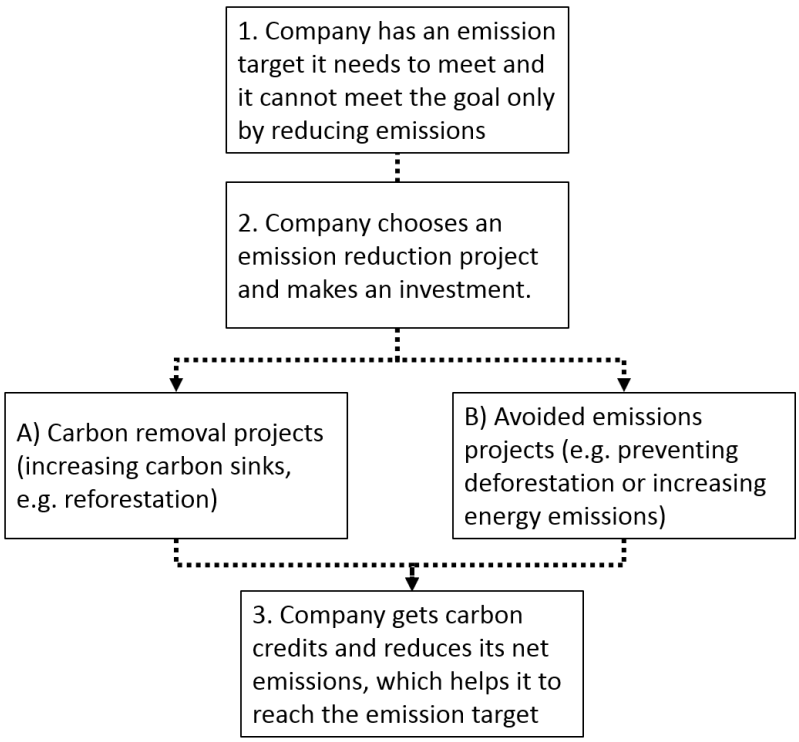

Figure 3 Basic logics of climate compensations

As explained and as shown in Figure 3, climate compensations can be generated by different types of projects. These different compensation methods can be divided into two main categories: carbon removal projects and projects that aim to avoid emissions. Carbon removal projects include a wide range of different actions that remove and store GHG emissions from the atmosphere by increasing carbon sinks, i.e., by growing terrestrial, ocean, or geological reservoirs utilizing products that work as carbon removals. (Zwick, 2019; Carillo Pineda & Faria, 2019; Alhola et al., 2015.)

Projects aiming at emissions avoidance utilize various mechanisms. One of the dominant ways is to acquire carbon credits from EU ETS and that way prevent another company from polluting. Such action also has a price impact on the available carbon credits and hence makes polluting more expensive for those subjected to EU ETS. Another widely used method is to fund electrification projects in developing countries, which helps to reduce emissions caused for example by open fire cooking. In some cases, also the positive social impacts have been considered and quantified. The third major mechanism, protection of natural carbon sinks, overlaps with carbon removal measures. Projects utilizing this mechanism may for example protect forests that would be otherwise cut and hence avoid land-use related emissions and protect the permanence of natural reservoirs. (Zwick, 2019; Carillo Pineda & Faria, 2019; Alhola et al., 2015.)

Table 3 below summarizes the different measures that can be taken under the two categories.

Table 3 Different compensation methodologies (Zwick, 2019; Carillo Pineda & Faria, 2019; Alhola et al., 2015)

Carbon removal measures (existing and prospective)	**Avoided emissions**
Afforestation and reforestation (improved forest management, fields and farms)	Protection of natural carbon sinks, e.g., avoided deforestation.
Land restoration	
Soil carbon sequestration	Purchasing extra carbon credits from ETS to prevent emissions.
Bioenergy combined with carbon capture and storage (BECCS)	
Direct air capture and storage (DACCS)	CDM projects - emission-reduction commitments in developing countries under the Kyoto Protocol, e.g. rural electrification and energy-efficiency projects.
Enhanced weathering and ocean alkalinisation.	

4.4 Voluntary compensation services in Finland

The voluntary climate compensation market has emerged in Finland ever since the publication of the IPCC report in late 2018 calling for more urgent actions. As of today, there are several national and international service-providers operating in the Finnish markets. The service-providers offer diverse compensation projects with different methodologies to invest in. Most of the available services aim at increasing natural carbon sinks or protecting existing carbon reservoirs, but there are also other types of carbon removal projects available, which focus on emission avoidance or technical solutions. The pricing of carbon credits varies greatly between the services as the price is not fluctuating according to supply and demand unlike in the compliance market.

The major climate compensation services in the Finnish markets are summarized in Table 4 below. Three of the listed service-providers avoid calling their projects compensations. However, as all three have a similar operational model than those actors declaring to offer compensations, they are included in the listing. All these organisations offer an opportunity to donate funds to an emission removal project and announce the amount of removed emissions, which makes it possible to use the services as compensation. Therefore it would have been extremely challenging to make a distinction between goodwill projects and climate compensations, especially if neither of the service-providers granted carbon credits.

Table 4 Compensation services in Finland

Major compensation services in Finland	
FirstClimate	First Climate is an international company offering climate compensation and carbon management services.
MyClimate	MyClimate is a Swiss NGO founded in 2002. It offers voluntary emission reductions and carbon management services globally.
Nordic Offset	Nordic Offset sells VERs and carbon sink increasements from voluntary climate compensation markets. Climate compensations focus on enhanced energy efficiency, carbon sink increasements, and increasing renewable energy share globally. Carbon credits are Gold Standard verified, and the prices are determined in free markets.
Compensate	Compensate aims to create a system that allows consumers to compensate for their own emissions effortlessly while making a purchasing decision. That makes it easier

	to understand one's climate footprint. Compensate uses all compensation payments for carbon removal projects and overcompensates for a double amount. Carbon credits are purchased from globally trusted, certified carbon removal projects.
CO2Esto	CO2Esto offers (also non-participatory) companies a chance to purchase carbon credits from ETS to neutralize their emissions. CO2Esto also supports its clients in cost-efficient emissions reductions.
Puro	Puro is a marketplace for industrial carbon removal. New methods for credible emissions removal are constantly developed, and the work is supported by scientific measurement. There are currently three different certified projects available, and new projects can be added as soon as scientific verification and measurement methods are defined. Current projects include, for instance, the usage of construction elements as carbon sinks.
Puuni	Puuni is a Finnish company that removes carbon dioxide from the atmosphere by increasing carbon sinks, primarily through reforestation projects implemented together with companies and communities.
Karbonautti	Karbonautti is a Finnish dealer of climate compensations. Only Gold Standard certified projects are accepted as climate compensations.
Push for Change (Finnair's flight compensation program)	Finnair offers its customers an opportunity to offset their flight's emissions by purchasing biofuels or supporting a carbon reduction product in Mosambik. Biofuels cause 60-80% fewer emissions than fossil fuels, but only 50% of an aeroplane's fuel can include bio components. The ordinary share of biofuel in the tank is only a few per cent. There are different pricing categories for biofuels, depending on the length of the journey.
Ilmastoapu	Ilmastoapu is a Finnish service provider and allows individuals and companies to offset their emissions through certified emissions reductions projects. Each compensation effort is documented, and hence everyone can verify if the compensation has been completed.
Taimiteko	Taimiteko is Finland's 4-H Club's project, in which young people aim at planting 10 000 hectares of a new

	forest by 2030 and hence increasing Finland's carbon reservoirs. Climate footprints of both companies and individuals can be compensated through the projects.
Following actors do not call their services compensations but can be used or understood as such:	
Finnish Natural Heritage Foundation	Finnish Natural Heritage Foundation is a Finnish NGO that promotes old-growth forests and nature conservation. The Foundation purchases uncut forest sites with a high degree of biodiversity and seeks stable funding for them. Projects are open for funding from various sources.
Hiilipörssi	Hiilipörssi was founded under Finnish Association for Nature Conservation but separated from the NGO at the beginning of October 2020 and started operating as an independent company. The idea behind Hiilipörssi is to conserve and reconstruct swamps and so secure the swamps' carbon storages. Hiilipörssi makes long-term contracts with the landowners to stop carbon leakage and preserve the existing carbon storage. Operations are funded with private donations by individuals and companies.
Suomen Hiilinielu ("Carbon sink of Finland")	Hiilinielu is a cooperative project, which increases the carbon storage of forests by managing forests, so that cut rates are lower than the growth rate of trees. As a result, carbon balance-sheet is positive, and emissions are removed from the atmosphere. Individuals and companies can fund the work.

4.5 Criteria for credible compensation

Compensation discussion has occasionally been heated, and some have taken a very critical stance towards compensations. The criticism has been raised partly because there is currently no comprehensive criteria for credible compensation or shared understanding of calculation. That is mostly because there is a lack of both international and national standards. Consequently, the quality of compensation services varies significantly, and companies use compensations differently. To overcome these challenges, organisations have started to rely on voluntary standards, such as Gold Standard or Verra's Verified Carbon Standard (VCS), for technical validation when making decisions about compensations. Shared understanding will increase over time, as compensation markets

develop and more data from compensation projects will be gathered. That is expected to further increase the credibility of the whole field. (Alhola et al., 2015; Seppälä et al., 2015; Kuitunen & Ollikainen, 2014)

Researchers and experts have aimed to guide the path to credible compensation for those wishing to compensate and have introduced a set of criteria. For a company's compensation efforts to be credible, there should be ambitious decarbonization, i.e., emission reduction plans in place before compensating. Mitigation hierarchy should be followed, and companies should prioritize avoiding and reducing emissions over compensating. It is also important to carefully assess the positive and negative impacts of compensation multi-dimensionally: the projects may affect the local environment, communities, and public economy of an area. (Alhola et al., 2015.)

Furthermore, compensations cannot slow down emissions reduction work. All actions taken under compensation projects must be additional: in other words, actions that would not have been taken otherwise. Moreover, the scale of compensations should be adequate compared to the caused emissions, and the results should be permanent. Credible compensation projects must also comprehensively comply with sustainable development goals. Accurate documentation about the climate compensations should be provided, and preferably, the projects would be verified and certified by an objective external party. (Seppälä et al., 2019; Hildén et al., 2019.) Transparency is one of the key factors of credible climate compensations. The criteria for credible compensation are summarised in Table 5 below (Seppälä et al., 2019).

Table 5 Criteria for credible compensation (Kuitunen & Ollikainen, 2014; Seppälä et al., 2019; Hildén et al., 2019).

Criteria for credible compensations:
Science-based
- Chosen mechanism and the amount of compensated emissions are based on science - Effects must be well-known
Efficiency and additionality
- Compensation efforts must be such that they would not have happened without climate compensation, i.e. efforts must be additional and create additional value. The project must reduce emissions that would not have been reduced without the project. - Compensations must be efficient, their effects must be known, and the efficiency must be provable. - Service-providers cannot double sell emissions: they must eliminate the carbon credits from their register after someone has purchased the credits. Compensator must also eliminate the credits after having calculated them as emissions reductions once. Credits should have tracking numbers.
Adequacy

- Compensations must be large-scale enough. Ideally, emissions would be over-compensated to ensure that the emitted emissions are fully compensated and to overcome the permanence risk. - The benefits must outweigh the downsides.
Permanence
- Permanence risk is always associated with compensations. That must be taken into account. - E.g. wildfires and diseases pose a risk for the permanence of carbon sinks. - Benefits must be as permanent as downsides.
Verifiability and reality
- All claimed emission removals must happen. - Emission reductions and environmental impacts must be quantifiable, measurable and verifiable. Standardized and universal quantification and calculation methods should be used. - Additibility of the emission reductions and environmental effects must be verifiable. An objective external party should verify the emissions reductions. - Service-provider has ensured that the chosen compensation project is compliant with the chosen standard, e.g. Gold Standard, CDM, VCS.
Transparency
- Compensations must be public, and the public should have an opportunity to evaluate the compensations.

One of the significant contradictories in the credibility of compensations is the question about additionality. The Climate Change Panel of Finland calls after a better and more comprehensive knowledge basis for domestic compensations, applicational scope, and rules. (Seppälä et al., 2014.) For example in Finland, there is remarkable potential in the land-use sector to neutralize emissions from other sectors if calculated as compensations. Nevertheless, Seppälä et al. (2014) have stated that natural carbon sequestration should not be used as compensation in Finland, even though it would be tempting to compensate for industrial emissions through Finland's numerous forests. That would be only a calculatory act without any real impact and hence should not be used. The land-use sector could be used as compensation only when some natural process is restored with additional actions, and its durability for over 100 years is ensured. Similarly, if carbon storage is protected in a situation where standard actions would release the carbon into the atmosphere, it could be understood as compensation. (ibid.)

Despite the issues and criticism targeted for climate compensations, Finnish climate change experts agree that companies' role can be remarkable in increasing the carbon sinks. Companies can have a role as funders, enablers, or pressure-builders for structural solutions. Some see that compensations are only a temporary solution before emission-based taxation or payments are introduced. (Hildén et al., 2019).

4.6 Pros and cons of purchasing voluntary climate compensations

Voluntary climate compensations are a new addition to a toolbox for climate change mitigation. In recent years, companies have started to integrate compensations in their carbon management strategies, and compensations are now increasingly used as a part of carbon management. Companies choose to compensate for various reasons. Voluntary compensations can be seen as a manifesto of their commitment to climate change mitigation (Goldstein, 2015; Weber, 2018). The other reason is that they believe to gain competitive advantage through first-mover strategy, as they learn how carbon markets work and can thus be better prepared for potential risks brought by obligatory emissions trading or other mandatory schemes and more tight environmental legislation (Tipper, Coad & Burnett, 2009; Bui & de Villiers, 2014). Moreover, climate compensation often produces co-benefits, for instance, improved gender equality and employment opportunities (Broekhoff et al., 2019). Such co-benefits are especially important for organisations with ambitious sustainability strategies and that wish to incorporate both social and environmental aspects in them.

Environmental NGOs and even media often criticize companies that purchase voluntary compensations to meet their climate targets. The criticism has focused on the controversy of compensations – compensations are seen as a shortcut, which polluters can take to buy good conscience and continue polluting without committing to any real change. According to the critics, compensations are hence only a form of greenwashing i.e. decarbonizing the internal processes. Compensations are blamed for turning the attention away from more crucial issues, mainly the necessity and urgency of tackling climate change with internal, fundamental changes in unsustainable patterns. Instead of implementing the required changes themselves, organisations can pay for a third party to reduce emissions somewhere far away. That is why compensations are seen as a short-sighted solution that, in the worst case, might even cause harmful lock-in situations and enable and legitimate the continuity of the high-carbon industry. In some cases, it has been noted that compensation projects have had negative impacts on local communities. (Monbiot, 2006; Blum & Lövbrand, 2019; Röstlund & Lenas, 2019; Broekhoff et al., 2019.)

Even though this criticism is mainly targeted at companies, it is also addressed to compensation services. Such criticism might affect a company's willingness to compensate for its emissions: The company might put its reputation at risk if chosen services were of poor quality, unreliable, or somehow questionable. Consequently, the credibility of a climate compensation project and reputability of the service-provider play a vital role in the company's compensation-related decision-making. (Elijido-Ten, Kloot & Clarkson, 2010.)

4.7 Climate compensation as a method to reach carbon neutrality

Many organisations utilize selected compensation initiatives to meet their dynamically changing climate targets. Companies have three options for compensating the emitted emissions: to purchase carbon credits from the compliance market if subjected to emissions trading, invest in climate compensation projects in voluntary markets, or launch insetting projects. All of these methods and all related compensation initiatives aim to protect the climate and diminish the organisation's carbon footprint (Weber, 2018).

By purchasing climate compensations, companies can more easily reach their emissions targets, as the acquired carbon credits allow the companies to claim a reduction in their CO2 consumption. By doing so, they can even achieve calculatory carbon neutrality for all their operations or for a specific product or service. That might benefit the company, as, for instance, certificates may be important for sustainability-minded customers. (Banerjee et al., 2013.)

Hildén et al. (2019) mapped the attitudes towards carbon offsets of Finland's leading climate experts. It was found that the experts did not believe that all companies could achieve carbon neutrality without compensations. That is possible for most companies – although depending on the scope of carbon footprint calculation – but not for all. Thus, compensations are needed to reach first carbon neutrality and carbon negativity soon after that. Nevertheless, mitigation hierarchy should always be followed, and compensations should be used only for unavoidable emissions (see also Goodward & Kelly, 2010; Alhola et al., 2015). According to this, a company's path to carbon neutrality can be summarized as follows:

1. **Avoid:** get rid of the most harmful and avoidable emissions
2. **Reduce:** minimize the rest of the emissions by utilizing different methods.
3. **Compensate:** compensate those emissions that cannot be avoided or reduced. (ibid.)

In other words, compensation should never be the first option, and the mitigation hierarchy should be followed as Figure 4 below illustrates. In other words, organisations should invest in compensation projects only when it becomes impossible or financially unfeasible to further reduce emissions (Hamrick & Gallant, 2018). Credible and effective compensation requires comprehensive knowledge and extensive carbon accounting. A company cannot take credible carbon management actions, and it should not compensate if it is not aware of the level and sources of its emissions or its picture is too narrow (Defra, 2019).

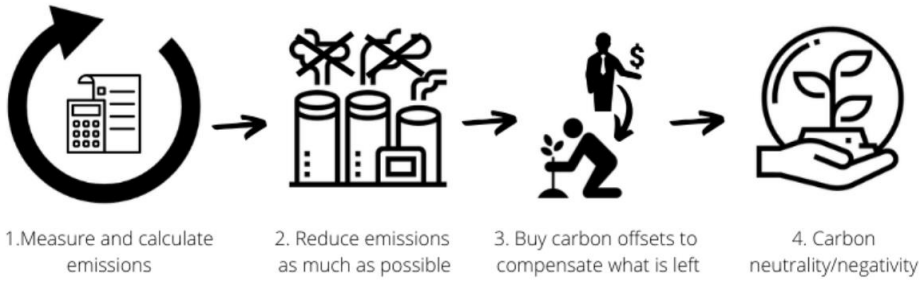

Figure 4 Road to carbon neutrality

After compensation, a company can calculatory reach carbon neutrality, as its net emissions reach down to zero. Zero net emissions mean that the company has managed to neutralize its emissions, either by minimizing, preventing and avoiding emissions in its all operations or by compensating the residual emissions.

5 METHODOLOGY

5.1 Data collection - semi-structured theme interviews

This study primarily utilises qualitative methods because the aim was to gather rather detailed subjective information. According to Eskola and Suoranta (2008), quantitative research is often associated with objective scientific knowledge, whereas qualitative research provides more subjective knowledge. In qualitative research, the emphasis is on the content, and the data set is often relatively small. (ibid.)

Qualitative methods have many benefits compared to quantitative methods, especially in cases where there is little to no prior knowledge of the studied subject. Hence, data is gathered without prior knowledge. That is one of the most significant advantages of qualitative research: it allows studying attitudes and opinions without making apriori hypothesis (Eskola & Suoranta, 2008). That was useful in this research as there was very little prior research on the subject. Moreover, qualitative research does not require as extensive data sets as quantitative research because analysis and conclusions are more important than a big data set (Tuomi & Sarajärvi, 2009). That was an important factor in this research process, as the interviews conducted were very detailed and time-consuming, and the studied group consisted of high-level corporate representatives.

There are several ways to collect data for qualitative research, and all of them have both advantages and disadvantages. Such methods include inter alia interviews, questionnaires, observation or document analysis. (Tuomi & Sarajärvi, 2009.) Different types of data collection methods are suitable for answering different kinds of research questions. For this thesis's purpose, interviews were deemed the most effective way to gather data, as there was minimal prior knowledge on the topic. The information available in the existing documents would have been too limited and poorly comparable for this research. Interviews allowed gaining a deeper understanding and getting access to new insights and valuable first-hand knowledge. What was especially beneficial was

the possibility to ask more specific questions from the interviewees whenever needed. As Eskola & Suoranta (2008) have stated, it is useful to gather ideas without any pre-determined hypothesis as something unexpected might come up.

There are two basic types of interviews: a structured interview with a pre-determined set of questions and an informal interview that goes with the conversation flow and creates impromptu questions. In informal interviews, it is vital that the researcher is able to steer the conversation from topic to topic. The other type is a structured and standardized interview. In such an interview, the interviewer typically uses a form with a pre-defined set of questions. The interview can be conducted either in person or via telephone. Depending on the research design and the number of questions, it can be a relatively fast way to collect data. Nevertheless, there are limitations when using structured interview: It limits the possibility to ask more questions and discuss other than pre-defined questions. (Hirsjärvi & Hurme, 2001; Eskola & Suoranta, 2008.) In some case, the interview method is somewhere in between of these two general types, such as in the case of this study. The data collection method of this research could be described as a half or semi-structured theme interview; even if there was a certain set of questions, there was also room to discuss the topic more widely, and ask the interviewees also additional questions to gather as much knowledge on the topic as possible. These kinds of interviews are sometimes also referred to as theme interviews (Hair, Celsi, Money, Samouel, & Page, 2015).

The data collection method was chosen because of the nature of the research. Structured interview was a natural choice over an informal interview because of the large number of interviewees. However, to get as comprehensive information as possible, it was important that there was also an opportunity to ask impromptu questions and for the interviewee to talk freely about their views. That can help to prevent interviewer's apriori theories from biasing the data collection and supports the production of unexpected information since the whole interview is not explicitly structured only towards the interviewer's goals. (Hirsjärvi & Hurme, 2001; Tuomi & Sarajärvi, 2009.)

As the interviewees were from variable organisations, it was useful to have both a fixed set of questions and an opportunity to ask more questions. The weakness of having only static question patterns would have been that the discussed themes were vast and not every interviewee answers from the same perspective. For some, the fixed questions worked better than for the others. Also, the interviewees had different personalities, temperaments and even attitudes towards the study. Some were very open and got very excited about the topics and questions and openly explained their own perspective on the matter. However, others were more suspicious and gave only short answers. Therefore, it was useful to have the opportunity to ask more questions. Having a fixed set of questions would have prevented that.

5.2 Data collection in practice

The objective of the study was to gain a broad understanding of the views of corporate representatives on the carbon offsets. Hence, a large amount of data was needed, and 27 interviews were conducted. The interviewees were chosen from different fields of industry and from companies of variable size. The industries of studied companies included forestry, energy, agriculture, retail, travel, service, event, oil refining, restaurant, software, daily consumer goods, importing, traffic, fashion and textile, cosmetics, real estate, manufacturing of different daily goods and/or industrial machines and food. As the potential interviewees were listed, they were also initially characterized either as pro-environmental or behind-laggers to ensure that different views would be included in the data set and the views would be well balanced.

The interviewees were contacted via phone or email, and they were promised anonymity. The interviews were primarily conducted face-to-face, but some of the interviews took place via video conference app due to far proximity or timetable reasons. The interviews were conducted between April 2019, and July 2019 and one interview lasted approximately 60-90 minutes. A for and a pre-determined set of questions were used to support the flow of the interview, and the interviewees were able to see the questions during the interview. Some also asked to see the question pattern beforehand to prepare for the interview and were sent the questions. After the interviews were conducted and the answers proof-read, they were sent out to the interviewee to revise. The interviewees had hence an opportunity to supplement or change their answers, but none of the respondents did so.

What was noteworthy and limits the possibility to generalize the results of this study, was that only around half of the interviewees agreed for an interview – they either turned down the invitation or did not respond at all - even though they were contacted by a respected Finnish NGO, Finnish Association for Nature Conservation. Reasons for that have not been studied in detail, but it can be assumed that one of the reasons for that was the emerging nature of compensation markets – the matter was very new in spring 2019, and hence it is possible that the interviewees did not feel comfortable enough to answer to the detailed questions on the matter. Another factor might be that those companies who did not respond to the interview, were those who were not willing to co-operate with an NGO, were not interested in the climate issues or who were still at the beginning of their sustainability journey. Naturally, also, schedule strains are a likely explanation. Nevertheless, it is important to note this limitation, as the data set might give a too one-sided view on the matter.

5.3 Data analysis - data-driven and theory-driven content analysis

The data set consisting of qualitative data has been analysed with the method of qualitative content analysis, more precisely a combination of data-driven and theory-driven approaches. Downe-Wambolt (1992, p. 314) has described content analysis as a "*research method provides a systematic and objective means to make valid inferences from verbal, visual, or written data in order to describe and quantify specific phenomena*", which makes it a very suitable method for the purpose of this research.

There are only a few rules to follow in content analysis. That is simultaneously an advantage and the main challenge of content analysis: as it is not linked to any particular science, a researcher must make an effort to ensure the credibility and trustworthiness of the results. (Long & Johnson, 2000.) Researcher's prior knowledge can be utilized in data analysis, as preconceived knowledge may support in interpretation and understanding of contexts. However, for the same reason, there is also a risk of bias in qualitative data analysis, and hence a researcher must consider their pre-understandings of the matter to minimize the risk (Long & Johnson, 2000.) A researcher must ensure that their prior knowledge does not affect the interpretations or informants and critically examine their own biases and be able to distance themselves. Then again, prior experience is necessary to some extent to recognize possible inconsistencies in the text. (Bengtsson, 2016.)

To overcome the challenges linked to content analysis, there are some common guidelines for content analysis. According to Tuomi and Sarajärvi (2009), the process of data-driven content analysis is as follows:

1. Data collection

2. Familiarising oneself with data

3. Reduction - reducing everything unnecessary from the perspective of the research questions

4. Identification of homogenous and heterogeneous groups from reduced text

5. Formulation of sub-classes through grouping and naming the categories with concepts

6. Formulation of categories by grouping subclasses

6. Compilation - drawing realistic conclusions. (Tuomi & Sarajärvi, 2009.)

Theory-driven content analysis is similar to data-driven content analysis. The greatest difference is that in theory-driven content analysis, the sub-classes are

data-driven, but the categories theory-born. In other words, the analysis starts with a data-driven approach, but as the analysis proceeds, the grouped data is linked to theory. (Tuomi & Sarajärvi, 2009.)

The reason for combining both of these data analysis methods in the thesis is that there were various stages of analysis in the process. Whereas the data-driven approach was more useful for analysing the attitudes towards voluntary climate compensations, which is still only a moderately researched topic with few theories, the theory-driven approach provided a valuable framework for grouping the organisations based on van Marrewiijk's and Werre's (2003) sustainability matrix (presented in Chapter 2.3) for their environmental performance. Without such an approach, it would have been difficult to make differences between the interviewees, which would have meant that the analysis would have been more superficial than what it now is.

Appendix 2 presents one example of the conducted data-driven content analysis and illustrates more in detail organisations' answers to one of the questions.

6 RESULTS

6.1 Environmental sustainability of companies

The question pattern enabled collecting data also on the organisation's background and their overall sustainability performance and objectives. In the analysis, the companies were divided into different groups based on their overall sustainability strategies and ambition levels. This division to groups is based on the van Marrewiijk's and Werre's (2003) sustainability matrix presented in more detail in Chapter 2.3. This approach provided an opportunity for more in-depth analysis and for gathering more detailed information.

Organisations' answers were analysed with theory-driven content analysis, and after interpretations were made and meanings found, the findings were compared to van Marrewiijk's and Werre's (2003) sustainability matrix, from which the categories were brought, and the companies were divided to different groups on the basis of this comparison. Most important cut-off points included the overall ambition level to sustainability, the number and contents of climate actions (including emissions reductions and carbon footprint calculations), prioritization of climate work over other matters in decision-making and operations, existence of long-term planning and action plans, and knowledge on the issues. Also some numeric and binary data (answers to yes-no questions, numeric questions "on a scale from 1 to 5, how much do you agree" and multiple-choice questions) were included in the data set and utilized and treated as a part of the content analysis.

Table 6 below shows the interviewed companies divided into the different environmental sustainability categories.

Table 6 Summary: environmental sustainability of interviewed organisations

Category	Description	Number of companies of this category in data	Industries of companies in this category
Pre-CS (red)	Corporate has no ambition towards sustainability, but it might take some sustainability actions if external drivers force it to do so.	0	-
Compliance-driven CS (blue)	Corporate respects the limits posed by regulation and authorities. It might do some charity work. CS is seen as a duty or as correct behaviour, which is the driver for action. Corporate's main task is to create economic welfare around it.	1	Forestry
Profit-driven CS (orange)	Social, ethical and ecological aspects are integrated into business operations and decision-making, but only if they have a positive effect on the bottom line. Hence, CS is motivated by profitability.	10	Forestry, engineering industry, clothing, energy, food industry
Caring CS (green)	Economic, social and ecological aspects all have intrinsic value and the company balances between them. CS actions go beyond compliance and profit-seeking, and the actions are motivated by a belief in the sustainability objectives.	8	Retail, clothing, cosmetics, agriculture, energy, textile, restaurant, food
Synergistic CS (yellow)	Ecological, economic and social solutions are in good balance, and the company creates value for all of these areas. Corporation operates together with stakeholders, and the cooperation is beneficial for all. Sustainability itself is important, and it is the inevitable direction progress takes.	5	Events, energy, travel, daily consumer goods

Holistic CS (turquoise)	Sustainability is the only option, and hence sustainability is integrated into every aspect of the organisation. Organisation's objective is to contribute to the life of every being and entity now and in the future as it is seen that everything is interdependent. An organisation and all of its employees have universal responsibility towards every other being.	3	Restaurant, food industry, real estate

6.2 Carbon management strategies and climate targets

6.2.1 Motivations for corporate climate action

Majority of the companies, 78%, saw that actions to mitigate climate change are urgent and 52% said that it is still possible to limit global warming under 1.5°C. All interviewees also said that their organisations aim at reducing carbon footprint in their operations. 25 out of the 27 interviewees had tangible climate targets, and the majority also had action plans or environmental systems to reach the objectives. Two out of those who had climate objectives did have neither an environmental management system nor an action plan for meeting the climate targets. Hence, they had difficulties describing how the climate targets would be reached.

Even though the urgency and importance of climate action were recognized, for most companies, carbon management was not primarily a question of sustainability, but rather a question of risk management and profitability, which follows the idea presented by Porter and Weinhardt (2008). These companies had not yet taken strategic-level approaches to climate change mitigation.

Recognized risks naturally varied between different industries, and the mentioned risks covered a broad spectrum of issues. They included inter alia challenges in global logistics and supply chains, weakening delivery performance, changes in weather patterns, extreme weather events, availability of raw materials, and increasing prices. Also, regulatory risks and risks associated with changing customer behaviour and attitude were named among the climate change-related risks. Climate change brings direct, physical risks to some organisations, whereas for others, the main risks are indirect and linked mostly to unpredicted or unfavourable developments in the operational environment. Most of the interviewed companies recognized that their operational preconditions would suffer if climate change would unstabilize societal order. These indirect risks include a variety of social, economic, and environmental risks, such as the uncontrollable movement of population, pollution, biodiversity loss, new diseases, increased inequalities, rising sea levels, and the risk of destabilizing

the economy and a possible recession. These answers are well aligned with the presented research literature, for instance with Juholin's (2003) illustration of regulation risks and Hoffman's (2006) notion about physical risks as a motivational factor, and about climate change as a matter of risk management. The answers also highlight Finnish markets' global nature, as many of the mentioned risks likely realize elsewhere than within Finland's borders.

The majority of the interviewees had made a risk mapping of climate-related impacts, but not all. As expected, those companies that had identified the risks and faced direct risks were, on average, more ambitious in their sustainability and carbon management strategies and more eager to compensate than those that also lacked risk management actions or faced only indirect threats. However, physical risks were not the only factors that motivated companies to adapt carbon management strategies. The financial and regulatory aspects were dominant in many answers, similar to what previous research suggested.

6.2.2 Carbon reduction strategies of organisations

The interviewees' carbon management strategies were analysed utilizing the framework presented by Busch and Schwartzkopf (2013). The strategies were identified from the answers and grouped with theory-driven content analysis. It was recognized that almost all of the interviewed organisations follow several carbon management strategies simultaneously. Surprisingly, all interviewees had rather similar carbon reduction strategies despite their different industries and characteristics. The carbon reduction strategies include carbon efficiency, carbon-cost leadership, low-carbon image and low-carbon labelling (ibid.). However, there was much more friction in the usage of compensation strategies, which include abatement efficiency, compensation cost leadership, climate-neutral image and climate-neutral labelling (ibid.).

Actions that aim to reduce both costs and the company's carbon footprint in internal processes or supply chains can be grouped under a carbon efficiency strategy. All interviewees had some sort of carbon efficiency strategies. The listed actions included efforts to increase energy efficiency in production processes, resource-wise and circular economy approaches, investments in own energy production, optimization of logistics or transportation (e.g. shorter distances, fuller loads, better roads or alternate means of transportation) and training of personnel to act in a resource-efficient way. Also all objectives to reduce GHG emissions in any part of the production processes can be understood as a part of this strategy, and these activities were commonly taken in Finnish companies.

Carbon-cost leadership was a popular strategy among bigger companies with a lot of resources. Focusing on products that are simultaneously competitive in both price and carbon performance are in the core of this carbon management strategy. The companies were also often operating in critical industries that face a lot of criticism and/or that have great potential for increasing handprint. The mentioned actions included R&D investments increasing cli-

mate handprint and process efficiency as well as marketing campaigns aiming at raising awareness and initiating behavioural change among consumers. Also, one small company operating in a restaurant industry followed the carbon-cost leadership strategy, having introduced several methods through which to motivate its customers to operate in a more sustainable way.

Low-carbon image strategy focuses on establishing and maintaining a good reputation, which allows a company to cover the carbon reduction costs by increasing prices of well-reputed green products or increased market share. Low-carbon image strategy was a commonly used carbon management strategy among the interviewees. It includes actions such as purchasing of green energy instead of fossil fuels, having an environmental management system, utilizing alternative methods of transportation and changing employee mobility policies, e.g. by utilizing more virtual solutions. Moreover, also actions such as philanthropy, e.g. supporting NGOs working to mitigate climate change and introducing new business model or climate-sound products or services outside the traditional business (e.g. utilizing production side stream for biofuel production) belong under this category.

Low-carbon labelling strategy focuses on a company's products and their increased sustainability. Greener products can be sold with higher premium price at the market thanks to strong communications efforts of a company following this strategy. Actions that can be grouped under low-carbon labelling strategy included product development investments in new innovations with smaller climate footprint and larger handprint, investments to more sustainable infrastructure in processes and life cycle approach to company's products and services (e.g. calculating and minimizing certain product's footprint).

6.2.3 Compensation strategies

Compensation strategies include abatement efficiency, compensation-cost leadership, climate-neutral image and climate-neutral labelling. The idea behind abatement strategy is to keep the abatement-costs to a minimum by utilizing climate compensations in climate work. In other words, the abatement strategy focuses on cost-optimization, but only when it is accepted by salient stakeholders and complies with legislation. Those interviewed companies that belong to EU ETS were obliged to pay for carbon credits, but some of them were also supplementing the free allocated carbon credits and VERs by participating in emissions trading more than on a required level.

Compensation-cost leadership strategy aims at generating a cost advantage for its customers through compensating caused emissions. Such initiatives include activities that companies take to compensate for their customers' emissions. It is not meaningful if the price is included in the consumer price as long as the customer does not have to choose between compensating and not compensating or to pay a separate fee. For instance, some companies had chosen to offer climate-neutral deliveries or sell climate-compensated products for its customers under this strategy. From a customer perspective, taking such actions means that customer can purchase so-called "good conscience products"

(citation from one of the interviewees) without having to bear the compensation cost themselves. This strategy was common among those companies that had already now compensated parts of their emissions. It is unclear if such actions were taken under sustainability or carbon management strategy or merely for marketing purposes.

When pursuing a climate-neutral image strategy, companies focus on improving image and green reputation through climate compensation. In other words, a company does not change its operations, or internal processes i.e. does not reduce its own or its supply chain's emissions but instead aims at greening its brand through climate compensations. In this strategy, a company invests significantly in compensation projects with high visibility. Companies might also demonstrate their engagement to climate work through insetting projects or public engagements to high-visibility climate change mitigation projects. Although this strategy was judged by the interviewees and closely associated to the general perception about climate compensations, this still seems to be one of the dominant strategies among Finnish companies, as many highlighted the importance of stakeholder acceptance. The actions taken under this strategy can vary from reforestation activities to funding of alternative energy generation systems in developing countries, and the chosen climate compensation methods are not determining.

With climate-neutral labelling strategy, companies charge their customers premium price for carbon-neutral products. This strategy comes close to offering customers a chance to compensate for their emissions while making a purchase decision, as the idea is to compensate some of the emissions caused by the product and finance it through the premium price paid by the customer. For instance one of the interviewees had categorized the emissions caused by a meal according to the source of protein and offered its clients an opportunity to compensate for the emissions caused by the meal by paying an equivalent amount of extra. Similarly, some transportation companies offer both climate-neutral and regular deliveries.

The various actions taken under different carbon management strategies are summarized in Table 7 below.

Table 7 Carbon management activities in the data set

	Strategy	Actions
Reduction strategies	Carbon efficiency	Efforts to increase energy efficiency in production processes and to reduce GHG emissions in any part of the production process, circular economy approaches, focus on resource wisdom, investments in own energy production, optimization of logistics or transportation (e.g. shorter distances, fuller loads, better roads or alternate means of transportation) and training of personnel to act in a resource-efficient way.
	Carbon-cost lea-	R&D investments increasing climate handprint

	dership	and process efficiency as well as marketing campaigns aiming at raising awareness and initiating behavioural change among consumers.
	Low-carbon image	Purchasing of green energy instead of fossil fuels, having an environmental management system, utilizing alternative methods of transportation, changing employee mobility policies, e.g. by utilizing more virtual solutions, philanthropy, e.g. supporting NGOs working to mitigate climate change and introducing new business model or climate-sound products or services outside the traditional business (e.g. side streams from production processes for biofuel production)
	Low-carbon labelling	Product development investments in new innovations with smaller climate footprint and larger handprint, investments to more sustainable infrastructure in processes and life cycle approach to company's products and services (e.g. calculating and minimizing certain product's footprint).
Compensation strategies	Abatement efficiency	EU ETS, Gold Standard projects
	Compensation-cost leadership	Offering climate-compensated deliveries, compensating certain product's climate footprint on behalf of the customer
	Climate-neutral image	Various offsetting and insetting projects, e.g. reforestation, funding alternative energy generation systems.
	Climate-neutral labelling	Offering customers a chance to compensate for emissions caused by their purchase decisions or deliveries, offsetting certain product's carbon footprint

6.2.4 Carbon management efforts and corporate communications

As the motivation for carbon management is often financial or motivated by stakeholder expectations, discussing the role of carbon management efforts in corporate communications supports in understanding the motivations behind it in corporate operations. Almost all interviewed companies utilized their climate work in communications. The objectives of such communications varied. For the vast majority of the companies, especially for those following low-carbon labelling or low-carbon image strategies, it was important to share information about the climate-friendliness of the products for consumers to seek competitive advantage and to increase the acceptability of a product or service. The aim

of the communications was to create a green brand and monetarize brand value, to motivate consumers to act or to share information about the climate efforts to enhance the company's societal status and acceptance.

Marketing-dimension was especially well seen in the strategies of those companies that had compensated climate footprints of a certain product. For example, one of the companies was still in the very beginning of its overall sustainability journey (blue sustainability group), but had compensated climate footprint of one of its product lines and used climate-neutrality of the product as one of the main messages in its marketing communications.

Some companies sought to validate their existence and increase their acceptability by actively communicating about their carbon management efforts, climate targets and made improvements to societal stakeholders like key decision-makers and relevant NGOs. These companies were motivated to carbon management and sustainability not only by physical threats or financial reasons but also because of stakeholder expectations and regulatory risks. They also wanted to enhance their position as relevant and responsible actors of the society to diminish the risks of emerging regulation.

Those companies that were already longer on their sustainability journey found it more important to communicate about sustainability issues more comprehensively no matter what kind of a carbon-management strategy they had chosen to follow. They understood sustainability more comprehensively than as a communications effort. Anyhow, this does not mean that they would not utilize their climate work also for marketing purposes and also these companies often followed either low-carbon image or low-carbon labelling strategies. However, the role and objective of communications are slightly different if a company belongs to the yellow or turquoise sustainability group, as the role of sustainability is more knit in the company's operations. In such cases, the organisations often said that their target groups include "like-minded customers" to collaborate with, other actors in the same industry, key societal actors (for coalition building, collaboration or lobbying) and value chain and the objective of communications was to engage key actors to climate work.

6.2.5 Climate targets of organisations

Overall, organisations had very variable climate targets. Some were extremely ambitious and focused on minimizing the adverse effects of either own or whole value chain's operations. Most of the organisations understood scopes 1 and 2 to be included in their own footprint, and scope 3 to be included either on suppliers' or customers' footprint. The most common target was to have a numeric target for emissions reductions by a given year. Some organisations were aiming to become fully carbon neutral in scopes 1 and 2, whereas others were reaching for certain carbon neutral products. Some targets focused mainly on stakeholder work: the stakeholders should be provided transparent information on the climate impact of products, services and the whole industry and/or stakeholders should be motivated and informed to act in a climate-friendly manner. Some organisations were still in the continuous improvement phase

on their sustainability journey and did not have specific numeric targets but were instead looking for better and more efficient ways to do business. Other organisations were motivated to work for more efficient use of resources

Table 8 below recaps the diverse climate targets the interviewed organisations have in place. The same organisation may have several different climate targets, which fall under different categories. The motivational factors are derived from the literature review discussing the different motivations of organisations towards sustainability work.

Table 8 Climate targets of companies

Types of climate targets of interviewees			
Type	**Description**	**Motivation**	**Chosen carbon management strategy**
Minimising or reducing own footprints	An organisation aims at minimizing or reducing its carbon and/or ecological footprint. In most cases, there are detailed numeric targets, e.g. carbon neutrality by 2025.	Physical, financial, ethical, regulatory	Carbon efficiency
Stopping the increase of emissions	Even though revenue is increasing, emissions should be reduced.	Ethical, financial, regulatory	Carbon efficiency, carbon-cost leadership, low-carbon image, abatement efficiency
Stakeholder-focused	Informing stakeholders about climate impacts, motivating stakeholders to take action	Financial, marketing	Carbon-cost leadership, low-carbon labelling
Value chain focused	Focus is on improving the performance throughout the value chain.	Financial, physical, ethical, regulatory	Abatement efficiency, carbon efficiency
Efficiency focused	Climate targets focus on increasing the effectiveness of operations, e.g. by improving logistics. Organisations may simultaneously achieve savings.	Financial, regulatory	Abatement efficiency, carbon efficiency, low-carbon image, low-carbon labelling

Innovation focused	An organisation aims to increase its handprint by introducing new, climate-sound innovations or finding new innovative methods to carry out its own operations in a more sustainable way.	Financial, marketing, ethical	Climate-neutral image, low-carbon image, low-carbon labelling
Continuous improvement	An organisation does not have clear climate targets, but it considers climate issues in its operations and aims for continuous improvement in core areas.	Regulatory, financial	Carbon efficiency, abatement efficiency
Built-in climate action	Sustainability and climate actions are built in the organisation's or its products' or services' DNA. The organisation works for the purpose.	Ethical, physical, marketing	Low-carbon image, low-carbon labelling, carbon-cost leadership, abatement efficiency
Fore-runner	A company aims at becoming a forerunner in climate work in its industry.	Ethical, financial, marketing	Carbon efficiency, low-carbon image, low-carbon labelling

6.3 Compensation in practice

Even though the majority of the interviewees had ambitious climate targets and interest towards compensations, only 7 out of the 27 interviewees compensated their emissions. However, many more had investigated opportunities for compensating and were considering it as an option. The majority of those who compensated, compensated only carbon footprints of a certain product to be able to market it as a carbon-neutral product. Although the companies have not yet made decisions to compensate, almost all interviewees agreed that residual emissions should be compensated at some point, and while some interviewees had ambitious plans to reach beyond carbon negativity with their compensation efforts, some others did not think that carbon neutrality target would be realistic. Moreover, views on what emissions were seen to belong under the company's responsibility varied greatly.

> "There have been discussions about compensations, but we have not decided anything yet."

> "We can continuously improve, but it is unlikely that we would ever be fully carbon-neutral."

One of the major barriers for compensating was that the companies did not have sufficient information about the impacts of their own operations, for example, carbon footprint calculations were insufficient or lacking. Surprisingly many companies had not yet calculated their carbon footprints and were not aware of the environmental impacts of their operations. Some interviewees that did not yet compensate their emissions said that it is partly because services are difficult to understand and almost impossible to reliably compare to each other. They wished that there would be a comprehensive package solution available, meaning that they would like to purchase carbon footprint calculation, carbon management advisory services and climate compensations from the same service-provider as a turnkey solution. Similar ideas were expressed in many answers: companies wished that they would have more knowledge both on their own emissions and on different compensation projects and methodologies.

> "We can reach carbon neutrality, if we are able to get credible calculations about our emissions, after that, we could maybe compensate, but it is impossible to tell how long that will take - may take long."

None of the organisations compensated their emissions through a domestic compensation program themselves, although some provided their customers with an opportunity to compensate for their purchase's emissions, for example through Compensate's service. Instead, the companies compensated their emissions through single projects, most often certified under Gold Standard. That approach was chosen as Gold Standard certified projects were seen reliable and commonly accepted, and they were simple and affordable enough to fund and easy to communicate to customers.

Whereas some companies were unwilling to compensate, others wanted to overcompensate to also offset the past emissions or just simply to mitigate climate change more than what would be required:

> "We could compensate, preferably even overcompensate, emissions caused by our operations by funding projects that increase carbon sinks through reforestation or reconstructing swamps. We would like to overcompensate so that we could help the planet to move to a better direction."

> "Carbon neutrality is not enough anymore, we need to be able to remove more carbon than what we emit."

Compensations are needed in the business sector's climate work, as none of the interviewees thought that their organisation could become carbon neutral only by reducing emissions. Most saw that compensating would be the final step on the journey and were planning to integrate compensating in their strategies later. However, companies did not find it feasible to compensate emissions at this

point when their climate work and carbon management strategies were still in their infancy, and there were a lot of uncertainties but instead preferred starting compensating only when all possible emissions would be reduced or avoided. The vast majority of the interviewed companies acknowledged that to meet the 1.5°C target, emission removals are needed in addition to emission reductions at some point. Removals can be implemented either by increasing carbon sinks or by utilizing technological solutions. However, this does not mean that the emissions removals should be completed through compensation programs, as they can be completed through numerous other ways, e.g. insetting projects, too. Currently, companies saw that having independent service-providers for dealing carbon climate compensations was the simplest way, but then again many were unsatisfied with the quality of the available services.

> "For us, carbon neutrality means that we make our own operations as carbon neutral as possible and compensate the residual emissions. It is especially important to improve own operations."

None of the interviewed companies said that they could become carbon neutral only with emissions reductions. 19 said that they cannot reach carbon neutrality and 8 were uncertain.

At this point, companies had difficulties in assessing, how big share of their organisation's total carbon footprint would remain to be compensated, which illustrates the insufficient knowledge basis for making compensating decisions. 12 interviewees could not give an estimate about the percentage, while 9 estimated that the compensable share would be 0-20%. One interviewee estimated 20-40%, two 40-60%, two 60-80% and one 80-100%.

The majority of those companies that knew their total carbon footprint and were capable of giving an estimate on the percentage of residual emissions estimated that only 0-20% of current emissions would need to be compensated. Again there were differences in what was included in the residual emissions. Whereas some companies said that they probably need to compensate their customers' emissions as they cannot alter their behaviour enough, some others did not include customers' emissions to their own footprint calculations at all. Residual emissions also varied between different industries. For some, travelling caused residual emission that cannot be avoided in the future, as travelling is an integral part of the business. Others said that they cannot affect their customers' behaviour enough to zero up those emissions and some mentioned value chain's emissions. For many, logistics and emissions caused by raw material production or primary production were unavoidable.

Companies saw that it is important to separate compensations from other actions in climate footprint reporting. Almost all interviewees agreed that it would be misleading to only reduce compensated emissions from the total amount without specifying which percentage has been reduced through compensation. Many interviewees underlined that all other actions should be taken first and compensation should be only the last option and hence the role of compensations should be clearly stated in the carbon footprint report, and the

actual emissions should be separately and transparently reported. That is also aligned with GHG Protocol's instructions.

Interviewees were also asked, how much they would be ready to pay for compensations. The vast majority said that it is still very unclear and will be clarified as the detailed account of measures taken proceeds. The rest were willing to pay market prices; some referred to EU ETS prices but noted that the current prices are a bad indicator as large-scale purchases of climate compensations would have almost immediate price effect on carbon credits. One major transportation company with net revenue of 500 million euros stated a precise price of 3000 euros, whereas a real estate company with net revenue of 34 million and ambitious sustainability strategy said that they currently purchase compensations worth of 100 000 euros annually. That illustrates the variance between different actors. Some others cited a relative percentage of their revenue, which was typically a couple of percentages. The varying levels of current compensation funding in the data set and the lack of precise cost estimates indicate that companies have not yet advanced in their compensating assessments.

6.4 Motivations for compensating

Those organisations that have climate targets focusing on minimizing own (covering only scopes 1 and 2, as this was the most common way to understand this among the interviewees) or value chain's footprint (scopes 1-3), were showing the most interest towards compensations and had either investigated the compensation services or already purchased compensations. Nevertheless, also some of these companies called after incentives. Incentives could be generated by consumers or public administration.

> "We could reduce our calculatory emissions in one night, but currently we do not have an incentive to do so."

Companies with the most ambitious targets to reduce climate emissions were also most aware of the different services, and all of those interviewees that had compensated their emissions had ambitious reduction plans or were highly motivated towards sustainability and driven either by purpose or physical threat of climate change. If a company's sustainability strategy was built upon continuous improvement or the main motivation was increased efficiency and resulting savings, it was in all cases unwilling to compensate, and the view towards compensations was mostly skeptical.

Companies that had primarily a stakeholder perspective in their climate work were more open towards compensations than their counterparts with more ambitious and comprehensive targets but were willing to consider using such services only if they were credible enough in the eyes of salient stakeholders and if the costs of compensating were not too high. The answers among

stakeholder-focused organisations can be roughly divided in two: the first group had compensated a specific part of their climate footprint, for instance, the climate footprint of a specific product or were considering that option. The logic behind different compensation services and differences between them was not a priority, and the interviewees did not have profound knowledge about the services, and they talked about carbon neutrality of a product in vague terms. Instead of the actual impact of compensation, the price and the potential brand value were seen as determining factors. Moreover, these companies were on average eager to offer compensation services for their customers. This implies that the marketing value of having a carbon-neutral product cost-efficiently was the most important motivation behind the decision to compensate. The second group was more sceptical towards compensations and wanted to ensure that compensations were credible in the eyes of salient stakeholders. In other words, these companies were on average more afraid that compensating with poorly known or unreliable services would backfire and create a negative reputation for a company.

Many market-oriented interviewees called after better branding of compensation services so that they would be easier to communicate to clients and would create business value. Compensating should also be a branding tool. Furthermore, consumers should demand transparent climate work from companies.

> "There is no use to compensate only for the sake of compensating. There should also be some value for the business in compensating."

6.5 Insetting projects as compensation

2 out of 27 interviewees had projects that can be understood as insetting projects even though the concept was not used by the interviewees. Both of these companies were major actors in critical industries with large ecological and climate footprints but also have remarkable potential for having a large climate handprint as these industries, and their courses of action are critical for a sustainability transition. Both companies stated that they were already undergoing a transition and adapting to climate change by altering their operations and products throughout the supply chain. Insetting projects are part of this transition. The logics of the industry are followed in the transition, and that applies to compensations and emissions reductions as well as on redirection of business. Interestingly, the ongoing insetting projects were seen simultaneously as business development as a way to increase handprint and compensation.

> "We do not compensate per se, as there is currently no credible way to compensate. But we sell compensations to others, and we have a lot of pilots ongoing. I think that from a business perspective, it is better for a company to give others a possibility to become carbon neutral than to just brand the company itself as a green company. Offering compensation services also supports our own business."

Even though the insetting projects are launched primarily with a business development focus, they also serve as climate compensation and reduce the climate footprint of a company. Both projects focus on increasing natural carbon sinks, but the approaches are different. The other project increases natural carbon sinks in a very traditional way through reforestation, whereas the other increased carbon sinks through improved performance in one of its value chain's core operations. The reforestation project may also provide the company with new business opportunities in the field of climate compensations in the future.

These answers indicated that insetting programs are a rising trend among powerful actors with a lot of resources, as they find it more useful and beneficial to initiate programs that reduce emissions or increase carbon sinks inside the value chain instead of funding an external climate compensation projects. Insetting projects are seen to create shared value throughout the value chain. They were also seen as an important step towards sustainability transition and improving the company's future performance. However, as these projects were not primarily set up for climate compensation purposes, but still counted as negative emissions in company's carbon management accounting, an issue of double counting and durability of such compensations becomes evident. Even though the projects are desirable and an integral part of an organisation's sustainability work and continuous improvement, counting them as climate compensations is somewhat problematic and might be misleading. According to the given description of the projects and explained emissions accounting, it seems that companies do not always follow the principles of carbon accounting, which makes the risk of double-counting evident. That is also one of the challenges of insetting and of utilizing insetting projects as climate compensation instead of treating them as an integral part of a company's general sustainability work. Following the rules of credible compensation, the project has to be such that would not have happened otherwise, and it must have high durability.

This notion highlights the importance of clear definitions and common guidelines also for insetting projects to prevent the issue of double-counting while still encouraging the introduction of climate-friendly innovations. Insetting projects naturally decrease the climate footprint of an organisation, but the issues arise if they are automatically treated as compensations, as it is very case-specific whether they meet the criteria of credible compensation or not.

6.6 Whose emissions ? Scope thinking in organisations' carbon management strategies

To illustrate the state of scope thinking in organisations' carbon footprint calculations and compensation decisions, the interviewees were asked first, what they include in their carbon footprint calculations and later on, whom they see

to have responsibility for emissions, i.e. who should compensate. In some answers, the role of companies was seen primary:

> "All value chain members should pay for compensations. To make it fair, the costs should be graded to all actors according to their emissions and costs for a single actor would be moderate. Common rules are especially important in global value chains. Also, consumers should be ready to pay some share of the total cost, but the whole cost of compensations cannot be in consumer price."

> "It is either the consumer or the company and as consumers are likely unwilling to pay as they are rather price-sensitive, so maybe companies will then follow corporate responsibility strategy and pay."

> "It should be primarily companies that compensate. That is the only way to ensure that economy keeps rolling. Consumers' decisions are based on their economic standings."

> "Polluter pays, so companies are the ones to pay for compensations. However, indirectly also consumers, taxpayers, other companies and public administration will pay."

> "Both consumers and companies pay. We cannot just manufacture something [unsustainably] and then ask the consumer to pay for the negative externalities. Companies must do their part and, first of all, offer sustainable products for purchase. A consumer can pay additional compensations."

> "Every actor should pay according to their resources. Then the cost would be distributed rather equally."

> "Companies with significant, nonreducible emissions should compensate."

> "Companies should primarily compensate, but also consumers are responsible through their consumption decisions, so maybe they should pay for the compensations too. It is hard to define."

Some interviews took a drastically different approach and portrayed voluntary compensations as production costs that will directly increase consumer prices for the corresponding amount. This approach indicates that a company does not see itself to be held accountable for the emissions, but instead sees that it is only responding to customers' demands and hence customers are responsible for the negative externalities and must pay compensations. The other possible interpretation is that a company does not prioritize sustainability in its strategy (this was confirmed in the cross-analysis) and therefore does not consider paying voluntary compensations as an alternative if it would weaken company's financial performance:

> "The actor who is committed or obliged to reach carbon neutrality will pay. In the end, the consumer will pay the bill as compensation costs will be integrated into consumer prices."

> "Polluter pays, and we are all polluters in the value chain, but just with different roles. In the end, it does not matter who is the first to pay the compensation, as the final user will end up paying for it eventually anyway."

> "If some actor wants to virtue signal or markets themselves, then they will probably pay for the compensation. "

> "The logic of each value chain is that the production costs will be moved forward and so the final user pays the bill."

> "Customers should purchase compensations, as they are the ones using products or services."

> "Final user should pay as they cause the emissions through their choices."

> "Customer always pays, and that is how it should go in every stage of the value chain."

> "Ideally, compensations would be paid in each stage of the supply chain, but I am afraid that will never become a reality. In practice, it is likely that all compensation-costs through the life cycle are included in consumer prices."

Some recognized the complexity of the question and did not have strict opinions on the matter. Some of them underlined that precise and mutually agreed calculation schemes for each actors' climate footprints would be desirable to clarify the accountability of each of the actors. Some also called after clearer definitions on what should be compensated:

> "Polluter pays, but it is a complex question. We cannot compensate for emissions caused by final use, but on the other hand, we can, of course, reduce the emissions caused by our products and increase our handprint."

> "Answer to a question about who is to blame for emissions is relative. Sometimes it is not easy to draw the line between different actors."

> "It is a complicated question. I think only one actor should not be held accountable for emissions and obliged to compensate; I think responsibility for emissions is shared."

> "Both consumers and companies should compensate; probably companies should compensate more, as they also pollute more. On the other hand, also consumers have responsibility for the emissions as they make purchase decisions and cause emissions through that. The most important role of companies is to offer climate-friendly options for consumers."

> "A balance is needed: polluter must pay, but having said that, the emission is demand-induced, so also consumers have responsibility. All actors should work together."

> "Clearer guidance and mutual definitions would be needed as this is a very complex question. For instance, must all products be climate neutral, or would there be a difference between stable commodities and other commodities?"

> "It is a complex question and probably all should compensate. Voluntary climate compensation is equivalent to a voluntary carbon tax initiated by consumers, and hence the effect runs through the whole value chain. Of course, also policies introduced by the public sector may have an impact."

> "The best case is that every actor would compensate for their own emissions, then the price effect would be neutral. If the supply chain's emissions are not compen-

> sated, it would be good to offer the consumer a chance to do so in the final stage. In that case transparency on a product,' climate footprint is needed."

Only very few interviewees linked compensating to the bigger picture and as a part of their sustainability or carbon management strategies. Rather, climate compensations were looked merely as a separate topic, not as an integral part of the climate work. Only one of the interviewees recognized that by voluntarily purchasing compensations, a company could gain competitive advantage through cost savings and enhanced brand image. However, the role of customers as demanders was also underlined in this answer:

> "Companies compete against each other. For those companies that are capable of renewing their operations and minimising emissions enough, compensating becomes more affordable, and it is easier to become carbon neutral by compensating all residual emissions fully. -- But that would also require that customers would demand more from the companies' climate work and would be better informed to look through the climate-neutrality claims. If you get the same benefits with less, more superficial efforts, companies are necessarily not motivated enough to make fundamental change."

For some, the major barrier for compensating was the lack of reliable data on emissions due to lack of measurement or long supply chains. In such cases, the only viable option would be to compensate only scope 2 emissions and leave scopes 1 and 3 out of the calculations because of insufficient data.

The answers to the question about responsibility to compensate were extremely divided. As expected, the majority of the companies said that they were not responsible for the whole supply chain's emissions, but mainly only on scope 1 and 2 emissions. Some scope 3 emissions were included in the climate footprint calculations, but almost all interviewees left emissions caused by the final use out of the calculations. However, some interviewees acknowledged the importance of their role in increasing their handprint and offering more climate-sound products and services for customers and compensating was seen as a way to create additional value for customers and hence gain competitive advantage. Some interviewees noted that "climate-neutral products" are easily understandable to customers and appeal to them, which makes compensation tempting from the perspective of marketing communications. That was one of the main motivations for compensating, and many of those companies that had planned compensating said that they were considering compensating first only as part of their operations. In the majority of such cases, companies were planning to compensate for operations near customer interfaces, e.g. products or deliveries, in the first phase.

Views on who should compensate were well compatible with what companies announced to have included in their carbon footprint calculations.

6.7 Critical views on compensation

All interviewees had some kind of critical thoughts or doubts about compensation services, regardless of whether they were using compensation services as part of their carbon management work or not. The greatest concerns were related to the reliability of either compensation projects or service-providers and the legitimacy and effectiveness of compensations.

Some interviewees had a neutral or negative attitude mostly because they had difficulties in understanding how compensations and different compensation methodologies work. That was because the whole industry felt too complicated, the projects were found to be too abstract or distant, and it was difficult or impossible to see the tangible impacts of compensation funding targeted for a specific project. The insufficient knowledge was either due to lack of interest to familiarize oneself with the matter, due to bad publicity of services or due to lack of climate change mitigation expertise inside the organisation. The marketing communications of the compensation service-providers was seen either as too pushy, which diminished the credibility or as too vague, which made the services look distant. Some also said that there was too little communications from the service-providers and they had difficulties in naming any compensation services or comparing the different methodologies and services. Hence, it can be argued that communications should be more transparent and comparable and overall enhanced.

Market issues were a primary concern mainly for those organisations, whose main motivation for climate action was brand work, reputation management, or competitive advantage. For these organisations, it was important that the compensations would inspire confidence in salient stakeholders' eyes, and the organisation would gain competitive advantage as a result of carbon-neutral products or services. Similarly, there was a concern that stakeholders would see that chosen compensation services lack credibility, which would turn against the organisation. It can be assessed that this concern is also behind the view of seeing climate compensations as "sales of indulgences". On the other hand, seeing compensations as sales of indulgences also indicates that compensations are seen as an ineffective action and waste of money, and hence an organisation would not purchase compensations. Such expression can also be interpreted as criticism towards companies that compensate.

One of the interviewees argued that climate compensations would diminish the competitive advantage of Finnish industry in the global markets due to increased costs. Even though this interviewee likely had difficulties in making a distinction between voluntary climate compensations and EU ETS, or wanted to oppose the possible introduction of compulsory climate compensations or emission taxation, similar ideas related to cost structure and competitive advantage of a company were underlying in many of the interviewee's answers.

Interestingly, when asked about the concerns related to climate compensations, many interviewees took a position of an observer and commented the

matter not only from their own organisation's perspective but also on a more general level. Interviewees tended to blame other, unnamed companies for poor practices and showed concern over the impact of compensations to the overall climate work of the industry. Also concern over the legitimacy of the climate compensations was presented. Compensations were, for instance, seen to undermine the actual, more expensive emission reduction actions if the price of a carbon credit was too low. However, the interviewees did not see these issues to apply to their own organisations, but only to others. This indicates that one of the obstacles for wide-spread utilization of climate compensation services is that, as there is a lack of common rules and guidelines, organisations are afraid of paying too much and doing significantly more than their competitors without having a guarantee on tangible benefits or competitive advantage. In other words, due to asymmetric information, distrust towards competitors and uncertainty over the actual impacts of compensations and salient stakeholders' unforeseeable reactions, companies are afraid to invest in climate compensations as they might well be seen as a waste of money, even though the organisations would, in principle, be capable of reducing their net emissions to zero very quickly. On the other hand, the asymmetric information could also lead to a situation, in which all organisations compensate with no actual emissions reductions, which was seen as a worrying direction. Even if in the long run, emissions reductions would bring a return on investment, in short-term rearranging operations might be a significant expense item, which would again weaken the company's competitive advantage. These conclusions are, however, more likely to apply only to companies which have adopted less ambitious sustainability strategies and are mainly motivated by financial motives. Companies with more ambitious sustainability strategies that were motivated either by purpose, i.e. ethical reasons, or physical threats to their operations, were more likely to have an open and positive attitude towards climate compensations even though they might have criticized other organisations for not taking sufficient efforts.

Most of the expressed concerns were related to the credibility of services or service providers. Programs were seen to be too ambiguous or hastily launched, and the reliability of service-providers was questioned. Many interviewees were concerned that business case overrides the purpose in service-providers operations. Moreover, the actual impacts of compensation projects to climate change mitigation were questioned in many answers. Some, more expertise interviewees expressed concern over the issue of double counting, especially after the Paris Agreement steps into force. Some interviewees would like to see more tangible impacts as a result of their compensation. Furthermore, many would prefer externally verified compensation projects with certificates. Despite the expressed concerns over reliability that were evident after performed content analysis, most companies still had an open and positive attitude towards compensations.

The interviewees were asked, if they think that climate compensations are reliable. Altogether seven interviewees strongly or moderately disagreed with the claim "Compensation programs are reliable", eight had neutral attitude,

eight moderately agreed and nine said that they have no opinion, mostly because they did not know the services well enough.

6.8 Credible compensations from the company's perspective

Companies' answers were mostly aligned with the credible criteria derived from the research literature (see chapter 5.5). However, this question showed the different levels of expertise inside the companies, and whereas some interviewees were capable of articulating their concerns and criteria for credible compensation in a very detailed and well-informed way, others were capable of providing only very general notions, if any. A couple of interviewees even stated that they could not compare and evaluate the reliability of services with their current level of knowledge and prefer leaving the assessment for experts. Simultaneously, this lack of knowledge was one of the main barriers for compensating for some interviewees, as presented in Table 9 below.

Table 9 Criteria for credible compensation from a company perspective

Answers: what are the criteria for credible compensation?
Credible compensation projects would increase carbon sinks.
The overall short-term and long-term positive and negative impacts must be carefully evaluated.
The information must be easily available.
Compensations must be transparent.
Compensations must have a real and verifiable impact.
The impacts need to be monitored for a longer time period.
Credible compensation requires having a trusted partner that follows standard and preferably has a certificate for the compensation projects.
Monitoring and verification are important
Verification is important.
Compensations should be measurable.
Compensations should be additional.
Projects should be audited by external parties.
Science-based verification methods should be used.
Durability must be ensured.
Mitigation hierarchy should be followed - everything that can be done inside the own organisation to reduce emissions must be done first.
Domestic projects would be preferred over projects abroad, but there is still an insufficient amount of domestic projects available.
It should be possible to see the concrete impacts of compensation.
Clear and reliable standards and perhaps also regulation would be needed to guide the compensation field.

Double counting should be avoided.
Transparency of compensation projects is important.

Interviewees mentioned that they would need more simplicity, more calculations and more transparency to better trust the compensation services. Comparability and transparency of services would be a prerequisite for compensating decisions. The services should also be science- and standard-based. Companies also called after global and national level rules and benchmarking. Especially multi-national companies called for global standards to ensure global compliance and competitiveness.

6.9 Correlation between the level of sustainability and compensation

Companies with less comprehensive sustainability strategies, i.e. companies in blue and orange sustainability groups, had not prioritized sustainability work and tended to seek cost-savings, profit or competitive advantage from their carbon management actions. For these companies, reputation and green image were the most important drivers when considering compensating. If these companies had compensated, they had compensated only parts of their carbon footprint, for example, a carbon footprint of a specific product or service and used compensation aggressively in marketing. Also those that had not yet compensated underlined the importance of being capable of monetarizing the achieved green image. In other words, compensations were seen merely as a tool for marketing and improving the company's brand.

Some companies with blue and orange sustainability strategies also noted that they would consider compensating in the future if the legislative or political operational environment changed and it would become more affordable to pay for voluntary compensations than to pay potential sanctions or taxes.

Companies with turquoise or yellow sustainability strategies were willing to compensate residual emissions but were not necessarily yet doing so because, for them, it was extremely important to ensure the actual impact and permanence of compensations. Also reliability of compensation services was a priority when making decisions about compensating, as these companies wanted to make sure to cause no harm.

The greatest difference in attitudes between companies following different sustainability strategy was that companies with comprehensive strategies felt more responsible for compensating for the harm done, and it felt natural for them. They did not question their responsibility for the emissions and the criticism towards compensations circulated around questions of reliability, additionality and durability. These companies were also worried that poorly conducted compensation with too low prices could diminish the ambition level of

other companies and expressed concern over a lack of tangible actions in other organisations. In other words, these companies themselves were willing to pay and felt even obliged to pay for voluntary compensations but did not necessarily do so, because lack of credible projects and transparent and comparable compensation practices was a concern for them. The vast majority of these companies also did not compensate for any part of their operations separately and did not find it useful to compensate for certain product's emissions. Instead, they were investigating how they could compensate for all residual emissions caused by their operations or had launched insetting projects. This indicates that companies with turquoise or yellow sustainability strategies did not prioritize marketing communications of a certain product but were instead more interested in building a sustainable brand as a whole, although this work also included marketing efforts.

Companies with less ambitious or more narrow sustainability strategies were more suspicious towards purchasing compensations and did not feel obliged to pay for them. Instead, they generally focused on continuous improvement of their operations and saw it on a sufficient level. Also, they expressed concern over the reliability of services, but also questioned the whole idea behind voluntary compensations and saw compensating more like an option than as an obligation. These companies were more eagerly offering compensation services for their customers than paying themselves, because typically only scopes 1 and 2 were understood as own emissions and handprint issues were rarely considered. If a company had compensated some emissions, it had done so to gain competitive advantage through branding its products as carbon neutral.

Table 10 below illustrates what kind of carbon management strategies companies with different sustainability strategies have taken and how they perceive compensations.

Table 10 Sustainability strategies, carbon management strategies and compensation

	Pre-CS (Red)	Compliance-driven CS (Blue)	Profit-driven CS (Orange)	Caring CS (Green)	Synergistic CS (Yellow)	Holistic CS (Turquoise)
Motivations for corporate sustainability	-	Mainly external drivers, e.g. enforcing national or global legislation or instructions from authorities, or compelling finan-	CS improves profitability, e.g. through the enhanced green image. A company might also be driven to take CS actions if it attracts negative media coverage or faces reputational risks that threaten to	Stakeholder expectations are the main motivation to act.	Company reacts to signals and messages from its operational environment and utilize unused opportunities or aim at responding to societal or environmen-	Sustainability is a priority for the company and in its DNA.

		cial reasons	lower its sales or stock price. One opportunity is also to prepare for emerging regulation.		tal challenges.	
Chosen carbon management strategies	-	Carbon efficiency, if any.	Carbon efficiency, carbon-cost leadership, abatement efficiency, low-carbon image, low-carbon labelling	Carbon-cost leadership, low-carbon image, low-carbon labelling, compensation-cost leadership, climate-neutral labelling	Carbon efficiency, carbon-cost leadership, low-carbon image, low-carbon labelling, climate-neutral image, climate-neutral labelling	Carbon efficiency, carbon-cost leadership, low-carbon image, low-carbon labelling
Perceptions on compensations	-	Unreliable, useless sales of indulgences	Willing to consider using, if the prices are not too high and involvement in the projects might generate competitive advantage and enhance the greening of the brand. It is important to maintain competitiveness. Compensations are preferable if they are a cost-effective way to reach carbon neutrality.	Can be considered, but the reliability of the services is primary. Compensations can be offered for consumers, or part of their emissions can be compensated.		Residual emissions will be compensated through credible and impactful projects.

7 DISCUSSION: THE STATE OF BUSINESS CLIMATE ACTION IN FINLAND AND THE USAGE OF COMPENSATIONS IN CARBON MANAGEMENT

When this study was conducted in the spring of 2019, voluntary compensation markets were just about to emerge in Finland. There was a lack of scientific knowledge on the topic. New services were launched one after another, but there was only very little background information available on the matter. The situation has changed during the past year, as compensation services have become more common. During the past year, the market has grown but also bumped into legislative issues. As the interviews for this research were conducted in spring 2019, these legislative issues had not yet occurred. This context is important, as even before the discussion about legislative issues emerged, companies expressed concern over the reliability of services and considered voluntary compensations as too ambiguous. The timing also has an impact on the results as it is likely that companies' strategies and utilization of compensation services have further developed and changed during the past year.

The objectives of this study were two-fold. The first objective was to analyse, what kind of sustainability and carbon management strategies and climate targets and actions Finnish companies have. The second objective was to find out if voluntary climate compensations are used in organisations and how they are perceived to better understand the emerging industry of voluntary climate compensations. Moreover, this thesis contributed for linking voluntary climate compensations as a part of CS, environmental management and carbon management discussion.

The data consisted of 27 answers across different industries and hence the data set provided a good basis for understanding the state of climate work in Finnish businesses and provided insights in their carbon management strategies and the usage of compensations as a part of such work. There might be differences between companies, and hence the results cannot be generalized to apply to all Finnish companies, nevertheless, this research revealed some trends and common views among the interviewees. Although the data set included

interviews with most of the central industries of Finland, logistics and construction business were significant sectors that were lacking from the group of interviewees. Moreover, according to Schultz and Williams (2005) one of the industries most exposed to climate risks is insurance. Also, the finance sector was lacking from the group of interviewees due to unavailability of potential interviewees. From most of the industries, the leading actors agreed for an interview, which increases the comprehensiveness of the data set.

This research was the first in kind to investigate, how Finnish companies perceive voluntary climate compensations and whether their approach correlates with their overall environmental CS. The results show that Finnish companies, on average, are willing to participate in climate change mitigation and consider climate aspects in their operations even though there are differences in strategies. Companies see that sustainability and climate work enhance their competitiveness, as they can better live up to salient stakeholders' expectations. Companies tend to define the scope of their carbon footprint calculations and climate work in a way that is beneficial for them. That is partly because climate change mitigation is still not an integral part of many company's core business, but instead either a support function for marketing or public affairs or an extra effort. In some cases, profit-maximization, which is traditionally seen as the main responsibility of companies, is somewhat contradictory with the climate objectives. Economic conditions and incentives do not sufficiently support the climate work of companies yet, and physical and regulatory risks feel still somewhat distant for some of the companies. This was, however, heavily dependent on a company's industry and the globalization degree of its markets.

This finding is interesting in the light of ambitious targets of Finnish Government and the global megatrends, which, according to Juholin (2003) should motivate companies to act. Moreover, previous research indicates that sustainability work has a positive impact on a company's bottom line from medium to long-term. For example Albertini (2013) has highlighted that although the positive impact might feel abstract or distant from the manager's perspective, the correlation is clear. Such slowness in sustainability investments of Finnish companies is probably best explained through the recognition of Aragon-Correa and Sharma (2003), as well as Hart (1995): companies are likely not to improve their financial performance instantly after making investments to improve environmental performance, which creates a problem of asymmetric information and uncertainty of outcome and might slow down the investments. These over a decade old theorization still seem to be very accurate in the light of the results although the operational has drastically changed.

Finnish companies act on sustainability for various reasons. Some companies have adopted sustainability approaches because they see communicational value in that and wish to enhance their green image. Others are preparing for future developments and aiming at ensuring the continuity of their business also in the future and wanted to tackle carbon price risks. As climate change remarkably alters the operational environment and circumstances, companies must act on climate change which is already now widely acknowledged in

companies and proactively acted upon. The notions about the motivations for sustainability were well aligned with the research literature. For example Hart's (1995) forecast that forerunner companies will gain competitive advantage in the green market, seems to hold even decades later motivating companies to seek competitive advantage in the ever-developing markets for greener products and services. Also Juholin's (2003) notion about tackling regulatory risks is as accurate as ever. Moreover, research, for example Jeswani et al. (2008), Brouhle and Harrington (2009) and Busch and Hoffman (2013, has widely indicated that meeting stakeholder expectations is a significant driver for sustainability work. That, alongside with physical risks faced by companies operating in certain industries, were the dominant drivers for ambitious climate action.

Majority of large companies in Finland have some kind of a carbon management strategy, and the findings of this study were well applicable to a framework of eight different carbon management strategies proposed by Busch and Schwartzkopf (2013). Generally, carbon management strategies build on prevention and reduction that are the primary measures to reduce carbon emission. However, in more and more cases, also compensation has a role in strategy, or at least compensating is considered as an option. Noteworthy, compensations are not used to reach carbon neutrality for the whole operations of the company, but instead, the dominant way of using them is to offset emissions caused by a certain production process. Another common way is to offer customers a chance to compensate for the emissions caused by their purchase. This is problematic, as by acting so, companies end up externalizing their value chain's emissions to consumer and understate their own role. On the other hand, as the voluntary compensation market is still very fresh in Finland, it is possible that these developments can be explained through the different strategies of firms. Companies seeking merely enhanced reputation or brand value for their products might be faster to adapt compensating as part of their strategy, as they do not necessarily complete a as thorough impact assessment than companies with more comprehensive sustainability strategies. As they only compensate for emissions of certain products, the process is also more affordable and faster to complete than if they wished to compensate for their residual emissions as a whole. This can be explained through different carbon management strategies and motivations.

Even more common among the Finnish companies is to provide consumers with an opportunity to compensate for a product's climate footprint and hence nullify their own consume-induced emissions. Even though this approach was rather commonly used and accepted by the interviewed organisations, it is somewhat questionable in the light of research literature. Research indicates that a company should adopt a life-cycle approach and calculate emissions throughout a product's life cycle, "cradle to grave" and this is also an emerging requirement of stakeholders. By offering customers a chance to compensate their emissions caused by their purchase, a company moves the emissions away from their own carbon balance sheet to customer's balance sheet. That means that a company does not take responsibility for scope 3 emissions,

which also has implications for the potentially compensated amount of emissions and moves the price of externalities for a customer to pay. If new legislation or for example, a carbon tax will be implemented, the scopes for carbon footprint calculations must be clearly defined. Companies widely recognized that compensations should be reported separately from other emissions and emissions reductions in their carbon footprint reports or carbon balance sheets, but included in the report nevertheless. That indicates that companies, in principle, see compensations as Scope 4 of carbon footprint, but many companies have yet not drawn system boundaries to include compensations in practice.

If these results of this study are mirrored to Tynkkynen and Berninger's (2017) conceptualization about the sustainability journey of companies, it can be argued that majority of the Finnish companies are surprisingly far on their sustainability path. Majority of the interviewed companies are somewhere in between the phases of continuous improvement and CS. Their actions aim at minimizing the footprint and some actions are taken to increase the handprint, but the focus is still merely on the footprint. That explains the interest towards compensation services. However, especially companies that had insetting projects in place, were also generally aiming at increasing their handprint. None of the companies had yet reached net positivity, but some had reached the stage of CS already.

When it comes to the drawing of system boundaries, the role of handprint in a company's sustainability work is highlighted. In general, companies that had emphasized their responsibility over consumption-based emissions and included those in Scope 3, were also aiming at developing handprint solutions. Interestingly, that was not always the case and especially companies producing fuels had excluded consumption-based emissions but were eagerly developing handprint solutions. In such cases it is challenging to assess, where a company stands in the sustainability path as the system boundaries are drawn beneficially and the company appears to be more sustainable than it actual is. In such cases the definition of the sustainability journey by Tynkkynen and Berninger (2017) proves to be too simplified, although useful, framework. This notion underlines the importance of Marrewiijk & Werre's (2003) statement that there are no "*one-size-fits-all solutions for CS.*"

For example Hart (1995), Albertini (2013) and Porter & Reinhardt (2007) suggest that companies can gain competitive advantage through sustainability efforts as long as they tailor them according to their strategy and operational environment. This study's results are aligned with these perceptions, and Finnish companies widely recognize the importance of sustainability work and have invested in it. Nevertheless, that does not yet seem to apply to climate compensations, even though companies had investigated compensating opportunities. Many of the interviewed companies found that they do not have enough incentives to invest in climate compensations enough to neutralize the totality of their carbon footprint. There is a lack of well-informed consumers, which affects companies' compensating decisions that are motivated primarily by financial aspects. Even though customers would seek green products and pay premium

prices for them, the issue is that it is challenging for consumers to assess companies' negative externalities and carbon footprints. As a result, companies can gain similar advantages with less money. For example, by compensating only for a particular product line, a company can enhance its green brand and gain competitive advantage more affordably than by neutralizing the operations' total carbon footprint. The issue of too little transparency and lack of knowledge about negative externalities in consumption has also been highlighted in Finland's Voluntary National Review, which listed unsustainable consumption patterns as one of Finland's greatest challenges in Agenda 2030 implementation work (Finnish Government, 2020). For more functional voluntary compensation markets, this issue would need to be solved. Moreover, as Busch and Schwartzkopf (2013) have noted, the competitive advantage created by compensating could be boosted if salient stakeholders expressed their wishes more clearly.

On the whole, it appears that Finnish companies do not yet generally recognize the role of voluntary climate compensation as part of their carbon management or climate work, although the majority of them acknowledge their responsibility for emissions caused by their production processes. Resources are used primarily for emissions reductions, and it is not seen important to reach short-term carbon neutrality, but instead, the targets are set so that they focus on a long-term perspective. Potentially in the future, the companies may use climate compensations if climate targets are not met otherwise, but they require improvements for the reliability of projects and service-providers. However, the existence of voluntary climate compensations was seen as a positive development as it enables proactive companies to accelerate the transition by purchasing compensations. If combined with a credible action plan and actions to reduce emissions internally in the company's supply chain, the usage of climate compensations was also rather widely accepted among interviewees. At its best, climate compensations channel funds for financing projects increasing carbon sinks. The market would benefit from increased regulation to support the usage of climate compensations as now the lack of reliability is a significant barrier for using climate compensations.

It is of primary importance that the companies do not rely only on compensations in their climate work. Other actions, merely preventing or avoiding and reducing emissions, are way more important actions than compensations. That was widely recognized by the companies and also highlighted in many answers explaining why a company had not yet acted on compensating. However, at the same time, compensations allow companies to take climate action at a shorter time horizon than what would be otherwise possible if they wish to do so.

The urgent need for regulation and tracking of climate compensations is evident. In 2021, when the implementation of the Paris Agreement starts, the risk for double-counting materializes. Policymakers must be capable of preventing double-counting in selling and buying of carbon credits. Compensations have recently attracted public discussion, as Finland's Climate Change Act is

under reform and the role of compensations in overall climate work is one of the burning topics. Compensations are becoming mainstream and new, urgently needed, regulation should be introduced to ensure the credible and beneficial use of compensations. It is proposed that the Climate Change Act would establish alignments to compensations, as clear guidance would create a shared understanding and support the climate work of all actors of the society by providing a calculation method for carbon neutrality. The confusion related to different methodologies and permanence risk linked to carbon sink projects raise a question about the future of compensations. Some stakeholders have proposed that a clear distinction between technology-based carbon reductions and natural carbon sinks would be needed in the field of compensations, as the permanence of natural carbon sinks is more uncertain. Many experts have also argued that a clear distinction between voluntary and compulsory (i.e. EU ETS) compensation should be made. If compensations were utilized to meet the climate targets, watertight regulation would be needed to ensure that actual climate benefits are reached. Then again, some see that separate regulation for compensations should be introduced only later when there are enough lessons learnt. If such regulation and guidance were introduced and methods to prevent double-counting found, the usage of voluntary climate compensations could become easier also for the organisations wishing to compensate. However, the issue of double-counting is global and international consensus would be needed to create a trustworthy system.

This research has focused on the companies' views on climate compensations and can contribute to the future research and developing of the compensation field by shedding a light on Finnish companies' concerns and views about compensation. As the concerns may pose barriers for utilization of voluntary climate compensations, it is important to take also this perspective into account.

In addition to this research studying companies' views on voluntary climate compensations, much research has also been conducted on the views of experts on the feasibility of compensations as part of companies climate work. However, there is still a need for further research on how investors and customers see compensations as part of companies' sustainability strategies. Such research would be important as companies are motivated to compensate merely because of external pressure and legislative environment.

8 CONCLUSIONS

Voluntary climate compensation is still an emerging industry in Finland. The industry is still in its infancy, and there is evident lack of standards, regulation and basis of calculations, which manifests as poor comparability of services, variable and irrational prices and questionable products. Especially compared to the well-regulated and clear compliance market, the markets of voluntary climate compensations are confusing and difficult to understand for companies, which is the main barrier for utilizing such services. The other central barrier is that the companies do not see a return on investment when voluntarily compensating, which means that only companies with the highest sustainability ambition are even considering compensating as long as there is no regulatory pressure. Currently, companies get equivalent, or more immense, benefits by compensating only certain parts of its operations than compensating for their operations, and thus being able to market a particular product in their catalogue as "climate-neutral". In many cases, compensating only emisssions of a particular product have a positive and more immediate return on investment, which makes it a more popular option among companies.

What was noteworthy in the results, was that even though there are numerous domestic service-providers available, companies do not use these compensation programs, but purchase the needed amount of climate compensations from separate projects available for instance through Gold Standard. When considering climate compensations, the most crucial factor for companies seems to be the reliability of the services and the possibility to verify the compensation. Preferably, also a certificate should be available.

One of the core findings of this research is that the voluntary compensation market requires more explicit rules and more compatible calculation methods. Comparability and reliability of the services should be ensured if service-providers wished to sell their services as compensations. Companies, in general, were very demanding and strict about credibility criteria and are careful in purchasing compensations. Internal emissions reductions were seen as a primary measure, and the majority of the companies were skeptical towards compensation.

Overall, what the research showed was that at least for now, voluntary climate compensations do not offer the long-awaited solution for quick emissions reductions. The first reason for that is that companies are unwilling to use them to compensate for their remaining carbon footprints due to obscurity and unreliability of the available services, skepticism towards their impacts and lack of return on investments. The second reason is that the way compensations are currently used in organisations does not accelerate sustainability work or provide significant emissions reductions, but instead the compensations are used merely as a tool for green branding of products. Ideally, compensations would make negative externalities visible and set a price on emissions and thus work as a preliminary phase for some sort of a carbon tax. However, according to this research, this is still a distant objective, at least in the Finnish market. Companies with higher sustainability ambition prefer launching insetting projects over investing in climate compensations but might consider investing in existing projects if the criteria for credibility are satisfactorily met, which nevertheless is currently not the case.

Despite the shortages of voluntary compensation market, the philosophy behind them plays an integral part in solving the climate crisis. If negative externalities were set a price, it would make emitting less profitable than more climate-sound action. That should steer the operations to a more sustainable direction. However, to meet this objective, new legislation, extended ETS or some sort of a carbon tax would be needed as for now, it seems that voluntary climate compensations are insufficient in solving these massive challenges. While compliance is still not in place, emphasis should be put on ensuring the excellent quality, additionality and reliability of climate compensation projects. Ideally, only high-quality and verifiable climate compensation projects should be available.

Moreover, it should be ensured that the mitigation hierarchy is always followed, and climate compensations do not take resources out of emissions reduction work. If an organisation follows these criteria and funds carbon removal projects, it is nevertheless desirable as solving the climate crisis is urgent and increasing carbon sinks or avoiding emissions are essential steps on the way. Reaching carbon neutrality through compensations might also be motivational for sustainability-seeking companies

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Principles	Pre-CS (Red)	Compliance-driven CS (Blue)	Profit-driven CS (Orange)	Caring CS (Green)	Synergistic CS (Yellow)	Holistic CS (Turquoise)
CS ambition level/definition	At this level there is basically no ambition for CS. However, some steps labelled as CS might be initiated if forced from outside (e.g. through legislation or a buyers' strike).	CS at this level consists of providing welfare to society, within the limits of regulations from the rightful authorities. In addition, organizations might respond to charity and stewardship considerations.	CS at this level consists of the integration of social, ethical and ecological aspects into business operations and decision-making, provided it contributes to the financial bottom line.	CS consists of balancing economic, social and ecological concerns, which are all important in themselves. CS initiatives go beyond legal compliance and beyond profit considerations.	CS consists of a search for well-balanced, functional solutions creating value in the economic, social and ecological realms of corporate performance, in a synergistic, win-together approach with all relevant stakeholders.	CS is fully integrated and embedded in every aspect of the organization, aimed at contributing to the quality and continuation of life of every being and entity, now and in the future.
Internal drivers/ motivation behind CS	The awareness that CS could increase personal power (e.g. through reputation improvement)	A sense of moral duty (e.g. regarding charity or stewardship): CS is perceived as a duty or correct behaviour	Awareness of the business case for CS: CS is promoted when it is thought to contribute to personal success and the financial bottom line • Relevant issues e.g.: reputation in various markets, or a perceived profit risk in not installing a CS policy (e.g. possibility of scandals)	Personal values and beliefs of top-management and all participants that social and environmental care are important as such	Personal values and beliefs of all stakeholders as well as top-management that sustainability, social and environmental aspects are important as such and inevitable given long-term trends	Conviction that sustainability on a worldwide scale is the only alternative, since all beings and phenomena are mutually interdependent. Each person or organization therefore has a universal responsibility towards all other beings, both in the present and of future generations.
Criteria for decision making	The impact of the decision on personal power	The decision should be taken by the correct authority according to the proper procedures and in line with the basic purpose	Financial criterium: Shortest "pay out period", highest expected profit, return on investment or shareholder value	• People, Planet, and maybe Profit • Taken after consensus or at least with consent of all relevant stakeholders	Balanced, functional decision, taking into account all available expertise and considerations with long term view perspective	In line with and in favour of holistic interests for survival of life on the planet

Van Marrewiijk & Werre (2013): Sustainability Matrix
External Drivers to Corporate Sustainability

Principles	Pre-CS (Red)	Compliance-driven CS (Blue)	Profit-driven CS (Orange)	Caring CS (Green)	Synergistic CS (Yellow)	Holistic CS (Turquoise)
External drivers behind CS	Outside force, e.g. enforced government legislation or a buyers strike or rewards	Instructions from higher authorities: e.g. government regulation or the word from God	• Proof that CS improves profitability • Pressure from various markets, e.g. reputation issues leading to a decrease in sales or lower stock price • negative media coverage	Requests from employees and other stakeholders for social and environmental care	Information from any source regarding the consequences of organizational actions (e.g. unexpected negative externalities or unused improvement opportunities)	
Preferred role for the government	Government implementing traditional public tasks	Clear legislation and subsequent enforcement which is effective and visible (law and order). Also clear division of tasks and responsibilities	• Creating and maintaining a *level playing field* • Creating financial stimuli to engage in CS	• Supporting international governance structures and national policies on poverty, environments, equity, ethical codes, etc. • Stimulating the formation of participative CS discussion groups	• Stimulating a network of experts to further develop the expertise-base to implement CS in a most effective way • Coordinating overlapping responsibilities • Furthering PPP in projects • Rules supporting SRI and transparancy	Co-creation in performing societal issues
Organization – stakeholders – society relationship	Distrust – the organization might act in very unsocial an unsustainable way when not properly controlled	Independent; social welfare is the responsibility of the state, not of an organization (apart from legal compliance)	Shareholders normally come first; taking account of interests of other stakeholders is often expensive and preferably avoided	Dialogue between the organization and stakeholders/ society	Stakeholder orientation of the organization: taking interests of relevant stakeholders into account is integrated into core business	

Van Marrewiijk & Werre (2013): Sustainability Matrix
The aspects of the 3P dimension for various CS ambitions

	Pre-CS (Red)	Compliance-driven CS (Blue)	Profit-driven CS (Orange)	Caring CS (Green)	Synergistic CS (Yellow)	Holistic CS (Turquoise)
Profit						
Prices based on	What they can get away with	Integral cost price plus	Market price/ value	Fair price	Perceived value	
Shareholder value	Shareholders are only relevant when powerful	Keep owners satisfied	• Maximising shareholder value is key • Managing perceptions of potential share holders to increase stock price	• Balancing shareholder value with interest of other legitimate stakeholders • Expand "ownership" possibilities	Increase of stakeholdervalues furthers shareholder returns as well doing something of use	Fair price for owners, no stocks traded
Investor relations	• Tell them whatever it takes to keep them from interfering • Possibility of manipulating financial and other information	In line with relevant regulations (e.g. issued by SEC)	Proactive managing of relations to secure financing at minimum costs	• Stakeholder relation • Beginning of exchange of social and environmental information • Participatory	• SRI orientation • Full info on Corporate Sustainable Performance	
Planet						
Environmental management	Environments are exploited for for short-term gain without concern for long-term consequences	Compliance oriented and use of simple improvements (such as taller pipes)	Environmental measures must directly improve profitability [e.g. waste reduction, reducing energy use] or indirectly [e.g. high visibility projects boosting reputation]	Eco-efficiency [see WBCSD]	• Minimise impact on the environment (e.g. emissions, waste and extraction of raw materials) • Use of insight in systemic interdependencies	Pursuit to reach zero impact on the environment (e.g. emissions, waste and extraction of raw materials)
Neighbourhood	Non issue	• Compliance with relevant regulations • Charity (*richesse oblige*)	High visibility projects boosting reputation	Supporting neighbourhood development	Together win approach	

	Pre-CS (Red)	Compliance-driven CS (Blue)	Profit-driven CS (Orange)	Caring CS (Green)	Synergistic CS (Yellow)	Holistic CS (Turquoise)
People						
People management	• Autocratic • Exploitive	• Custodial • Authoritarian	• Supportive • Manipulative	• Collegial • Participative	Motivational; Interactive	
Workplace environment	• Permanent supervision • Communication is top-down • Risk of exploitation of employees	• Compliance: meeting physical and safety requirements • Standardisation of work	Cost-effective actions to improve employee motivation in order to increase productivity and decrease employee turnover	• Endeavours specifically to increase personnel well-being • Corporate culture is often considered a major theme	Individual and collective alignment of requirements and facilities, supporting dedication and individual motivation	
Safety and health	Respond to acute problems	• Compliance with regulations • Inventory of common problems and systematic response	Cost-benefit appraisals of possible improvements	Management system on safety and health, including socio-psychological dimensions	Pro-active policy, linked with people management (HRM) and custom made arrangements for individual employees	
Diversity	Non issue	Homogenic labour force	Diversity only receives attention when it increases results	Policies for emancipation of women, coloured and disabled persons	Women and minorities in management positions (provided they qualify)	
Work Ethics and globalisation: (e.g. bribery, child labour)	Non issue	Ethical code describes the one and only correct way to handle	Pragmatism	Ethical imperialism: act abroad as when at home [e.g. total ban on bribery and child labour]	• Situational relativism • Applying appropriate expertise to introduce local improvements	Proactive policies for introducing better institutions world wide
Consumers	Victims	Company oriented, supply push	Market oriented, but still basically supply push	Discovery of the human being behind the customer	Truly customer oriented: e.g. co-creation, design for all	Integrated production-consumer systems
Suppliers	"Players who are trying to get to us before we get to them"	• As few as possible • Focus on economies of scale and vertical integration (hierarchies) • Loyalty • Tradition	• Sub contracting based on strict cost based contracts (win-lose approach) • Output control	• Introduction of co-makership • Process control and internal audits (e.g. introduction of SA 8000)	• Strategic partnerships (together win approach) • Systemic quality control, externally verified	Integrated supply chains

APPENDIX 2 Content analysis on critical perceptions

Phrase	Code	Sub-category	Category	Common denomiators - themes
Is the money used for right purposes?	Is the funding used as promsied?	Reliability of either projects or service-providers is a concern	Concerns over reliability of compensation projects and service-providers	Companies do not want to waste money on inefficient and even harmful acts, and want to ensure the credibility and legitimacy of compensations
The compensation projects should be such that reduce emissions for long term, but now it appears that the long-term perspective or durability is not considered at all	Long-term perspective is lacking from impact assessment			
Are emissions reductions verified and excactly known?	Reductions should be verifiable			
Compensation market is wild and the offered projects are very variable. Some of the projects carried out in developing countries were rather questionable.	Compensation market and projects are unreliable			
How can I know that the promised emission-reduction act actually happens and creates a promised amount of emissions-reductions?	Hard to know if promised emissions reductions actually happen			
I have similar concerns than what I have with development aid: is the money actually used like promised? Is the funding targeted correctly and is it impactful?	Is the funding used as promised?			
The emissions-reductions are hard to verify. If someone promises to plant rain forest, but does not do it, who can do anything about it, and first of all, who will even know?	Service-providers are not reliable			
I wonder, if all compensation funding is used for right purposes or if it is used for example for running the servic-provider's organisation.	Are service-providers trustworthy and is the funding used as promised?			
There is a lack of credible service-providers.	Service-providers are not credible			
Are compensation projects socially acceptable?	Are compensation projects acceptable?			
Is it certain that promised emissions reductions will occur? Are compensations reliable?	Are compensations reliable?			
Compensations should be the last solution, the turnkey nature of climate compensations is a worrying direction	Compensations should be last option, compensating cannot be too effortless			
I would not trust a compensation project that could not be verified.	Projects should be verifiable			
I am worried that carbon sinks or emisisons reductions might be calculated twice	Double-counting may occur			
The scale of compensation and the compensated emissions are not always in balance - sometimes the price appears to be too low	Price of carbon credits is too low	Issues with pricing or with compensation market in general		
It is difficult to understand, how the price of a carbon crefit is formed in the free market. What is the right price?	It is hard to determine the right price of carbon credit			
Compensation is nowadays more about business than about saving the world. The business may override the purpose.	Compensation market is turning into business.			
Compensation business can become very profitable to some actors. I hope profit is not seeked on the expense of actual emissions reductions.	Profitability can override the purpose in compensation market			
I am worried about the very low prices of compensations : can something actually happen with so little money?	Compensations are suspiciously afforfable			
Companies are unaware of the impacts of their compensation.	Companies compensate with too little knowledge	Companies may use compensations wrong	Concern over legitimacy and effectivness of compensations as a part of climate work	
Consumers are given insufficient and even wrong information about the compensations as there is lack of comprehensive knowledge base.	Consumers might be (unintentionally) mislead due to insufficient knowledge base			
Companies should make real change and not buy good conscience and compensate for their poorly done work.	Compensation is undesirable, if real change is not made.			
Compensations are trendy and I am worried that all projects are not as reliable, but the companies are not looking too much into detail and are just jumping in the bandwagon. Now that there is "compensation hype", companies are buying a place in heaven with little money.	Compensation hype leads to bad decisions, not all projects are reliable			
It is problematic that companies overcompensate. It wastes resources and is a sign of insufficient carbon footprint calculations. If a company does not know its emissions, it only throws money around. Poor calculations prevent effective emissions reduction actions and compensations enable that.	Companies base their compensation decisions on inadequate emissions calculations			
If customers are given an opportunity to compensate, are companies hiding away from their own responsibility?	Companies shift the responsibility over emissions for consumers by allowing them to compensate			
Compensation is not enough, but instead all actors need to adapt and change their behavior patterns. We cannot continue consumption like this.	Compensations cannot solve the fundamental issues of consumption.	Compensations are insufficient and should not be relied on		
We cannot exceed the planetary boundaries. It is a false image that we could pay minimal compensations and continue on the same path. It is simply unsustainable.	Compensations cannot solve the fundamental issue of repeadetly exceeding planetary boundaries.			
We cannot compensate forever. It is not possible to plant enough trees, if the emissions just continue to increase. This problem is associated especially to carbon sinks, maybe it would be better to fund projects that aim at avoiding emissions.	Compensation cannot continue forever, emissions must be reduced			
Compensations are not a sustainable solution and if companies use them wrong, there is a risk of taking unsufficient emisisons reductions actions. The attitude of companies is an important question.	Companies cannot think that compensations solve all the problems, emissions reductions are primary			
Compensations can passivate actors and create a false awareness of the situation - maybe we do not have to develop and improve, if we can compensate	Compensations passivate the actors.	Compensations should not slow down the emissions reduction work		
Compensations might legitimate very unsustainable actions - a company might think that it can do anything as long as it compensates	Companies think that compensation legitimitates unsustainable actions.			
If everything can be compensated, will there be enough effort to reduce emissions?	Do compensations override emissions reductions?			
If compensations are too affordable, it might become more profitable to compensate than to invest in emissions reductions	Compensating might be more affordable than reducing emissions			
Compensations are easily sub-optimization. Reductions would be more important in the big picture.	Reductions should be primary in climate work			

Mitigation hierarchy is often forgotten in today's compensation discussion.	Mitigation hierarchy should be followed			
Emisisons reductions should be a primary measure and compensations cannot replace reductions efforts.	Emissions reductions should be a primary measure			
I feel that some compensation programs are designed to mainly sell good conscience for consumers - on the other hand it is good that something is done and compensators should not be made feel guilty	Compensations are about selling good conscience	Compensation is sales of indulgences		
I must say that I wonder if compensations are sale of indulgences or purchasing of good conscience.	Compensations are sale of indulgences			
I tend to associate compensations with sale of indulgences. On the other hand, if funding is used for good purposes it cannot be all bad.	Compensations are kind of sale of indulgences			
Compesations are sale of indulgences.	Compensations are sale of indulgences			
There are multiple different methods, it is sometimes challenging to understand the mechanisms and the impact of compensation act	Hard to understand the methods and impact	Difficulties in understanding compensation and/or different services	Difficulties in understanding the compensation market and/or the different methodologies	Compensation markets are complex and confusing.
I am a bit confused on how the calculations are made.	Calculations are confusing.			
I have hard time understanding the logics of compensation market, as it is so complex and there are many things to consider. It is hard to trust service-providers who make everything look too easy, effortless and way too affordable.	Compensation market is hard to understand			
It is very hard to compare the compensation services to each other, there should be standards to allow comparisons.	Comparability of services is poor			
The calculations and concepts are yet a bit confusing, as the field is so scattered and various different methods and formulas are used.	Climate compensations are confusing			
Many compensation project are abroad, very far away from customers which makes the compensations feel abstact and distant.	Compensations feel absract and distant	Distant/absract projects		
I would like to see the actual impact of compensation.	Concrete, tangible impacts			
In some projects, there is a lack of concrete actions and it is hard to know, where the money goes. Planting trees is a concrete action, I get that.	Credible compensation requires tangible compensation projects.			
The whole compensation business is complex and difficult to understand for our customers, which makes communication about the matter [for our customers] extremely difficult.	It is hard to communicate about compensation efforts to consumers	Views of salient stakeholders are important	Market perspective	Compensations are viewed through competitivness and profitability. Compensations may weaken the competitivness or work as a tool for green brand marketing.
It is now hard to communicate about compensations, they should be more approachable for consumers, "a nice common thing".	Compensations should be more easy to communicate to stakeholders			
Our stakeholders have expressed concern over climate compensation, as some of them see that compensating diminishes the actual emissions-reduction actions.	Stakeholders are worried that emissions are not reduced because of compensation			
As a company, we cannot do anything that looks bad in the eyes of salient stakeholders. The projects must therefore be credible and reliable.	Salient stakeholders must think compensations are credible			
There is a risk of carbon leakage, if compensations become mandatory. I think it would be better to have international service-providers and standards.	There is a risk of carbon leakage in national compensation	Compensations threaten the competitivness of Finnish business		