



Managing Greenhouse Gas Emission in Scope 3

A qualitative case study on the Swedish real estate sector

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Abstract

While many real estate companies have been reporting and managing emissions in scope 1 and 2, scope 3 emissions remain underreported. The real estate industry accounts for 29 per cent of the total greenhouse gas (GHG) emissions in the European Union, where most of their emissions stems from scope 3. Thus, managing scope 3 emissions creates a significant opportunity for real estate companies to reduce GHG emissions and prevent negative impacts on the climate. Scope 3 emissions are currently voluntary to report on, and previous research has shown that scope 3 emissions are challenging to measure and manage. The aim of this study is therefore to contribute with new knowledge on the management of Green House Gas (GHG) emissions in scope 3. A qualitative case study on six Swedish real estate companies that are reporting scope 3 emissions were conducted to address the research aim. Empirical data were collected through semi-structured interviews and thereafter analysed. The findings shows that companies are reporting on scope 3 emissions for various reasons such as market expectations, laws, and regulations, demands from the financial sector and a willingness to make a change that will lead to reduced GHG emissions. The findings also shows that Swedish real estate companies use internal management systems such as policies, calculations and KPIs and external management systems such as guidelines and tools to manage scope 3 emissions. However, to fully use the management control systems, companies are depending on other actors in their value chain. To manage scope 3 emissions, this case study shows that companies seek to collaborate with their tenants and suppliers as much as possible. The study concludes that managing GHG emissions in scope 3 is challenging because the scope goes beyond the organisational boundaries, which has consequences for collecting data on GHG emissions and the quality of data for analysing emissions within this scope. Given that the scope cuts across multiple organisational boundaries it requires collaboration with other actors in the value chain, which requires new ways for companies to manage GHG emissions.

Keywords: Scope 3 emissions, Swedish real estate companies, GHG emissions, management, collaboration, co-creation

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Abbreviations

<i>EPD</i>	Environmental Product Declaration
<i>GHG</i>	Greenhouse gas
<i>GHG Protocol Scope 3 Standard</i>	GHG Protocol Corporate Value Chain, (Scope 3) Accounting and Reporting Standard
<i>IPCC</i>	International Panel on Climate Change
<i>KPI</i>	Key Performance Indicator
<i>LCA</i>	Life cycle assessment
<i>MCS</i>	Management control system
<i>SMCS</i>	Sustainable management control system
<i>WBCSD</i>	World Business Council for Sustainable Development
<i>WRI</i>	World Resource Institute

1. Introduction

This chapter outlines the aim and focus of the study. It starts with an empirical and theoretical background that leads into the problem statement. The problem statement is thereafter followed by the research aim and research questions.

1.1 Background

“Every company and every industry will be transformed by the transition to a net zero world. The question is, will you lead, or will you be led?”

- Larry Fink, Chairman and CEO, BlackRock, 2022

Reducing greenhouse gas (GHG) emissions and tackling climate change is a pressing global concern (IPCC, 2022). The report “Climate Change 2022: Mitigation of Climate Change” reveals that GHG emissions in the last decade have been the highest they have ever been in human history (IPCC, 2022). To meet the target set in the Paris Agreement, which aims to limit global temperature rise to well below 2 degrees Celsius, substantial GHG emissions reductions are needed (ibid). The real estate industry accounts for 29 per cent of all the GHG emissions in the European Union (CREEM, 2023; European Commission, 2021). The sector thus has an important role to play in mitigating climate change (McKinsey & Company, 2022).

In response to increased GHG emissions, different guidelines and international practices have emerged. The most used standard to account for GHG emissions is provided by the Greenhouse Gas Protocol (WRI & WBCSD, 2004; Patchell, 2018). GHG Protocol has established several guidelines on how companies can manage, measure, and report their GHG emissions (WRI & WBCSD, 2004). According to GHG Protocol Corporate Value Chain, (Scope 3) Accounting and Reporting Standard (GHG Protocol Scope 3 Standard) GHG emissions can be divided into three scopes; scope 1, scope 2 and scope 3 (WRI & WBCSD, 2004; WRI & WBCSD, 2011). Scope 1 emissions include direct emissions from owned or controlled sources, and scope 2 emissions include indirect emissions that come from the generation of purchased energy that the company consumes. Scope 3

emissions refer to all the indirect emissions that occur along a company's value chain and are categorised into 15 different groups (WRI & WBCSD, 2011).

According to the World Economic Forum (2023), scope 3 emissions often account for 70 per cent of a company's total GHG emissions. Managing scope 3 emissions thus creates a significant opportunity for companies to reduce GHG emissions and prevent negative impacts on the climate (WRI & WBCSD, 2011). Scope 3 emission reporting is however not well established. Previous research (Patchell, 2018; Robeco, 2023) has shown that few companies have reported on scope 3 emissions, meanwhile, scope 1 and scope 2 emission reporting has increased in the last decade. According to GHG Protocol Scope 3 Standard (WRI & WBCSD, 2011), companies must report on scope 1 and 2 emissions, meanwhile scope 3 emission reporting is voluntary (WRI & WBCSD, 2011).

The Swedish real estate sector has for several years been managing, accounting, and reporting on GHG emissions in scope 1 and scope 2. Most of the sector's emissions derives, however, from scope 3, which many times represents 90 per cent of their total GHG emissions (Fastighetsägarna, 2022). Scope 1 emissions in real estate companies typically originate from sources such as heat pumps, refrigerant leakage, and the fuel use of their vehicle fleet (ibid). Scope 2 emissions encompass indirect emissions resulting from purchased energy (ibid). Scope 3 emissions for the real estate sector can generate upstream emissions through, inter alia building materials during the construction phase and downstream through, inter alia tenants' energy during the maintenance phase (Robeco, 2023; Fastighetsägarna, 2022). Since the real estate sector is one of the major emitters of GHG emissions in the European Union as well as in Sweden, it is vital that real estate's reduce emissions in all scopes (Boverket, 2023; European Commission, 2021).

To harmonise the Swedish real estate sector's scope 3 emissions reporting and management, Fastighetsägarna, a Swedish real estate industry organisation, has developed a guideline. The guideline aims to assist Swedish real estate companies to manage their scope 3 emissions (Fastighetsägarna, 2022). According to Fastighetsägarna (2022), the scope 3 categories: purchase of goods and services, capital goods as embodied carbon in new development and construction, and downstream leased assets as embodied carbon in tenants' energy usage drive the sector's largest share of scope 3 emissions, and thereby the most material scope 3 categories (see appendix 1 for full list of scope 3 categories).

1.2 Problem Statement

Scope 3 emissions are challenging to measure and manage since they fall outside the control of the organisational remit. Previous research (Schmidt, Nill & Scholtz, 2022; Patchell, 2018; Montgomery & Van Clieaf, 2023) has shown that data in scope 3 can often only be traced to the first-tier supplier in a company's value chain. Mahapatra, Schoenherr and Jayaram (2021), also highlight technical limits high transactional costs and that companies use different definitions and assumptions when measuring their carbon footprints. Arguably it is difficult to get accurate data on a company's total GHG emissions and manage scope 3 emissions.

Although GHG Protocol has established a guideline for scope 3 emissions, the guideline has been criticised for not giving a comprehensive view of how companies should account for their scope 3 emissions (Klaaßen & Stoll, 2021; Patchell, 2018). GHG Protocol Scope 3 Standard allows some level of uncertainty in how companies measure scope 3 emissions (ibid). According to the GHG Protocol Scope 3 Standard companies are encouraged to report on those categories that are most material to the company. However, if the company cannot access data, the standard allows for standardised measurements. Companies are also allowed to report on other scope 3 emissions categories if they cannot access data to the most material categories (WRI & WBCSD, 2011; Klaaßen & Stoll, 2021).

Building on Peter Drucker's credo "what gets measured, gets managed" (Prusak, 2010), one can question whether a real estate company can build capacity to manage its scope 3 emissions given that data on scope 3 emissions are difficult to access and that the emissions are to some extent outside their control. Because it is more difficult to account and report on scope 3 emissions some companies have started to question the premise and purpose of scope 3 reporting due to its lack of success (Patchell, 2018). Some companies have also started to question the responsibility over scope 3 emissions as they are someone else scope 1 and scope 2 emissions. Scope 3 emissions reporting might thus lead to a risk of double accounting (Montgomery & Van Clieaf, 2023)

However, to tackle climate change, real estate companies need to go beyond their direct ownership, i.e., internal emissions derived from scope 1 and 2, and start managing emissions in scope 3. This, however, raises management challenges as companies cannot control the emissions that occur in their value chain to the same extent. Research is therefore needed to create knowledge about how to manage scope 3.

Despite the importance scope 3 emissions management in the Swedish real estate sector, the academic literature is scarce. While there is lots of research on why companies report on GHG emissions, and the quality of the accounting and

reporting of scope 1, scope 2 and scope 3 (Klaaßen & Stoll, 2021; Depoers, Jeanjean & Jérôme, 2016; Tang & Demeritt, 2018; Qian & Schaltegger, 2017), there are few studies that have reviewed scope 3 emission management. Previous studies have focused on scope 3 emissions in sectors such as telecom (Radonjiča & Tompab, 2018), and food and beverage (Schulman, Bateman & Greene, 2021). Schulman, Bateman & Greene's (2021) article showed that the scope 3 disclosure in the food & beverage processing sector was incomplete and inconsistent. Radonjiča and Tompab's (2018) article discusses the application aspects of organisational carbon footprint which showed that scope 3 emissions were the largest contributor to the sectors total carbon footprint.

Although previous research has shown the importance of tackling GHG emissions in scope 3 and the difficulty of accessing accurate measurements, none has to the authors' knowledge examined scope 3 emission management in the Swedish real estate sector. This paper, therefore, aims to address the lack of research on scope 3 emission management within the Swedish real estate sector and extended the knowledge of motivational factors of scope 3 emissions, and provide new insights into scope 3 emission management and challenges with scope 3 emission management. By pursuing a study of one of the largest emitters to GHG emissions, we can gain insights that extend beyond the real estate sector.

1.3 Aim and Research Question

The purpose of the study is to contribute knowledge on the management of Green House Gas emissions in scope 3. This will be undertaken by conducting qualitative case study research on six Swedish real estate companies that have reported on scope 3 emissions. To fulfil the aim of the study, the research will answer the following questions:

- What motivates real estate companies to engage with scope 3 emission management?
- How do real estate companies manage scope 3 emissions?
- What are the challenges with scope 3 emission management?

2. Literature Review and Theoretical Framework

This chapter presents a review of relevant literature and theories to the research objectives, followed by an analytical framework.

2.1 Introduction to Scope 3 and Scope 3 Emission Management

Previous research has shown the importance of climate action to drive the society to low-carbon economy (Montgomery & Van Cleef, 2023). As more companies have started to wake up to reality of climate change, more companies have taken actions. However, while many companies have primarily focused on their direct emissions, from scope 1 and their indirect emissions from purchase of electricity from scope 2, scope 3 emissions have gained little attention. To determine a company's contribution to GHG reduction, Montgomery, and Van Cleef (2023) states that companies need to inventor its emissions in all scopes, including scope 3. Scope 3 emissions are all indirect emissions and can come from various activities and occur both upstream and downstream along a company's value chain. See picture below for illustrations of scope 1, 2, and 3.

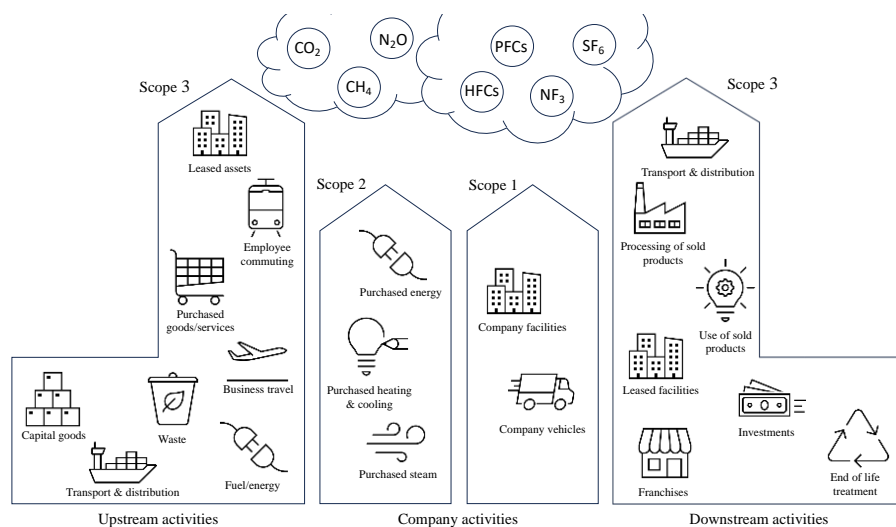


Figure 1. Overview of GHG Protocol scopes and emissions across the value chain (WRI & WBCSD, 2011), own design.

Measuring scope 3 presents a complex challenge, as highlighted in previous literature (Montgomery & Van Clieaf; 2023; Schmidt, Nill & Scholtz, 2022; Patchell, 2018;). According to GHG Protocol Scope 3 Standard (WRI & WBCD, 2011), scope 3 emissions can be grouped into 15 categories (see figure 1 categories and appendix 1 for specification of categories), where each category can be measured in a specific way (Montgomery & Van Clieaf, 2023; WRI & WBCD, 2011).

To measure scope 3 emissions, GHG Protocol Scope 3 Standard (WRI & WBCSD, 2014) provides guidance on various calculation methods that companies can employ, including the supplier-specific method, the hybrid method, the average method, or the spend-based method. Both the supplier-specific and hybrid method requires companies to collect data from its suppliers meanwhile the two latter methods use secondary data from an external source. In addition to suggesting different calculation methods, GHG Protocol Scope 3 Standard also outlines a process (figure 4) for how companies should inventor their scope 3 emissions. According to the GHG Protocol Scope 3 Standard, companies are recommended to start by defining their business goals and reviewing GHG Protocol accounting and reporting principles. These steps plus quality assurance are however voluntary for companies, meanwhile reviewing accounting and reporting principles, setting scope 3 boundary, track emissions and report are requirements. Figure 2 below illustrates GHG Protocol Scope 3 Standards accounting and reporting steps for 3 emissions.

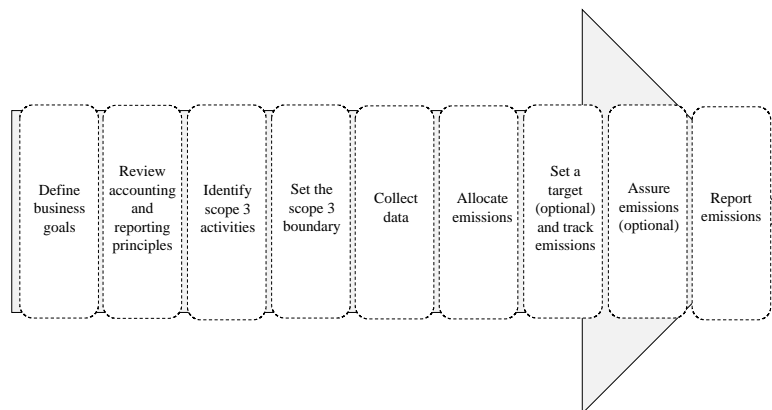


Figure 2. Overview of the accounting and reporting steps for scope 3 from The Greenhouse Gas Protocol- Corporate Value Chain (Scope 3) Accounting and Reporting Standard (WRI & WBCSD, 2011), own design

To fulfil the aim of the study, the literature review and theoretical framework will further examine studies and theories on why companies engage in scope 3 emissions, and strategies to manage GHG emissions and particular emissions in scope 3.

2.2 Motives to Manage Scope 3 Emissions

Several studies (Mahapatra, Schoenherr & Jayaram, 2021; Schulman, Bateman & Greene, 2021; Comyn, 2018; Tang & Demeritt, 2018) have shown that companies have started to report on GHG emissions. A study made by Mahapatra, Schoenherr and Jayaram (2021) showed that companies have started taken measures to reduce their GHG emissions because they are recognizing the potential link between business risk and climate change. Schuman, Bateman, and Greene (2021) also highlight that companies are accounting for and disclosing GHG emissions because of pressure from different stakeholders such as investors, consumers, and non-governmental organisations (NGOs). According to Schulman, Bateman, and Greene (2021), this can be explained through the stakeholder theory, where a stakeholder is “any group or individual who can affect or is affected by the achievements of the organisation's objectives” (Freeman, 1984, p.56).

Furthermore, alongside stakeholder pressure, Schulman, Bateman, and Greene (2021) state that companies disclose GHG emissions because of external pressure, such as social and cultural norms which they draw to the institutional theory. Comyn (2018) also reinforces this perspective and states companies may engage in GHG reporting because of the institutional context in which companies operate in. According to Comyn (2018) reporting practices are shaped by various institutional pressures, including regulative, normative, and cultural-cognitive factors. In a study by Tang and Demeritt (2018), the authors found that UK-listed firms disclose emissions for various reasons, e.g., financial incentives, social pressure, and regulatory compulsion. According to Tang and Demeritt (2018), some companies are engaging in GHG practices to gain or extend legitimacy since they care about their reputation. According to Suchman, (1995, p. 574), “legitimacy is a generalised perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions”.

2.3 Strategies to Reduce Scope 3 Emissions

As means to reduce GHG emissions, companies have started to implement different strategies. Porter and Reinhardt (2007) describe how there is no one-size-fits-all blueprint for reducing climate change and that companies have to use both an inside-out and outside-in approach.

The inside-out approach focuses on the internal capabilities and actions of an organisation to deal with external threats and opportunities (Frau, Moi & Cabiddu, 2020). Thus, means that if looking at a company from an inside-out perspective, a

company's business strategy is based in the company's own analysis of what is relevant to them and how those relevant issues should be addressed (Maas, Schaltegger & Crutzen, 2016). Furthermore, the choice of measurement systems for those issues, and how those are reported externally are all based on internally made decisions (ibid.) Thus, the chosen relevant issues are usually aimed towards an increased value for the shareholders and reducing the climate footprint of the company, rather than creating a sustainable value in society in a broader sense (Dyllick & Muff, 2016).

The outside-in approach on the other hand, emphasizes external factors and stakeholders to solve global challenges. According to Dyllick and Muff (2016), this means that companies want to understand how they can make meaningful impacts on areas that are critical and relevant for the planet, rather than seeing themselves as an entity that wants to minimize their environmental impact (Dyllick & Muff, 2016). Organisations' adopting an outside-in approach address sustainability issues by reviewing the most acute sustainability issues in society, and then decides to engage in developing a new strategy or strategies to deal with that issue. How much a company can contribute to the acute issue will vary between companies and largely depends on the company's resources, strategy, and purpose. The context, industry and the societal context will also determine the contribution (ibid.)

The inside-out and outside-in approaches are two different strategies a company can adopt to drive climate action (Dyllick & Muff, 2016). When integrating the two strategies together, a third approach arises, called blended approach. The blended approach holds characteristics from both the inside-out and outside-in approach. The nexus between the inside-out and outside-in approach create spanning capabilities that generate results that would not be possible if looking at the approaches separately (Frau, Moi & Cabiddu, 2020; Urde, Baumgarth & Merrilees, 2013). Moreover, because the approach is a blend, it involves collaborations between companies and can be seen as a source of advantage (Frau, Moi & Cabiddu, 2020). According to Dyllick and Muff (2016) interfirm cooperation and engagement on different levels are the key to increase a company's sustainability impact. A company that only engages on an individual company level can expect its activities to have a limited impact (ibid.) Dyllick and Muff (2016), like how Frau, Moi and Cabiddu (2020) emphasise the importance of company engagement on a sectorial or cross-sectorial level meaning that companies can change common methods and practices shared by everyone in the sector or along a supply chain. They can do this by sharing best practices, being transparent, and defining common rules and standards (Dyllick & Muff, 2016).

2.3.1 Sustainability Management Control Systems

Several studies (Ghosh, Herzig, & Mangena, 2019; Crutzen, Zvezdov and Schaltegger, 2017; Laine, Unerman & Tregidga, 2021) have shown that companies have started to adopt strategies to deal with challenges pertaining to the society, environment, and the economy and that sustainability management control can be used by firms to manage sustainability issues.

Crutzen, Zvezdov and Schaltegger define sustainability management controls as “all devices and systems that managers develop and use to formally and informally ensure that the behaviours and decisions of their employees are consistent with the organisation’s sustainability objectives and strategies” (2017, p. 1293). In essence, sustainability management controls involve measuring, assessing, and communicating activities that the organisation deem as sustainable (Laine, Unerman & Tregidga, 2021).

To steer organisation towards becoming sustainable, managers and decision-makers within the organisation require correct information available (Laine, Unerman & Tregidga, 2021; Hristov, Chirico & Ranalli, 2022). This information enables decision-makers to understand dependencies, reduce environmental impact, and enhance sustainable activities (ibid.). The information that decision-makers within the organisation need is created from different forms of management accounting, and one of those is sustainability management accounting. Laine, Unerman, and Tregidga (2021) argue that making sustainability management accounting and control a core business priority empowers organizations to integrate sustainability factors into strategic and operational decision-making at all levels.

According to Laine, Unerman and Tregida (2021), decision-makers within the organisation utilise a wide range of tools, practices, and systems which they seek to integrate complex and multidimensional sustainability factors into their organisational decision-making. The sustainability factors can include assessments and evaluations of organisational activities that are related to sustainability or analysing how decisions can affect the organisation’s sustainability performance as well as ensuring that employees, groups, and divisions' actions are aligning with the organisation’s sustainability strategy and goals (ibid.).

A widely used package for management control systems (MCS) is the one developed by Malmi and Brown (2008). The MCS package by Malmi and Brown (2008) consists of cultural controls, planning, cybernetic controls, administrative controls, and reward and compensation. Even though it is not specifically developed to control for sustainability, it can be transferred to control for sustainability in a company which has been done studies by Crutzen, Zvezdov and Schaltegger (2017) and Gond, Grubnic, Herzig, and Moon (2012). The study by

Crutzen, Zvezdov and Schaltegger (2017) explores to what extent large companies have developed a package of formal and informal management controls and finds that large companies either focus on the formal controls or the informal controls, not a combination of the two even though a combination of the formal and informal controls might reinforce each other. The study by Gond et al. (2012) explores how sustainability strategies are integrated by different MCSs and stress the difficulty of integrating sustainability into MCSs due to organisational, technical, and cognitive barriers. Technical integration refers to the integration of sustainability control tools into formal control systems that can collect, process, and communicate sustainability information. Organisational integration concerns the definition of roles and structures that can facilitate practices for sustainable management. Cognitive integration is about how MCS can act as a communication platform that can facilitate interaction and allow examination and change how actors see the organisational objectives and how they deal with environmental and social problems (Corsi & Arru, 2021).

Studying a company's management control systems, provide insights into how management controls can increase the probability for employees to act and make decisions that are in the company's best interest (Crutzen, Zvezdov & Schaltegger, 2017). Enhancing employee decision-making aligned with organizational objectives has been explored in several studies (Johnstone, 2019; Crutzen, Zvezdov & Schaltegger, 2017; Wijethilake, Munir & Appuhami, 2017). A sustainability MCS that is well designed not only help organisations to specify and communicate their objectives and monitor performance, but also enables and motivates employees to engage in sustainability projects and practices by rewarding their actions and achievements (Wijethilake, Munir & Appuhami, 2017; Johnstone, 2019). However, as concluded by Lueg and Radlach (2016) the MCS alone cannot ensure and address the sustainability objectives that an organisation has, instead, multiple controls or methods that reinforce each other are required.

2.4 Collaboration with Outside Actors in the Value Chain

The term co-creation builds upon the concept of value-creation which refers to the process of generating value between the company and its consumers. However, according to Prahalad and Ramaswamy (2004), co-creation involves a shift from a company-centric view of value creation to a customer-centric view that emphasises collaboration.

Co-creation emphasise the interaction between the company and its consumers (Prahalad & Ramaswamy, 2004). Prahalad and Ramaswamy (2004) describe a

system of co-creation that is based on dialogue, access, risks, benefits, and transparency. The dialogue component in Prahalad and Ramaswamy's (2004) system of co-creation implies interaction, engagement, ability, and willingness of both the company and the consumer to be equal and joint problem solvers. To become equal and joint problem solvers, the dialogue needs to be centred around issues that are of interest to both parties as well as clearly defined rules (ibid.).

The building blocks of access and transparency are of importance because companies tend to have more information compared to the consumer and, traditionally they have benefited from the information asymmetry. Therefore, for co-creation to occur, both parties need access to the same information and transparency in sharing it (Prahalad & Ramaswamy, 2004). The building blocks of dialogue, access, and transparency lead to the assessment of the risks and benefits from the consumer which is going to aid them in action and decision-making (ibid.). The main point of the building system is that the marketer needs information to design a better product for their customers, meaning that more information will lead to a better-designed product.

Based on Prahalad and Ramaswamy (2004) insights, De Koning, Crul and Renee (2016) developed a model that visualizes the spectrum of co-creation (see Figure 3) and a model that visualise the steps involved in co-creation (see Figure 4). The spectrum model provides an overview of how different approaches can lead to different forms of output (De Koning, Crul & Renee, 2016). De Koning, Crul and Renee (2016) notice two main movements in the spectrum, the first one is where co-creation is used as an innovation, and has little to no influence on output, whereas the second movement in the spectrum is used in co-creation as a design method i.e., a higher level of influence on the output. The first movement (the dot in the upper left quadrant in figure 3) shows that the level of collaboration is low, and the second movement (the dot in the upper right quadrant in figure 4) shows a high level of collaboration (ibid.).

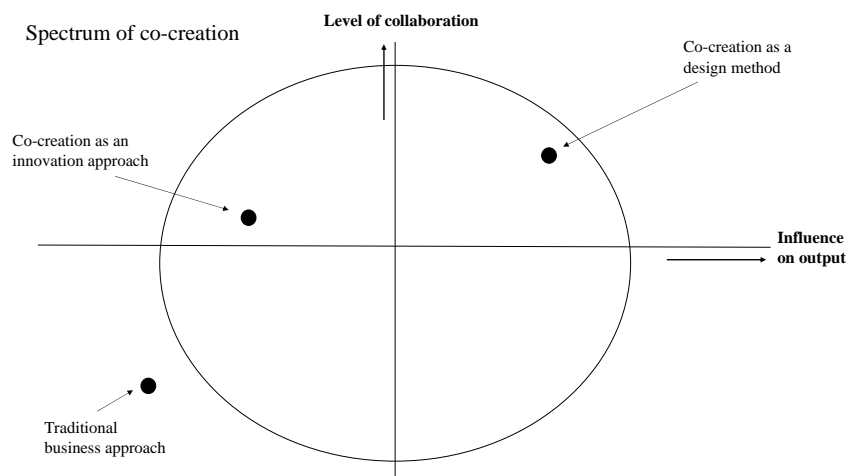


Figure 3. Spectrum of co-creation from De Koning, Crul and Renee (2016), own design.

The second model developed by de Koning, Crul and Renee (2016) visualises the steps of co-creation similar to the spectrum of co-creation. The steps of co-creation consist of the innovative approach and the design method. The innovation approach consists of six steps: identify, analyse, define, design, realise and evaluate. The design method is embedded in the innovation approaches' design step and consists of four steps: invite, share, combine, select, and continue. De Koning, Crul and Renee (2016) discuss whether co-creation is a method or an approach since no consensus exists. However, what can be concluded is that co-creation uses tools, and tool kit techniques that are put together strategically so goals can be fulfilled (ibid.).

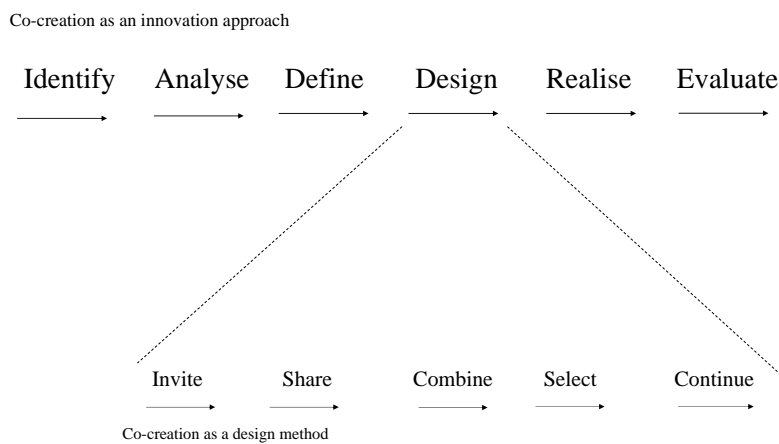


Figure 4. Steps of co-creation from De Koning, Crul and Renee (2016), own design.

As co-creation involves activities such as co-design and co-implementation it can be seen as a way to manage scope 3 emissions. The next section will describe more in detail how the study will apply and use the concept in the study.

2.5 Analytical Framework

To fulfil the aim of the study, i.e., to contribute knowledge on the management of Green House Gas emissions in scope 3, an analytical framework has been developed. The analytical framework illustrates how the researchers' ideas have been organised by drawing linkages between the existing theory on corporate GHG management found in the literature and the purpose of the study (Wilensky & Hansen, 2001; Maxwell, 2013). Acknowledging the aim of the study, three analytical themes have been outlined from the literature review and the theoretical framework.

The first analytical theme concerns the motivational factors that a company exhibits to manage scope 3 emissions. It draws on previous research that has shown how

companies take measures to reduce their emissions and that they engage in GHG emissions management and reporting because of stakeholder pressure from, inter alia investors and consumers, regulatory updates and incentives, and external pressure e.g., social, and cultural norms. Based on the insight from the literature review, motivational factors will be analysed from three theoretical lenses (stakeholder theory, institutional theory, and legitimacy theory) to create a more nuanced picture. The connection between the motivational factors and the first research questions is made because it facilitates an understanding of the link between business risk and climate change, but also highlights the pressure from stakeholders on different levels, as well as internal and external stakeholder pressure.

The second analytical theme focuses on strategies employed by real estate companies to reduce GHG emissions in Scope 3. It is linked to the second research question, “how do real estate companies manage scope 3 emissions?”. The inside-out, outside-in, and sustainability management system controls are connected to this theme, as they provide insights into organizational strategies related to scope 3 emission reduction. Although, the studies by Frau, Moi and Cabiddu (2020), Dyllick and Muff (2016) and Maas, Schaltegger and Crutzen (2016) are not directly focused on scope 3 emission reduction strategies, these studies highlight the importance of internal resources when it comes to dealing with external threats and opportunities and how a company can contribute to a sustainable society. As mentioned above the sustainability management control systems have previously been studied to control sustainability in companies (Crutzen, Zvezdov & Schaltegger, 2017; Gond et al., 2012). These previous studies highlight the importance that management controls have in how a company chooses to develop and integrate their sustainability strategy.

The third theme addresses collaborative strategies used by companies to manage scope 3 emissions. Since most of the emission from the real estate sector comes from their scope 3 emissions, decision-makers within the organisation cannot only depend on their sustainability management control systems (SMCS) and business strategies to facilitate activities that can reduce emissions, i.e., multiple controls and methods that reinforce each other are required (Lueg & Radlach, 2016). The third analytical theme therefore refers to the collaborative strategies that a company uses to manage their scope 3 emissions. Since scope 3 emissions fall outside the organisational remit, the management of scope 3 emissions are likely to involve some sort of collaboration with actors outside the organisation. Thus, collaborative strategies are identified as the third analytical theme for this study.

For the organisation’s sustainability objectives to transcend organisational boundaries means that collaboration or communication needs to be in place in the

company's value chain. Therefore, we turn to theories about collaboration between organisational entities. The co-creation concept can be transferred because it facilitates access to information from actors outside the organisation. More specifically it creates a base for the company to apply the building blocks of co-creation to reduce their scope 3 emission. Applying the spectrum and steps of co-creation to scope 3 emissions reduction strategies means that it can facilitate an understanding of the strategies that companies implement to reduce their scope 3 emissions. The characteristics of the outside-in approach and the co-creation concept are linked to the third analytical theme because it shows how the use of collaboration with outside actors could help to reduce scope 3 emissions and therefore linked to the third research question, "What are the challenges with scope 3 emissions management?".

Presented below is a visual presentation of the developed analytical framework. It starts with stating the aim of the study followed by the research questions that have been developed to fulfil the aim. The analytical framework and its analytical themes act as the operationalisation of the research questions. As mentioned above, the analytical themes have been outlined with the help from the literature review and theoretical framework and are therefore closely connected to them.

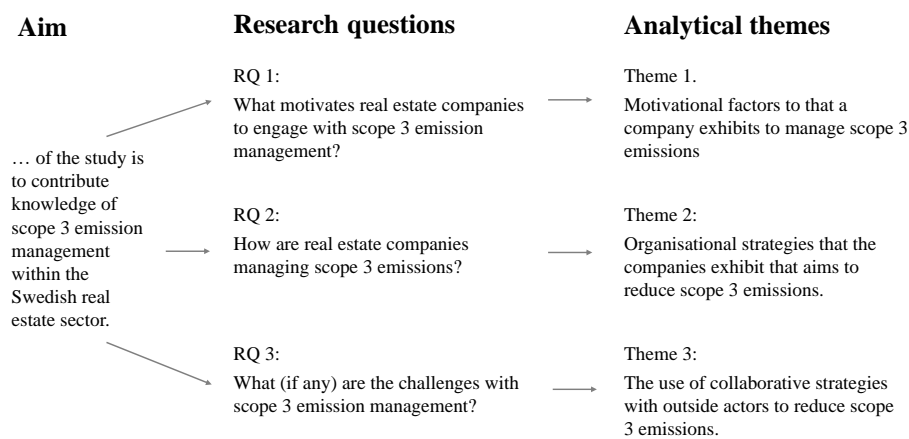


Figure 5. Analytical framework, authors' own development.

As mentioned above, and as the underlying logic, that scope 3 emissions fall out of the organisational remit, the question of how an organisation can transfer their sustainability objectives outside the organisation becomes apparent. As previous research on sustainability management in firms have had a focus on motivational factors and internal sustainability management, this study goes beyond the organisational borders due to the nature of scope 3 emissions i.e., they fall outside the organisational remit. This means that the GHG emission management scope has increased and that the conceptual understanding of GHG management also must

follow the increased scope i.e., new knowledge is needed. This study, with the help of the analytical framework thus builds on previous research sustainability management but adds the concept of co-creation to create new knowledge on the management of GHG emissions, specifically scope 3 emissions. The novelty of this study is through addition of the co-creation concept to create new knowledge on scope 3 emissions management and by applying a qualitative multiple case study to investigate how companies manage scope 3 emissions in the context of the real estate sector.

3. Method

This chapter describes the way the research has been conducted. It motivates and discusses the implications of the methodological choices that have been undertaken for this study.

3.1 Research Philosophy and Paradigm

The lack of clear and comprehensive scope 3 accounting guidelines has created an interpretation space for how companies manage scope 3 emissions. To understand how Swedish real estate companies manage their scope 3 emissions, this paper thus applies an interpretivist paradigm since it allows for understanding and uncovering of stakeholders' or individuals' experiences and subjective reflections (Thanh & Thanh, 2015). Interpretivism is a subjective position of epistemology which is a philosophy of theory of knowledge (Bell, Bryman & Harley, 2019). The ontological position of the research, i.e., the nature of reality, is constructivism (Bell, Bryman & Harley, 2019). According to the constructivist position, "social phenomena are produced through social interaction but are also in a constant state of revision by the authors of this research" (Bell, Bryman & Harley, 2019, p. 27). The authors chose this approach as the study examines the interactions between real estate companies and their suppliers, tenants, and customers, where scope 3 management can be viewed as a social phenomenon created by humans.

3.2 Research Strategy

The study was developed through a qualitative deductive approach, where theory and predetermined codes were drawn from theory, and literature applied to the empirical data (Bell, Bryman & Harley, 2019). A qualitative approach was taken since the academic literature on scope 3 management in the real estate sector is scarce, and according to Yin (2003), qualitative research is suitable when the research aims to examine themes in a partly unexplored, ambiguous research field. Qualitative research methods have, however, been criticised for not providing generalised answers as it is difficult to draw causal links from small data sets (Bell, Bryman & Harley, 2019). However, since the aim was to get a better understanding

of how Swedish real estate companies manage their scope 3 emissions, the purpose was not to generalise. According to Bell, Bryman, and Harley (2019) qualitative methods are better suited to analyse organisational behaviour which aligns with the research objectives.

3.3 Research Design

Since the focus of the study was to explore why Swedish real estate companies engage in scope 3 and how they manage emissions along the value chain, a multiple case study was chosen. According to Yin (2003), case study approaches are appropriate for studies that emphasise how and why questions. Case studies have however been criticised for exhibiting a verification bias, where researchers tend to confirm their preconceived notions (Flyvbjerg, 2006). However, according to Flyvbjerg (2006) this critique is unfounded. According to Flyvbjerg (2006) case study has its own rigor and “the advantage of the case study is that it can close in on real-life situations and test views directly in relation to phenomena as they unfold in practice” (Flyvbjerg, 2006, p. 235).

According to Eisenhardt (1989), case studies are good when the researcher wants to study an unexplored field as it reveals how different aspects relate to each other. The results of a multiple case study are often considered more robust compared to a single case study because it has evidence from multiple sources that is also consistent with the purpose of this study (Yin, 2014).

Because the study’s aim is to contribute knowledge of scope 3 emission management, the unit of analysis becomes the actual phenomena, i.e., management practices and strategies. This argumentation is in line with Sheppard (2020) who argues that the entity the researcher tries to get a result from is generally the unit of analysis.

The unit of observation is the actual items that are being observed, measured, or collected to learn about the unit of analysis (Sheppard, 2020). Given the aim of the study, the unit of analysis and the data collection method, the unit of observation for this study is individuals at the different companies i.e., the interviewees of the study. They become the unit of observation since they are expected to have the knowledge of the phenomena that are being studied i.e., knowledge of scope 3 emission management within the Swedish Real Estate sector.

3.4 Data Collection

This section describes the way the data has been collected. Starting with a description of selection of companies and the interviewees.

3.4.1 Selection of Companies and Interviewees

The selection of companies was done through an analysis of Swedish real estate companies listed on Nasdaq Stockholm and followed a fixed purposive sampling strategy (Bell, Bryman & Harley, 2019). The authors set three requirements that the real estate companies had to fulfil to be included in the sample. The first requirement was that the company had to be listed on Nasdaq Stockholm in the sector real estate, either on the small, mid, or large cap. The decision to include all three caps on the Nasdaq Stockholm was made to include as many companies in the sample as possible since previous literature has shown that few companies have reported on scope 3. The second requirement was that the companies must have disclosed information about scope 3 emissions in their annual and/or sustainability report for at least two consecutive years i.e., both in 2021 and 2022 as scope 3 emissions reporting was seen as a sign the company was managing scope 3 emissions which was a requirement to conduct the study. The reason the companies had to have disclosed information about scope 3 for at least two years was that when the study started, not all companies' annual reports for 2022 had been released, so the authors' initial selection was based on the companies' 2021 reports. However, the reported data in the empirical section is taken from the 2022 years annual and sustainability reports. The third requirement was that the company's main business activities had to be related to owning, managing, or developing real estates.

To meet the three requirements, the authors began by compiling a comprehensive list of real estate companies listed on Nasdaq Stockholm in 2022 across different market caps, including small, mid, and large cap. This process yielded a total of 37 companies. Based on the second requirement the authors selected companies who had disclosed information about scope 3 emissions in their annual and/or sustainability reports in both 2021 and 2022. Out of the total 37 listed companies on Nasdaq Stockholm in 2022, 27 of those had reported on scope 3 in 2021 and 31 reported on scope 3 in 2022. This meant that 27 companies met the first selection requirement of scope 3 reporting in both 2021 and 2022.

By applying the third requirement, which mandated that the companies' primary business activities revolve around real estate ownership, management, and development, two companies were excluded from the sample. Consequently, the final sample size comprised 27 companies. See table 1 below for the final sample.

Table 1. Sample size

Shows the number of listed Real Estate companies on Nasdaq Stockholm (Large Cap, Mid Cap and Small Cap), the number of companies that had reported on scope 3 emissions in 2021 and 2022 and, if the companies' main business activities were related to owning, managing, and developing real estate.

	2022
<i>Number of listed companies</i>	37
<i>Reported on scope 3 emissions in 2021 and 2022</i>	31
<i>Main business activity relating to ownership, management, and development of Real Estate</i>	29
<i>Final sample</i>	27

Out of the 27 companies, 17 were contacted. The reason for only contacting 17 out of the 27 was because the authors contacted the companies in sequence. The choice to contact the companies in the sequence was due to the possible scenario that, if contacting 27 of the companies at the same time, there was a possibility that 27 would accept. Due to the scope and time frame of this study, 27 cases did not seem feasible to the authors. To gain control of the sample size and to make the study feasible, a total 17 companies were contacted. Out of the 17 contacted, 9 responded where 6 accepted to participate in the study, and 3 declined to participate. The final sample of companies that participated in the study was six out of the 17 that were contacted. The final sample of six cases for the study, given the scope and time frame, was seen as feasible and expected to collect enough empirical data.

The interviewees were selected based on their work profession. The authors aimed to interview the Head of Sustainability at each company since they many times have the overall responsibility over a company's sustainability performance and thereby have insight in how companies manage their scope 3 emissions. For four of the six cases the Head of Sustainability was interviewed and for the second two interviews the project leader that managed the climate accounts and the Chief Financial Officer that was involved and sustainability agenda at the company was interviewed.

3.4.2 Interview Design and Process

To meet the research objectives and ensure the interviews had the same structure, an interview guide was created (see appendix 2). The interview guide was anchored in the research questions and hence focused on why companies engage in scope 3 emissions management and how they manage scope 3, and what the challenges are to manage scope 3.

The interviews were conducted through a semi-structured approach with open-ended questions. The reason for using semi-structured interviews was that the technique allows for flexibility where the researcher can change the order of questions or add additional ones if the researcher wants clarification on a specific topic (Bell, Bryman & Harley, 2019). Given the narrow literature on scope 3 management and the fact that companies may have different management approaches, it was crucial to be able to ask additional questions for clarification to answer the research questions correctly.

The semi-structured interviews were held both in person and virtually through the software applications Zoom and Teams and ranged from 30 to 45 minutes. The reason for having the interviews both in person and online was because of geographical distances where some of the selected companies were located in other cities than the authors were located in. The reason for using both Teams and Zoom was that some of the interviewees preferred to have the interview on Teams. While most interviews were conducted online, the authors recognized the importance of maintaining a personal connection and minimizing the risk of misunderstandings that could arise from technical disruptions (Bell, Bryman & Harley, 2019). To mitigate technical issues, the authors conducted a test-pilot before each online interview and ensured the participation of both authors during the interviews in case of technical problems. The authors were also recording the interviews and transcribed the data manually to prevent missing data. To avoid the risk of misunderstandings, a web camera was used during the interviews, except in one interview where the interviewees' web camera did not work (Bell, Bryman & Harley, 2019).

The interviews were held in Swedish since it was the native language for both the authors and the participants in the study. To avoid miscommunication and make the interview more relaxed, the interviews and transcriptions were thus in Swedish. Prior to the interviews, the interviewees were assured that their company and names would be anonymized to foster trust between the authors and the participants. Moreover, the interviewees were asked whether they agreed to have the interview recorded and informed they would be able to control the summarised interview after the interview. The summarised results were done in English to ensure the interviewees were pleased with the translation. The interviewees were also asked to consent with the summary and asked whether they wished to add or remove something, thus answering another question in text.

3.4.3 Collection of Secondary Data

To yield a holistic view of how real estate companies manage scope 3 emissions and what strategies and methods they apply to reduce scope 3 emissions, empirical

data was also gathered from the selected companies' annual and sustainability reports from the reporting year 2022 (Donnellan & Lucas, 2013). According to Bell, Bryman & Harley (2019), the use of different data sources can increase the understanding of a phenomenon. The secondary data was used both as a preparation step before the interviews to be able to ask follow-up questions, but also as a main data collection source. The secondary data has brought information about what scope 3 categories the company reports on, whether the company follows GHG Protocol, scope 3 calculations methods, and supported the case interviews with information about what actions, and tools companies use to minimise their GHG emissions.

To respect the anonymity requested by the companies included in the study, we have chosen to reference the data from the annual and sustainability reports from the reporting year 2022 as depicted below in table 2. While annual and sustainability reports are publicly available information, we have chosen not to include them in the reference list to uphold the companies' wish for anonymity. We acknowledge that this may not be the ideal approach, but it was considered the best solution to fulfil our ethical responsibility to the participating companies.

Table 2. Source of secondary data and name of reference in empirical results chapter

	<i>Secondary data source</i>	<i>Reference in empirical results</i>
<i>Company A</i>	Annual and Sustainability report, 2022	Annual and Sustainability report A
<i>Company B</i>	Annual and Sustainability report, 2022	Annual and Sustainability report B
<i>Company C</i>	Annual and Sustainability report, 2022	Annual and Sustainability report C
<i>Company D</i>	Annual and Sustainability report, 2022	Annual and Sustainability report D
<i>Company E</i>	Annual and Sustainability report, 2022	Annual and Sustainability report E
<i>Company F</i>	Annual and Sustainability report, 2022	Annual and Sustainability report F

3.4.4 Data Analysis

The recorded interviews and the secondary data were analysed through a thematic analysis approach. A thematic analysis approach was chosen because it provides a flexibility in theoretical and epistemological position (Braun & Clarke, 2006). Given its theoretical freedom, thematic analysis is a flexible and useful tool that has the potential to give a rich and detailed account of the data (Braun & Clarke, 2006). However, due to the thematic analysis' theoretical freedom, Braun, and Clarke (2006) emphasise the importance of being transparent regarding the assumptions concerning the epistemological and ontological position the study has (see 3.1. for research philosophy and paradigm).

The thematic analysis approach is particularly suitable when the researcher aims to identify patterns within qualitative data and gain insights into different aspects of a phenomenon (Bell, Bryman & Harley, 2019; Braun & Clarke, 2006). According to Stake (2013) it also allows for the comparison of cases, facilitating the highlighting of similarities and differences and enabling a holistic view of the subject (Stake, 2013). Moreover, thematic analysis provides a means to create a rich description of the dataset, capturing the most dominant and essential themes. However, it is worth noting that this approach may sacrifice depth and complexity to some extent, although it maintains an overall comprehensive portrayal of the dataset (Braun & Clarke, 2006).

Given the study's exploratory nature, deductive design, and considerations of scope and time frame, the thematic analysis approach was deemed most appropriate, aligning with Braun and Clarke's recommendations (2006). To identify themes in the data set, the primary method employed was a theoretical approach, meaning that the analysis was driven by theoretical or analytic interest (*ibid.*). This approach generally leads to a less rich depiction of the whole data set, but instead gives a detailed description of some parts of the data set. The identification of the themes was done at a semantic level meaning that the analysis focuses on identifying themes at an explicit level (*ibid.*). As the study is theory-driven, the semantic level analysis was deemed the most suitable method, aligning with the study's objectives and the phenomena under investigation.

To operationalize the analysis and identify themes, the authors immersed themselves in the data, following the guidance of Braun and Clarke (2006). This involved extensive reading and re-reading of the transcripts to become intimately familiar with the data. Braun and Clarke (2006) define themes as capturing important aspects of the data related to the research question and representing patterns or meaning within the dataset. What counts as a theme is described by Braun and Clarke as "a theme captures something important about the data in relation to the research question and represents some level of patterned response or meaning within the data set" (2006, p. 82). As the study follows a deductive approach and the analysis is driven by theoretical and analytical interests, the themes derived from the data analysis were shaped by the research objectives and questions of the study. While this approach may have resulted in a potential loss of depth and complexity, it aligns with the operationalization of the study's aim through research objectives and is deemed appropriate by the authors.

3.5 Summary of Research Process

In summary, the research built on several steps, where the authors started to review previous literature on GHG emissions in the real estate sector. Based on the literature, a research gap and questions could be identified and formulated. Subsequently, the researchers delved into theories and literature pertaining to the study's objectives. The next step entailed establishing selection criteria for the research and analyse companies' annual and sustainability reports. Following this, the authors reached out to the selected companies to gather empirical data. Once the empirical data had been gathered, the authors transcribed and coded the data which led to the study's results. See the figure 6 below for an illustration of the steps.

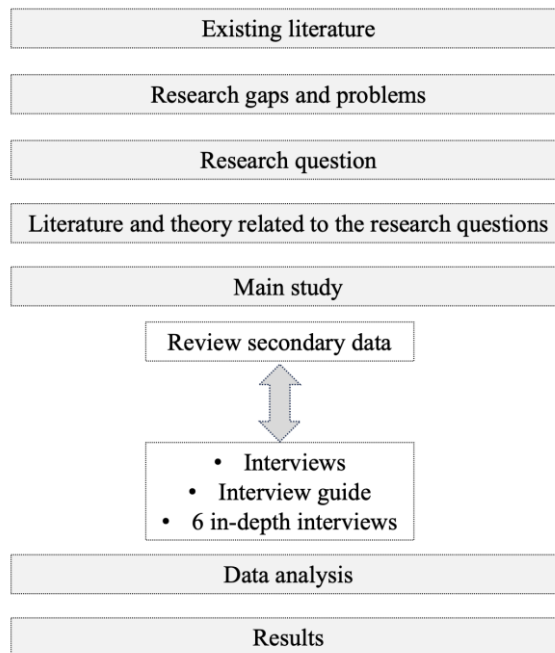


Figure 6. Visual presentation of the study's research process, own design

3.6 Quality and Ethical Assurance

To assess the study's quality and ethical criteria the research has been validated through Lincoln and Guba's (1985) criteria of trustworthiness and Diener and Crandall's (1978 see Bell, Bryman & Harley, 2019, p. 1369) ethical principles.

3.6.1 Quality Criteria

According to Lincoln and Guba, trustworthiness can be described through four criteria's, namely, credibility, transferability, dependability, and confirmability (Bell, Bryman & Harley, 2019; Lincoln & Guba, 1985). To ensure the research had

high credibility, i.e., ensure that research findings are correct and that there was a congruence between the researchers' observations and the developed theoretical ideas, (Lincoln & Guba, 1985), the research collected data from different sources and applied a triangulation technique. The use of different data sources enabled the researchers to cross-check the findings and thereby strengthen the research credibility (Bell, Bryman & Harley, 2019). Further, the research credibility was ensured by recording, transcribing the interviews which minimise the risk of having misinterpreted the interview answers. To assure transferability, i.e., the degree to which the study's findings can be generalised or applied to another situation or context (Bell, Bryman & Harley, 2019; Lincoln & Guba, 1985), the researcher has tried to give as much background of the selected company as possible. This was done to enable the readers to make their own judgements concerning the findings generated (Bell, Bryman & Harley, 2019). To ensure the study's dependability, i.e., the study's possibility to be replicated (Bell, Bryman & Harley, 2019), the researchers have tried to be as transparent as possible about the research process.

Finally, to ensure the study's confirmability, which is concerned with the research objectivity (Bell, Bryman & Harley, 2019), the interview questions had an open-end character. Asking open questions minimises the subjective view of the research by ensuring the researcher does not lead the participants to answer in any specific direction (Bell, Bryman & Harley, 2019). Furthermore, by asking the company the same questions, the risk that the view of the participant held by the authors influenced the data gathering and the analysis, will be reduced (Willendorf & Belk, 1989).

3.6.2 Ethical Considerations

In order to uphold the ethical standards of the research, the researcher used Diener and Crandall's (1978 see Bell, Bryman & Harley, 2019, p. 1369) four ethical principles, i) informed consent, ii) avoiding harm to participants, iii) privacy, and iv) preventing deception as a guideline. To avoid a lack of consent, the interviewees were given a brief overview of the study, its purpose and how their answers would be used if they wished to participate (Bell, Bryman & Harley, 2019). The researcher also masked the interviewees names, annual and sustainability reports, and company name to ensure no harm to the participants. To avoid invasion of privacy, the interviews were also focused on the research questions. Finally, to ensure the prevention of deception, the researcher also must make sure to present the study truthfully (Bell, Bryman & Harley, 2019).

4. Empirical Findings

This chapter presents the findings from the interviews and the company's annual and sustainability reports. The empirical findings are presented as a summary of each interview for each company. The summary follows the same structure as the thematic analysis. Starting with the motivational factors for engaging with scope 3 followed by a description of how the companies manage their scope 3 emissions and what challenges they see with scope 3 emissions management and with the addition if companies were missing any tools in the market.

4.1 Company A

Company A engages in acquisition, management, and operations of residential buildings in Sweden (Annual and Sustainability report A). The company has a long-term target of having a climate neutral operation by 2030 and in the whole value chain by 2045. Company A follows GHG Protocol and reports on the categories 1, 2, 5, 6 and 13¹ where category 1 represents the largest emission category (ibid). The following sections present the empirical findings drawn from the interview with Company A, plus additional information gathered from the company's annual and sustainability report.

4.1.1 Motivational Factors to Scope 2 Emissions Management

Company A reports on scope 3 emissions because of various reasons. Firstly, because of laws and regulations, where the interviewee highlighted the law of climate declaration² and said the law outlines the foundation for their scope 3 emission reporting. Secondly, the company reports on scope 3 emissions because they experience an expectation from the market, and thirdly, because they anticipate demands and regulations from the financial sector.

¹ 1. Purchased goods and services; 2. Capital goods; 5. Waste generated in operations; 6. Business travel; 13. Downstream leased assets.

² The climate declaration act establishes requirements and guidelines for declaring the climate impact of new buildings, ensuring that the construction process is conducted with environmental considerations in mind. (Boverket, 2021)

Finally, the interviewee said they were reporting on scope 3 emissions because they wanted to make a difference and make more active sustainable choices. e.g., making active choices that are more sustainable and doing business as usual seems embarrassing.

4.1.2 Managing Scope 3 Emissions

In the company's annual and sustainability report from 2022 (Annual and Sustainability report A) the company states that their biggest challenge lies in their indirect emissions, mainly linked to emissions attributable to new constructions which the interviewee also confirmed during the interview. According to the interviewee, building materials represent the largest share of Company A's scope 3 emissions.

To reduce its scope 3 emissions, the interviewee said Company A collaborates and engages with their employees, tenants, and suppliers. In terms of their relationship with suppliers and sub-suppliers, the interviewee explained that there is an existing relationship and an ongoing dialogue. Moreover, Company A takes the initiative to educate their suppliers and the entrepreneurs involved in construction projects. According to the interviewee this is important because if they are demanding certain things from their suppliers, it is in the company's interest that the suppliers understand, want to, and are able to comply with the demands from Company A. Instead of cutting ties with suppliers who do not follow Company A's rules and policies they believe in educating them. The interviewee expressed that smaller suppliers may not have the resources to deal with what is being demand of them, so the interviewee said Company A goes through and analyse the supplier before collaboration. Company A has to compare the output of working with a small supplier with a large supplier.

“If we use a smaller supplier that does not deal with certain issues, should we not buy from them or should we buy from that supplier and instead help start a sustainability project”.

The interviewee also said that Company A investigates and looks at other suppliers that offer products with a lower environmental impact. The interviewee expressed that if they were to buy a more expensive product with a lower environmental impact, there is a risk that they will never get a return on the investment. Moreover, the interviewee said that the first reaction to products that have a lower environmental impact is usually that “it is more expensive and worse quality”. However, to make an actual investment decision, the interviewee said that one has to be able to compare price with the environmental impact, and that it does not necessarily have to be more expensive to build more sustainably, just that those kinds of products are often shorter in supply which affects the price.

To manage scope 3, the interviewee stressed how they make active decisions regarding the products they buy. The interviewee said that it can be difficult to change a product that has always worked for them, but they also feel that it can be worth trying if there is a better product for the environment. The interviewee highlighted that they might be able to shift and steer demand and look at how products can be improved.

Another way Company A manages their scope 3 emissions is through engagement with tenants. Company A can put pressure and demand on certain aspects or enforce activities that might reduce the tenants' climate impact. The possibility to have a livelier dialogue is easier with tenants compared to communicating demands to suppliers. The interviewee highlighted that the company has demanded that tenants sign green electricity contracts, sort, and recycle their waste.

When asked about whether a KPI on scope 3 is a good idea, the interviewee said it might be hard to set KPIs or GHG reduction targets, specifically targeted towards building material because the emissions that are being calculated are based on the data that is available.

4.1.3 Challenges with Scope 3 Emissions Management

According to the interviewee Company A experiences it is difficult to collect relevant data on scope 3. The interviewee said it is difficult to synthesise the data in the value chain and thus difficult to enhance the degree of transparency in the value chain.

According to the interviewee it would have been much easier to report on scope 3 if there was an environmental product declaration (EPD) on each product they buy. The interviewee also mentioned that it would have been easier to manage scope 3 emissions if the financial systems and other types of business systems worked together.

4.1.4 Summary of Empirical Findings for Company A

Company A engage in scope 3 emissions because of various reasons and uses different systems to reduce scope 3 emissions. Company A do however think scope 3 emissions management is difficult because of data and differences in reporting techniques and thus wishes companies could collaborates across sector to a better extent and that all products had an environmental product declaration. See table 4 below for summarised result.

Table 3. Summary of findings for company A

<i>Motivational factors to engage with scope 3 emission management</i>	Laws and regulations Market expectations Demands and regulations from the financial sector Willingness to make a change
<i>Management of scope 3 emission</i>	Collaboration within the organisation Collaboration with suppliers Educating suppliers Demands on suppliers Dialogue with tenants; demanded tenants to sign green electricity contracts, sort and recycle their waste.
<i>Challenges with scope 3 emission management</i>	Collect relevant data Companies are reporting on different categories
<i>Missing tools in the market</i>	Environmental product declaration on each product they buy Collaboration across sectors

4.2 Company B

Company B manages and develops commercial properties in Sweden (Annual and Sustainability report B). In the company's annual and sustainability report it states that the company has a target of achieving a climate neutral property management by 2025. The company follow GHG Protocol and reports on the scope 3 categories 1, 3, 5, 6, and 13³, where category 1 represents the largest reported category (ibid.). The following section present the empirical findings drawn from Company B.

4.2.1 Motivational Factors to Scope 3 Emissions Management

Company B follows GHG Protocol and Fastighetsägarna's guideline on scope 3 (Annual and Sustainability report B). The interviewee highlighted, however, that the GHG Protocol is not fully modified or adapted for the real estate industry. Many real estate companies do not build continually and because a building has an expected lifetime of 100 years, the reported scope 3 emission number becomes volatile, with an increased number of scope 3 emissions in the building phase and a lower number during the maintenance phase. The company is today using both actual data and standard amounts to calculate their scope 3 emissions where they get help from consultants to measure their emissions.

In the company's annual and sustainability report (Annual and Sustainability report B), the company highlights that they are also cooperating with their customers and

³ 1. Purchased of goods and services; 3. Fuel and energy-related activities (not included in scope 1 and 2); 5. Waste generated in operations; 6. Business travel; 13. Downstream leased assets

other partners in their environmental work. Furthermore, the report highlights, Company B's engagement with suppliers and waste entrepreneurs to foster the development of circular material flows.

The interviewee said during the interview that it is difficult for them to control their customers' and tenants' energy usage as they may have their own electricity metre. To control the tenant's energy usage, the interviewee said one often have to be a signatory, which involves a lot of extra work.

When asked about whether a KPI on scope 3 was a good idea, the interviewee raised some concerns as emissions in scope 3 can be volatile. The interviewee said that Company B does not build buildings every year, but when they build their emissions in scope 3 increases a lot no matter what sustainable choices they have made.

4.2.2 Challenges with Scope 3 Emissions Management

According to the interviewee it is difficult to give a true picture of the total scope 3 emissions. The interviewee said it is important to be transparent about the truth of scope 3 emissions. Companies reporting scope 3 emissions do not reflect the actual scope, which misleads people and creates a falsehood.

An accurate picture of scope 3 emissions requires a bureaucratisation, which is not possible according to the interviewee. However, according to the interviewee, it is possible to gather any amount of data. The interviewee raised, however, the importance of the data's purpose.

“You can gather as much data as possible, but somewhere fundamentally, you must have this information to be able to make a better decision”

“What kind of qualified decisions can be made from that information?”

The interviewee said it is important to handle the data in a pragmatic way, where standardised data have to be used. However, the interviewee also raised the importance of having your own data to make active sustainable choices.

4.2.3 Summary of Empirical Findings for Company B

To conclude, Company B engage in scope 3 emissions because of market expectation and uses different systems to reduce scope 3 emissions. Company B said they felt it is difficult to present a true picture of scope 3 emissions and that is hence it is important to be transparent of how data and calculations methods have been conducted and used. See table 5 below for summarised result.

Table 4. Summary of findings for company B

<i>Motivational factors to engage with scope 3 emission management</i>	Market expectations
<i>Management of scope 3 emission</i>	Outside counsel Internal policies Collaboration with outside actors Long-term approach
<i>Challenges with scope 3 emission management</i>	Difficult to disclose a true picture
<i>Missing tools in the market</i>	Transparency True picture of scope 3 emissions

4.3 Company C

Company C develops, owns, and manages logistics facilities. The company has a long-term target to become net zero in the whole value chain (scope 1, 2, & 3) by 2030 (Annual and Sustainability report C). Company C follows GHG Protocol and reports on categories 2, 6, 7 and 13⁴ where category 2 represents the largest reported emissions source (ibid.). The following section describes the empirical findings drawn from Company C.

4.3.1 Motivational Factors for Scope 3 Emissions Management

Company C reports on scope 3 emission because they are a listed company and hence are expected to do so. According to the interviewee, Company C is also reporting on scope 3 emissions because they report in accordance with GRI Universal Standards 2021, meaning they must provide a materiality analysis illustrating topics where Company C has the most significant impact on the economy, environment, and people. According to the company's materiality analysis, GHG emissions are the most important topic for them where scope 3 emissions stand for the largest share of their total greenhouse gas emissions.

Company C said, however, that demands from the financial sector have driven the issue and pushed companies to become more sustainable.

4.3.2 Managing Scope 3 Emissions

Company C follows the Greenhouse Gas Protocol but decided in 2022 to also follow the guideline developed by the United Kingdom's Green Building Council

⁴ 2. Capital good; 6. Business travel; 7. Employee commuting; 13. Downstream transportation and distribution.

(UKGBC) for accounting for scope 3 for commercial properties to expand their scope 3 accounting in 2021 (Annual and Sustainability report C).

Company C started to map their scope 3 emissions about four years ago and has identified that new construction accounts for the largest share of the company's GHG emissions but highlights that the tenant's energy use, production and transport operations make up a large part of the total greenhouse gas emissions. The interviewee said, however, that they are still mapping their scope 3 emissions and don't have an exact number of their total scope 3 emissions yet.

“We are for example not reporting on our client's transports, but that is something that we will report on in the future”

Company C states that they will continue their effort on mapping scope 3 emissions, and that the amount of scope 3 emissions will therefore most likely increase (Annual and Sustainability report C). To reduce the environmental impact of new buildings and refurbishments, Company C works with carbon budgets and lifecycle assessments. The company sets different types of limit values they work towards, which they communicate internally at the various projects. Moreover, the interviewee expressed that they need help from their suppliers, tenants, customers, and consultants and welcomes them to challenge Company C and inform them of alternative material choices. The interviewee said that many of their project leaders work with about two projects per year, meanwhile, their consultants work with hundreds of projects in parallel and therefore are more familiar with alternative material choices and techniques.

“Although we build facilities, our primary activities are ownership and management of existing properties, hence it is important that we get challenged by our suppliers... “

The company also collaborates with their customers to reduce scope 3 emissions. The interviewee said that many of their customers nowadays have their own sustainability program and want to be involved and influence the building phase. There is, however, still a knowledge gap which affects the management of scope 3.

When asked whether a KPI on scope 3 is good, Company C said they were a bit sceptical towards it because they believe it can be counterproductive. The interviewee said it is important to be aware that many companies' scope 3 emissions will increase in the upcoming years since they are today not reflecting the total scope. The interviewee said that they are still in the early stage of scope 3 mapping, and as mapping, tools, knowledge, and reporting requirements develop, the reported number of scope 3 emissions will increase. In the company's annual report, the company says it will continue to work on identifying scope 3 impacts to determine relevant targets and actions. The interviewee said, however, it is important to

encourage companies to map and report on their scope 3 emissions and to identify the activities that generate the largest negative climate impact to mitigate or try to limit those emissions.

4.3.3 Challenges with Scope 3 Emissions Management

The main challenge with scope 3 emissions is data. According to the interviewee, some tenants and suppliers don't share their emissions because they don't have enough resources or knowledge to provide the data, because they can't verify the emission data or because they feel that the data is of bad quality.

Another challenge with scope 3 emissions is the ambiguity of the definition of scope 3. The interviewee raised the question of what components they should account for. Company C builds facilities, but a large part of its operation is also acquisitions.

The same issue applies to the sale of buildings, if Company C sells one of their buildings, does their negative climate debt then disappear or do they not have to report on it? The interviewee said it is important to have a common understanding of scope 3 and how to measure it. Companies are using different definitions, and measurement techniques and are not equally transparent on what the reported scope 3 emissions number covers.

When asked what tools the Company were missing in market, the interviewee said they were missing open solutions and wished parties were more willing to share data although a party is not buying their service or solutions. To manage scope 3, it is important to access data in the whole of value-chain.

4.3.4 Summary of Empirical Findings for Company C

To conclude, Company C engage in scope 3 emissions because of various reasons, inter alia due to market expectations. To manage scope 3, they use different systems and strategies. The company thinks however that is difficult to collect data and the fact that companies use different measures and definition of scope 3 makes scope 3 emissions management difficult. See table 6 below for summarised result.

Table 5. Summary of findings for company C

<i>Motivational factors to engage with scope 3 emission management</i>	Market expectations Regulatory guidelines Demand from financial sector
<i>Management of scope 3 emission</i>	Mapping scope 3 emissions Carbon budgets and life cycle assessments Communication with suppliers, tenants, customers, and consultants Customers influencing the building phase
<i>Challenges with scope 3 emission management</i>	Data collection The ambiguity of the definition of scope 3, there is often a lack of a common understanding of scope 3 Companies use different definitions, and measurement techniques and are not equally transparent
<i>Missing tools in the market</i>	Open solutions to able to share data in the whole value chain

4.4 Company D

Company D engages in acquisition, management, development, and renewal of industrial, storage, logistical and commercial real estate (Annual and Sustainability report D). The company has a target to become climate neutral in whole operation by 2035. The company follow GHG Protocol and disclose information on the categories 1, 2, 3, 6, 7, and 13⁵ where category 1 represents the largest reported category (ibid.). The following sections presents the findings from the interview with Company D plus additional information gathered from its annual and sustainability report.

4.4.1 Motivational Factors for Scope 3 Emissions Management

The interviewee said Company D reports on scope 3 emission for two reasons. Firstly, because they see scope 3 reporting as a learning tool and want to practise and get a better understanding of their total GHG emissions before a common reporting requirement appears, and secondly, because scope 3 reporting is a way to communicate with their stakeholders and show them that they have taken the question seriously and started to work with scope 3.

⁵ 1. Purchased goods and services; 2. Capital goods; 3. Fuel and energy-related activities (not included in scope 1 and 2); 6. Business travel; 7. Employee commuting; 13. Downstream leased assets.

4.4.2 Managing Scope 3 Emissions

Company D has conducted a materiality assessment to decide which scope 3 categories to report on. The company has been working with a consultant group for several years to map its GHG emissions but has lately started to use digital tools such as Position Green to map its GHG emissions. The company is, however, still working on mapping its total scope 3 emissions and exploring calculations methods and approaches to change their operation and how to run projects more resource-efficiently.

Company D today follows Fastighetsägarna's guideline on scope 3 emissions and uses a mix of their own data and standardised data from Boverket to calculate their scope 3 emissions.

Although the company sometimes uses standardised data to calculate its scope 3 emissions, the interviewee said there was little risk that their scope 3 calculations are too optimistic, rather the other way around. The company uses a pessimistic approach when they lack their own scope 3 measurements. But since their scope 3 models are not yet finalised, there are always uncertainties, so Company D is applying the precautionary approach when calculating scope 3 to see if their active choices lead to reduced GHG emissions.

“It is not trustworthy to report on a too low scope 3... we are thus shooting ourselves in the foot as we cannot see if our active choices to reduce scope 3 emissions leads to an actual reduction”

The company aims to be climate neutral throughout its value chain by 2035 and has recently adopted a climate-neutral roadmap which showed that projects drive the largest share of emissions. To reduce Company's D scope 3 emissions, the company has specifically looked at its project organisation and found that they can increase the level of reuse. The company is for example implementing different internal reuse projects, setting reuse targets, and working on creating a roadmap.

The company is also collaborating with their customers to increase the level of reuse. The interviewee said that the biggest climate savings they can do when renovating is to preserve the floor plan. It is, nonetheless, challenging to renovate old buildings as they have a different layout than offices have today. Many of Company D customers are asking for new and fresh offices, which the interviewee said was a challenge.

“It is big challenge to perhaps change what our customers are asking for and also value then a reduction in emissions, or, as it were, a saving in emissions in their renovation”

The interviewee said that reuse is a shared process, where they must learn, but also how to sell in, and have a dialogue with their customers. There is no functional

recycling market yet, but it is important to set requirements to ensure that the market will be created. The interviewee said that there are many industry initiatives coming up and that some of their peers have.

“We are also working on these issues so that we can demand the right things as well as being able to create a market for actors to take. But I think it is easy to kind of see all the obstacles rather than to dare try”

In addition to reuse projects, Company D evaluates their suppliers and analyses which suppliers have a greater share of recycled material in their products. However, at this stage, the interviewee said, a lot is about training for project managers and coming up with a new construction strategy and to calculate the climate impact in all new properties.

When asked whether a KPI on scope 3 is good, the interviewee said they were, but it also depends on their usage. The interviewee said it can be tricky to benchmark KPIs on scope 3 between companies and that it is important to explain why the KPI on scope 3 has increased or decreased, e.g., because of access to better data or new calculation methods etc.

4.4.3 Challenges with Scope 3 Emissions Management

The interviewee said there is much clear guidance and processes around the construction activities, e.g., the number of materials, EPDs. However, all the indirect purchases are used with a spend-based method and standardised data. The interviewee therefore wished to have more data on in-direct purchases.

4.4.4 Summary of Empirical Findings for Company D

Company D engage with scope 3 emissions because they see it as a learning and communication tool. They use various strategies and systems to manage scope 3 emissions but wished to have more data on indirect purchases. See table 7 below for summarised result.

Table 6. Summary of findings for company D.

<i>Motivational factors to engage with scope 3 emission management</i>	Learning tool Communication tool
<i>Management of scope 3 emission</i>	Materiality assessment Consultant group Fastighetsägarna's and GHG Protocol guideline Has set a target of becoming climate neutral throughout the whole value-chain by 2035 Climate neutral roadmap Collaboration with suppliers and tenants and customers Reuse projects
<i>Challenges with scope 3 emission management</i>	Not discussed specifically, however based on the discussion from managing scope 3 emissions, different scope 3 emissions strategies were highlighted to be a bit challenging
<i>Missing tools in the market</i>	Data on indirect purchases

4.5 Company E

Company E invests and manages logistical and office buildings. The company has a target to become climate neutral, in scope 1 and scope 2, by 2030 in its property management. Company E follows GHG Protocol and reports on categories 1, 6 and 13⁶ where category 1 represents the largest share of emissions (Annual and Sustainability report E). The following sections describes the empirical result from the interview with Company E thus provides data from Company E's Annual and Sustainability report.

4.5.1 Motivational Factors to Scope 3 Emissions Management

The interviewee said that Company E has started to report on scope 3 emissions because they want to be in line with market trends and prepare their business in areas that will affect the sector, they are operating in. The company highlighted that properties have a long lifetime period which requires them to be one step ahead to be able to implement possible changes.

“As properties have a long lifetime period, we can't just quickly change direction if the regulations change. It is hence important to be aware where the market is heading”

4.5.2 Managing Scope 3 Emissions

Company E has just started to manage and report on scope 3 emissions. The company currently uses the spend-based method since it is the most common

⁶ . Purchased goods and services; 6. Business travel; 13. Downstream leased assets.

method among its peers. The interviewee highlighted that they are aware that the spend-based method would not give them the most accurate picture of their scope 3 emissions. The spend-based method is however easier to implement, and the interviewee emphasised that Company E is actively seeking to enhance their reporting methods for scope 3 emissions and aims to incorporate more accurate data into their reports.

When asked if Company E thinks they will ever abandon the spend-based method and use their own data the interviewee said they would if the right tools are developed and those are not too expensive and complicated. The interviewee elaborated on how Company E might be able to calculate better approximations and described how they could start by doing some representative projects which then would make it possible for them to approximate the emissions created per square metre, i.e., you would create your own specified data rather than using secondary data. The more you would do this the larger the company's own database would become and thereby also more specific.

Company E's largest scope 3 emissions stems from their renovation and other types of adaptations for their tenants. The interviewee said it was difficult to manage these emissions since they are not renovating the buildings themselves. Company E usually receives an invoice for the renovations and thereby has little insight into what materials that have been used. The interviewee mentioned, however, that they have policies regarding material choices, but that there is no follow up after the project is done to see if the entrepreneurs followed the policies or not. The interviewee therefore wished that there was a follow-up routine or a way to get better insight to the project to make sure that the policies are followed.

Most of Company E's scope 3 emission stems from the renovations and adaptations, the interviewee said they have been looking at methods in the market that could help them calculate the emissions from the renovations. The interviewee described that there is an automated tool that's been developed by one of their sectoral colleagues that can be used for calculating emissions. However, the interviewee described that the tool is project based which does not fit for Company E since it would become too expensive and when using the tool, the one who is using it needs engineering skills. The interviewee develops their thoughts around the tool and suggests that, if there was some sort of subscription rather than paying for each project, that could be interesting. The interviewee also mentioned that there have been internal discussions on how they could use and develop their existing internal systems for gathering data on emissions and reporting on emissions.

When asked how they are managing their emissions from their tenants the interviewee said that they sign electricity contracts from renewable energy for their

tenants. Since their real estate portfolio is outside Sweden, they can do this compared to Sweden where tenants can sign their own electricity contracts. The interviewee thinks this is positive because this means that they can control which electricity and energy is used in their buildings.

4.5.3 Challenges with Scope 3 Emissions Management

The interviewee elaborated on the scope 3 categories that they are reporting on right now and mentioned that they will report on waste from renovations and adaptations. The main challenge with this is the data collection from the entrepreneurs, especially since it is usually several different ones in one project, so trying to organise the data collection is seen as difficult.

4.5.4 Summary of Findings for Company E

To conclude, Company E engages in scope 3 because they want to prepare and future-proof their operations. To manage scope 3 emissions, they use different strategies and tools. The company do however think it can be challenging to collect data and to organise it. See table 8 below for summarised results.

Table 7. Summary of findings for company E

<i>Motivational factors to engage with scope 3 emission management</i>	Prepare and future-proof the business
<i>Management of scope 3 emission</i>	Spend based method Sign their own energy contracts Policies on material choices, but no follow up Uses secondary data to calculate approximations. Wants to be in alignment with market-trends, therefore sees what sectorial colleagues do
<i>Challenges (if any) with scope 3 emission management</i>	Data collection and organisation of the collected data
<i>Missing tools in the market</i>	Not expressed

4.6 Company F

Company F engages in acquisition, management, and development of properties (annual and sustainability report F). The company has a long-term target to become climate neutral by 2030 (ibid.). The company follow GHG Protocol and reports on the categories 6 and 13⁷, where category 13 represents the largest source of

⁷ 6. Business travel; 13. Downstream leased assets.

emissions (ibid.). The following section describes the empirical data drawn from the interview with Company F and information gathered from its annual and sustainability report.

4.6.1 Motivational Factors for Scope 3 Emissions Management

Company F reports on scope 3 because they feel it is their moral obligation to do so. The interviewee also said that Company F's employees take the sustainability question seriously and want to play their part.

“We are all aware of the climate changes and want to do our part”.

The interviewee also highlighted that the financial debt market, both the loan market and the bond market will develop and that they might not be able to finance properties that are not environmentally certified.

“We do not believe we will be able to finance “brown” buildings in the future, which is also a reason why we do this”.

4.6.2 Managing Scope 3 Emissions

Company F aims to be climate neutral in scope 1, 2 and 3 by 2030. To reach the goal, Company F has taken help from a consultancy company to develop a roadmap with an emphasis on energy efficiency and renewable energy. The interviewee said they were almost climate neutral in their own operation, i.e., scope 1 and 2 and that it would be a “walk in the park” to get there. The biggest challenge with the goal is to reduce the emissions in scope 3. Company F's management of scope 3 emissions is mainly directed toward their tenants as their tenants' emissions represent the Company's largest emission source in scope 3.

To reduce scope 3 emissions, the company is collaborating with their tenants. However, the interviewee said that they have different leases and that the type of lease determines how much Company F can affect their tenants. In most cases, the leases are designed so that the tenants have to pay for all their own expenses, such as waste, electricity, and water, but in some leases, the tenants manage their own capital expenditures, which means Company F can't force them to do anything.

The interviewee said that the leases are often very long and start with a 10-year lease that then usually is extended 3 times with 5 years at the time. Thus, this means that the leases are up to 25 years long making it hard to implement any changes. However, the interviewee highlighted that Company F makes changes wherever it is possible.

“Where we can make a change, we make a change and enter that they must buy renewable electricity, but as you can understand, it takes quite a long time before you have gotten through the entire contract. But we have to work together”

When asked if a company puts any pressure on the tenants or if they feel like they do not need to, the interviewee expressed that they feel that their tenants are very progressive so the need to put pressure on them is not always necessary.

However, the interviewee said that even though it will take time to renegotiate all the leases, they have chosen to not wait for their tenants, rather they want to be proactive and install the solar panels even if there is a possibility that the tenants do not want to buy that electricity, because if that is the case, they can still sell to the electricity grid. If the tenants, choose to use the installed solar panels this means that company F can offer renewable electricity for the tenants which would be positive for company F scope 3 emissions.

When asked if Company F has any demand on their suppliers and their tenants the interviewee described how they request what e.g., materials they would like to be used. The interviewee also said that they have an environmental policy that says which suppliers and partners Company F wants to work with, where Company F prioritises actors with high ESG profiles.

When asked about if the interviewee thinks that setting up scope 3 targets would make companies take scope 3 emissions more seriously the interviewee described that they think that companies will see the necessity in having plans and targets because they will not be able to finance their “brown” properties.

4.6.3 Challenges with Scope 3 Emissions Management

Since scope 3 emissions are outside of the company’s remit, the interviewee said that Company F can only discuss, encourage, and cooperate with their tenants to reduce scope 3 emissions which has been a challenge. Company F’s tenants have however been accommodating and taken this question very seriously.

“If we have had other tenants, they probably wouldn’t have been as interested in the issue”

4.6.4 Summary of Empirical Findings for Company F

To conclude, Company F engages in scope 3 because they feel it is their moral obligation to do so. They also highlighted that the financial market is evolving which pushes them to disclose more sustainable information. To manage scope 3, Company F uses different tools and strategies. The company feel however that it can be challenging to collaborate with their tenants which affects their way of reducing scope 3 emissions. See table 9 below for summarised results.

Table 8. Summary of findings for company F

<i>Motivational factors to engage with scope 3 emission management</i>	Moral obligation Evolving financial market
<i>Management of scope 3 emission</i>	Target of becoming climate neutral in scope 1,2,3 Consultants Climate Roadmap Collaboration with tenants Energy efficiency and renewable energy
<i>Challenges (if any) with scope 3 emission management</i>	Collaboration with tenants
<i>Missing tools in the market</i>	None, but it takes time to reduce scope 3 emissions

4.7 Summary of Empirical Findings

The interviews and the companies' annual and sustainability reports showed differences in why companies engage with scope 3 emissions, how they manage emissions in the value chain and what they see as challenging with scope 3. See table below for a list of summarised results and identified themes drawn from the empirical findings.

Table 9. Summary of empirical findings.

<i>Company</i>	<i>Motivation factors to engage with scope 3 emission management</i>	<i>Management of scope 3 emissions</i>	<i>Challenges (if any) with scope 3 emission management</i>	<i>Missing tools in the market</i>
<i>Company A</i>	Laws and regulations Market expectations Demands and regulations from the financial sector Will to make a change	Collaboration within the organisation Collaboration with suppliers Educating suppliers Demands on suppliers Dialogue with tenants: demanded tenants to sign green electricity contracts, sort and recycle their waste	Collect relevant data Companies are reporting on different categories	Environmental product declaration on each product they buy. Collaboration across sectors
<i>Company B</i>	Market expectations	Outside counsel Internal policies Collaboration with outside actors Long-term approach	Difficult to disclose a true picture.	Transparency True picture of scope 3 emissions

<i>Company C</i>	Market expectations. Regulatory guidelines. Demand from financial sector	Mapping scope 3 emissions Carbon budgets and life cycle assessments Communication with suppliers, tenants, customers, and consultants Customers influencing the building phase	Data collection The ambiguity of the definition of scope 3, there is a common understanding of scope 3 Companies use different definitions, and measurement techniques and are not equally transparent	Open solutions to able to share data in the whole value chain
<i>Company D</i>	Learning tool Communication tool	Has set a target of becoming climate neutral throughout the whole value-chain by 2035 Climate neutral roadmap Collaboration with suppliers and tenants and customers Reuse projects	Not discussed specifically	Data on indirect purchases
<i>Company E</i>	Prepare and future-proof the business	Spend based method. Sign their own energy contracts Policies on material choices, but no follow up Uses secondary data to calculate approximations Looks at sectorial sectoral colleagues	Data collection and organisation of the collected data	Not expressed
<i>Company F</i>	Moral obligation Evolving financial market	Target of becoming climate neutral in scope 1,2,3 Consultants Climate Roadmap Collaboration with tenants Energy efficiency and renewable energy	Collaboration with tenants	None, but it takes time to reduce scope 3 emissions
<i>Identified themes</i>	Market expectations Laws and regulations Demands from the financial sector	Internal management systems <ul style="list-style-type: none"> • Policies • Calculations • KPIs External management systems <ul style="list-style-type: none"> • Guidelines 	Data. Collaboration. Scope and boundaries with scope 3	Collaboration, cross-sectorial and within the value chain. Data sharing

Willingness to
make a change

- Tools
 - Collaboration
-

5. Analysis and Discussion

This chapter analyses the empirical findings and links it to the existing literature from the literature review and the theoretical framework. The chapter is structured around the research questions and the identified themes found in the empirical data.

5.1 What Motivates Swedish Real Estate Companies to Engage in Scope 3 Emissions Management

Previous literature has shown that companies engage in GHG emissions reporting due to various reasons such as stakeholder pressure, laws, and regulations but also to be aligned with norms and standards. The empirical data confirms these findings, as Company A to F expressed various reasons for disclosing information about scope 3. By identifying commonalities among the responses, it was feasible to categorise them into four distinct themes.

5.1.1 Market Expectations and Demands

Both Company B and C said they were reporting on scope 3 emissions because they are listed companies and thus are expected to do so. Company A also mentioned they were reporting on scope 3 emissions because they anticipate the market is expecting them to do it. Since scope 3 emissions are not yet mandatory for listed Swedish real estate companies, the driver for engaging in scope 3 can be drawn to the stakeholder theory, where the market acts as a stakeholder. According to Freeman, a stakeholder is “any group or individual who can affect or is affected by the achievements of the organisation's objectives” (Freeman, 1984, p. 56).

5.1.2 Laws and Regulations

The interviews also showed that several companies report on scope 3 emissions as they expect the regulatory landscape to evolve. To stay competitive in the market they must align with the norms and future proof their businesses as scope 3 emission reporting might be mandatory in the future. Company D said for example that they

report on scope 3 emission as practice for future mandatory reporting. Company C also mentioned they were reporting on scope 3 emissions because they report in accordance with GRI Universal Standards 2021, which means they must provide a materiality analysis illustrating topics where Company C has the most significant impact on the economy, environment, and people. According to the analysis, GHG emissions are one of the most material topics to Company C where scope 3 emissions stand for the largest share of the company total GHG emissions. These findings are thus in line with research conducted by Schulman, Bateman, and Greene (2021) who showed that laws and regulations push companies to report on GHG emissions which is supported by the institutional theory.

5.1.3 Demands from the Financial Sector

The interviewees at Company A, C and F also mentioned that the financial sector is putting demands on the real estate sector which pushes them to report and engage on scope 3 emissions. Company F highlighted for example that they will most likely not be able to finance brown buildings in the future, which is a reason why they do this. These findings can be drawn to Schulman, Bateman, and Greene's (2021) reasoning why companies engage in GHG emissions where they mentioned pressure from different stakeholders such as investors, consumers, and non-governmental organisations (NGOs) which is supported by the stakeholder theory.

5.1.4 Willingness to Make a Change and Contribute to a Sustainable Society

In addition to stakeholder pressure and upcoming laws and regulations, Company A and F also highlighted that they are reporting on scope 3 emissions because they want to make a change and contribute to a sustainable society. Company F mentioned that it is their moral obligation and that their employees are aware of the sustainability issues and want to make a change. Company D also highlighted that they are reporting on scope 3 as they see it as a communication tool to show their customers, they have taken the issue seriously and have started to act. These findings are in line with Tang and Demeritt (2018) findings who showed that companies engage in GHG practices to gain or extend legitimacy since they care about their reputation which is anchored in the legitimacy theory.

5.2 How do Swedish Real Estate Companies Manage Scope 3 Emissions?

The empirical data revealed that many Swedish real estate companies have set long-term target of becoming climate neutral in their entire operation, and that they have

come a long way in reducing emissions in scope 1 and 2, meanwhile scope 3 emissions are lagging. To reduce emissions in scope 1 and 2, companies use their internal sources and capacities, which can be drawn to the inside-out approach. However, to manage scope emissions, companies must collect data outside of their business and thus apply an out-side in approach. The empirical data revealed, however, that companies uses both internal and external systems to reduce scope 3 emissions, managing scope 3 emissions can arguably be seen a blended approach.

5.2.1 Internal Management Systems

The empirical data indicated that many Swedish real estate companies have committed to long-term targets of becoming climate neutral in their entire operation, encompassing scope 1, 2 and 3. However, none of these have established a specific reduction target or KPI on scope 3. According to the GHG Protocol Scope 3 Standard, companies are encouraged to set a business goal before accounting for their scope 3 emissions, e.g., to identify GHG reduction opportunities, set reduction targets, and track performance. However, setting a specific scope 3 reduction target is optional under the GHG Protocol.

Regarding the use of a KPI for scope 3 emissions, Company B expressed concerns about its volatility, as it would increase with new property development and remain stable during periods of inactivity. Company D acknowledge the value of a KPI on scope 3, but emphasised the importance of their appropriate usage, noting that benchmarking scope 3 KPIs between companies can be challenging due to variations in reporting. Interviewees C and D emphasised the need to explain why the KPI on scope 3 has increased or decreased. Company C said a KPI on scope 3 can be counterproductive, but it is important to encourage companies to map and report on their scope 3 emissions and to identify the activities that generate the largest negative climate impact to mitigate or try to limit those emissions. According to Crutzen, Zvezdov & Schaltegger (2017), targets and KPIs can be seen as formal management systems and thereby a way to manage scope 3 emissions. However, given the challenges with measuring scope 3 it is questionable whether a target alone can be used as an effective management system. The interviews revealed that many companies are still mapping their scope 3 emissions and that they lack precise figures, and that their scope 3 emissions will most likely increase. Consequently, many companies rely on a combination of their own data and standardised data to quantify scope 3. According to (Laine, Unerman & Tregidga, 2021; Hristov, Chirico & Ranalli, 2022) managers and decision-makers within the organisation need to have correct information available to steer the organisation towards becoming sustainable. Building on Laine, Unerman and Tregidga (2021) and Hristov, Chirico and Ranalli (2022) reasoning, this would mean that Swedish real estate companies must have exact information about their scope 3 emissions to

manage scope 3 emissions and achieve their long-term target. However, Company B said that it was important to think of scope 3 in a pragmatic way. It is possible to collect as much data as possible, but the essence is what to do with the data, where the interviewee said it was to make active choices to become more sustainable. These findings therefore differ somewhat from what previous research has shown.

To manage scope 3 emissions, several companies highlighted they have internal environmental policies and established roadmaps. Building on Zvedov and Schaltegger's definition of sustainability management control systems i.e., "all devices and systems that managers develop and use to formally and informally ensure that the behaviours and decisions of their employees are consistent with the organisation's sustainability objectives and strategies" (2017, p. 1293), policies and roadmaps can thus be seen sustainable control systems. In addition to roadmaps, Company C also said they were working with climate budgets and life cycle assessments to reduce their GHG emissions which also aligns with Zvedov and Schaltegger's definition of sustainability management control.

While decisions to report on scope 3 emissions, set targets, implement policies, create climate budgets, and conduct life cycle assessments are made internally and aligned with an inside-out approach, these efforts require external data or tools to fulfil their purpose. Drawing on the concept of the blended approach, it can be argued that environmental policies, targets, and climate budgets serve as a type of blended management control system since internal control systems rely on external data or tools to achieve their goal of reducing scope 3 emissions.

5.2.2 External Management Systems

As scope 3 emissions lie outside of the companies' direct control, they must implement systems that enable them to indirectly manage their scope 3 emissions. As mentioned above, companies in this study experience outside pressure to manage their scope 3 emissions. All companies in this study exhibit characteristics from the outside-in approach. To adjust to the external pressure that they are experiencing from their external stakeholders they have adjusted their internal resources to deal with the change in the external environment.

One way they have adjusted their internal capabilities is by adhering to GHG Protocol Scope 3 Standard. Company B highlighted however that the GHG Protocol is not modified for the real estate sector, which questions whether the guideline can work as a management tool or not. In addition to GHG Protocol Scope 3 Standard, the empirical data also revealed that some companies also are following Fastighetsägarna's guideline on scope 3 and are reporting in those categories that are most material according to the organisation. Lastly, one company also follows the United Kingdom's Green Building Council.

Beyond the implementation of reporting standards, which implies adjustments to internal capabilities, companies are also seeking solutions beyond their organizational boundaries to manage their scope 3 emissions. As mentioned earlier, combining the inside-out and outside-in approaches, or employing a blended approach, can generate spanning capabilities that may yield results not achievable by considering the approaches separately (Frau, Moi & Cabiddu, 2020; Urde, Baumgarth & Merrilees, 2013).

The study identifies various strategies employed by companies, with the most common being the implementation of strategies that combine the inside-out and outside-in approaches. This combination is achieved through different forms of collaboration, either with tenants or suppliers. Establishing inter-firm collaborations is regarded as crucial if a company aims to have a substantial sustainability impact (Dyllick & Muff, 2016). Furthermore, Frau, Moi, and Cabiddu (2020) emphasize the importance of company engagement at a sectorial or cross-sectorial level, enabling companies to exchange common methods and practices within the sector or along the value chain.

Collaboration with Tenants

Given the significance of inter-firm collaborations in determining the impact of a company's sustainability efforts, it is of interest to explore how Swedish real estate companies engage in collaboration with their tenants. Additionally, category 13, referred to as "Downstream leased assets" which encompasses tenants' electricity consumption, waste generation, and car usage, holds high relevance within the GHG Protocol Scope 3 Standard and Fastighetsägarna's scope 3 guidelines. Although it contributes significantly to the companies' scope 3 emissions, it is not the largest contributor.

All the companies participating in this study acknowledge collaborating with their tenants; however, the degree and nature of collaboration vary among the companies. The most commonly expressed strategy by the companies in the study is to demand or exert pressure on their tenants to adopt sustainability objectives and thereby reduce scope 3 emissions. This can involve requirements for tenants to sign green electricity contracts or utilize renewable energy sources, as well as offering waste recycling options. Company A explains that it is feasible for them to impose certain activities to mitigate their tenants' environmental impact, and they find it easier to engage in a two-way dialogue with tenants compared to communicating demands to suppliers. Similarly, Company E strongly desires its tenants to use renewable energy sources, driven by their real estate portfolio located outside Sweden, which allows them to sign electricity contracts on behalf of their tenants. Both Company A and E demonstrate characteristics where their sustainability

objectives extend beyond the organisational boundaries and are transferred to their tenants, albeit with varying degrees of collaboration in achieving these objectives.

Furthermore, construction, adaptations, and renovations of buildings for customers represent another significant source of scope 3 emissions for companies. The empirical findings reveal that several companies collaborate with or involve their tenants in the construction and renovation processes. Company C, for instance, includes tenants in the construction phase, which aligns with the co-creation approach as an innovative method, as they actively invite tenants to contribute to the design process. Thus, the co-creation spectrum can also be applied since the level of collaboration could be seen as higher which results in the influence of output and therefore also the result of the final product, in this case a building. Since many of Company C's tenants have their own sustainability agenda it comes naturally for their tenants to be a part and influence the construction phase. The collaboration between Company C and their tenants is particularly interesting because it showcases a two-way dialogue, facilitating the transfer of sustainability objectives between both parties.

Similarly, Company D engages with their tenants in the design process but specifically during the adaptation or renovation of buildings for their tenants. Company D recognizes the benefits of involving tenants in these processes. However, transferring the idea of emission reduction to tenants can be challenging, particularly when tenants prioritize the creation of new and modern office spaces. The level of collaboration between Company D and their tenants is not as pronounced as in the case of Company C. Nevertheless, by inviting tenants into the design process, Company D demonstrates efforts to transfer sustainability objectives to their tenants, thereby warranting the application of the co-creation spectrum. While the level of collaboration is higher than in a traditional business approach, the influence on output may not be as significant as observed with Company C.

Collaboration with Suppliers

Applying the same logic as above, inter-firm collaboration plays a crucial role, and the collaboration with suppliers is equally significant. Category one under the GHG Protocol Scope 3 Standard, known as “Purchased goods and services” and category two, referred to as “Capital goods” involve extensive interactions with suppliers and holds a high relevance according to Fastighetsägarna's scope 3 guidelines. Moreover, these categories represent the largest reported sources of emissions for all companies in the study, except for one company that does not report on these categories. Additionally, creating engagement at the sectoral level requires companies to modify shared methods and practices within the sector or along the supply chains (Frau, Moi & Cabiddu, 2020). From the empirical findings, two

methods of transferring sustainability objectives can be observed. The first method involves companies simply demanding specific requirements from their suppliers, while the second method entails educating suppliers to meet their demands.

The first method where the companies demand certain aspects to be fulfilled can be found in almost all the companies, but to a varying degree. Companies that impose specific requirements on their suppliers communicate desired material choices, often through their environmental policies. They may also value suppliers based on the extent to which they utilize recycled materials or follow circular material flow practices. Since renovations and adaptations contribute significantly to scope 3 emissions, imposing certain demands seems reasonable to reduce such emissions. However, Company E points out that while they have policies regarding material choices, there is no follow-up mechanism to ensure compliance with these policies, raising concerns about how to enforce adherence.

The second method, involving the education of suppliers to meet demands, is found only in Company A. While they do have certain demands for their suppliers and sub-suppliers, unlike the aforementioned companies, they also undertake the task of educating their suppliers on these demands instead of severing ties immediately. Company A emphasizes the importance of suppliers understanding and being able to comply with the demands, as it aligns with the company's interests. According to Dyllick and Muff (2016), the exchange of methods, practices, and the establishment of common rules and standards are essential for enhancing a company's sustainability impact. Company A exemplifies this by fostering a shared understanding with their suppliers. The willingness of Company A to educate and establish a relationship with their suppliers can also be linked to Prahalad and Ramaswamy's (2004) concept of co-creation, where the dialogue aspect is evident in the relationship between Company A and their suppliers. This approach emphasizes transparency and symmetrical access to information compared to the one-sided communication of the first method. This type of collaboration is observed in only one out of the six companies in the study, it does not represent the entire sample. However, most companies have acknowledged collaboration with both suppliers and tenants as an important aspect of reducing scope 3 emissions. Hence, it can be argued that although the second method is not widely seen in the sample, the first method remains a significant finding from the empirical results.

Both methods can be linked to De Koning, Crul and Renee (2016) spectrum of co-creation. However, it can be argued that the first method would fall under the traditional business approach, where the level of collaboration and the influence on output is lower. The second method would then fall under co-creation as a design method because there is a higher level of collaboration which affects the influence on the output. It could therefore be argued that the second method would be

preferable to the first method because, as mentioned above, more information will lead to a better designed outcome. And in the case of this study, it is implied that a high level of collaboration is a key aspect in value emission reduction i.e., scope 3 emissions reduction. However, this is not to say that the companies that exhibit the first method do not have that type of collaboration the second method entails, only that it was not explicitly found in the empirical material.

5.3 What are the Challenges with Scope 3 Emissions Management

The empirical data showed that companies experience challenges to manage scope 3 emissions where a majority raised the issue with data availability, data volume and data accuracy. For instance, Company C mentioned the struggle to collect data as some of their tenants and suppliers do not share their emission data with them. Company F acknowledged the limitations of their control over scope 3 emissions and highlighted their reliance on discussions, encouragement, and cooperation with tenants, which posed challenges. Company E also emphasised that it was challenging for them to get data from their entrepreneurs. Company A stressed that it had been much easier to calculate on scope 3 emission if all purchased products and services had an environmental products declaration (EPD). Company B underscored the need for transparency and the difficulty in providing an accurate representation of scope 3 emissions. They also highlighted the importance of the data's purpose, and the pragmatic handling of data, suggesting that standardized data should be combined with company-specific data.

The empirical data revealed that most of the companies are using a mix of their own data as well as standardised data to calculate their scope 3 emissions, meaning they are applying a combination of spend-based method and supplier-specific method. Additionally, several companies reported on one to six categories outlined in the GHG Protocol Scope 3 Standard. In addition to data, difficulties with scope, boundaries and responsibility allocation were mentioned. Company A said for example that companies were reporting on different categories and Company C raised the question of what components they should account for and what their responsibility is. These empirical findings are in line with previous research and articles who also have highlighted data, collaboration, ambiguity around the scope 3 concept as challenges.

Regarding tools to address scope 3 emission issues several companies stressed the importance of collaboration across sectors and open solution systems that enabled companies to share data between sectors. Company E mentioned for example, how they wish it was easier to use the tools that already exist in the market. Company A

had a similar idea to Company E's idea on developing already existing systems and elaborates on how they think it would have been easier to manage scope 3 emissions if the financial systems and other types of business systems worked together, e.g., that the supplier's business systems could link with the company's system and work together, thus making the emissions calculations more automated compared to what they are today. These ideas of collaboration and data sharing align with the blended approach and co-creation spectrum discussed by Frau, Moi, Cabiddu (2020) and De Koning, Crul, and Renee (2016) respectively. Furthermore, the notion of multiple controls and methods collaborating internally and externally resonates with the perspective of Lueg and Radlach (2016), who argue that methods that reinforce each other are necessary to address sustainability objectives effectively.

5.4 Critical Reflection

The research is subject to a few limitations. To start, the research only examined six out of the 27 listed Swedish real estate companies who have reported on scope 3 emissions. To get a complete picture of how Swedish real estate companies manage scope 3 emissions, a larger data set is required. Another limitation concerns the fact that the selected companies have different primary business operations, where some of the company's own, build and develop properties, while other companies only own buildings, meaning their scope 3 emissions is not equally comparable and thereby their way of managing them. However, the aim of the study was not to compare how Swedish real estate companies manage scope 3 emissions, but rather to examine how they do it. A third limitation with the study, concerns the fact that the empirical data is built on the Swedish real estate companies' point of view. To get a better understanding of how Swedish real estate companies manage scope 3, it would have been valuable to include the companies' tenants and suppliers in the study.

6. Conclusions

This chapter concludes the study's empirical findings. Furthermore, the chapter also discusses study's academic contribution and limitations and gives suggestions for future research.

6.1 Addressing Aim and Lessons Learned

The purpose of the study was to contribute with knowledge on the management of Green House Gas emissions in scope 3. The study deployed qualitative research methods within the real estate sector. This study shows that the approach to manage GHG emissions in scope 3 is through collaboration, where co-creation can be used to analyse the collaboration strategies with actors in the value chain. As scope 3 emissions goes outside of the company's organisational direct control, the research found that sustainability management control systems for scope 3 are insufficient unless the company do not collaborate with other actors. Previous research has shown that control systems are necessary for GHG emissions management. Our research thus goes beyond those assumptions and state that collaboration is the key to manage scope 3 emissions. It should, however, be noted that managing scope 3 emissions is a challenging task, and collaboration is also recognized as a major challenge in reducing emissions in this category.

6.2 Academic Contribution

Previous literature has mainly focused on why companies engage in GHG reporting and illustrated a lack of incompleteness in companies' scope 3 emissions reporting. This study therefore focused on how companies manage scope 3 emissions and why Swedish real estate companies engage with scope 3 emissions. By shedding light on those questions, this research has thus contributed with increased knowledge and extending the understanding of scope 3 emission management. The use of multiple case study also allowed us to get a deeper contextual understanding of scope 3 management.

It is worth noting that prior research on corporate GHG management mainly examined individual organizations as the primary unit of analysis. However, this study demonstrates that solely analysing organizations limits the understanding of managing GHG emissions in scope 3. Instead, the study emphasizes that effective management of scope 3 emissions necessitates collaboration and co-creation among organizations. Consequently, it is crucial to investigate and study scope 3 emissions management from a collaborative perspective.

Moreover, this study identifies the significance of incorporating the concept of co-creation to effectively manage GHG emissions. Co-creation helps address challenges identified in previous research, such as the risk of double accounting and the reduction of transactional costs. These aspects were highlighted in the introduction, emphasizing the importance of adopting co-creation as a strategy to overcome these challenges.

6.3 Future Research for a Sustainable Future

Building on insights drawn from the study and that scope 3 emissions reduction is a result of co-creation between the companies itself, its suppliers, and tenants, it would have been interesting to examine the cross-collaboration more in detail. A recommendation for future research is hence to examine how Swedish real estate companies' tenants and suppliers work with scope 3 emissions and see if they have the same perception as the Swedish real estate companies has. Additionally, it could be of interest to examine the collaboration strategies in a company's value chain in more detail through a co-creation perspective since this study only has looked at the strategies from a superficial level and looking at the results it was one of the main challenges that companies expressed.

Due to the methodological choices, this study has only looked at listed companies on Nasdaq Stockholm companies that have reported on their scope 3 emissions. The results of the study showed that one reason for reporting on scope 3 emissions was market expectations and it could therefore be interesting to see if the motivations differ from the listed companies and how they are managing their scope 3 emissions.

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Popular Science Summary

The real estate industry accounts for a large proportion of the global GHG emissions, with most of the emissions coming from scope 3. While several companies are reporting on scope 1 and 2, previous literature has shown that scope 3 emissions are underreported. Scope 3 emissions are however voluntary to report on under the GHG Protocol, this thesis therefore examined six Swedish real estate companies who have chosen to report on scope 3 emissions, aiming to understand their motivations, management approaches, and the challenges they face.

The empirical data revealed that companies report on scope 3 emission because of various reasons, but the primary factors that could be drawn from the study were market expectations, anticipated laws, and regulations, demands from the financial sector and willingness to make a change for the society.

Building on the research results, a majority of the Swedish real estate companies are still mapping their scope 3 emissions and use a mix of their own data and standardised data to measure their scope 3 emissions. Since many companies have not fully quantified their scope 3 emissions, some of the interviewees highlighted that it is difficult to present a true picture of their scope 3 emission.

To reduce scope 3 emissions, companies employ internal management systems such as policies, calculations, and key performance indicators (KPIs), as well as external management systems such as guidelines and tools. However, the effectiveness of these control systems depends on collaboration with other stakeholders in the value chain. This case study highlights that companies strive to collaborate extensively with tenants and suppliers to manage scope 3 emissions. Nonetheless, data availability and cross-collaboration emerge as significant concerns in addressing scope 3 emissions. As scope 3 emissions cut across organizational boundaries, effective management requires new approaches and enhanced collaboration among companies and other value chain actors.

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Appendix 1.

Appendix 1 shows the Scope 3 categories, upstream and downstream stated in the “GHG Protocol Corporate Value Chain, (Scope 3) Accounting and Reporting Standard” (WRI & WBCSD, 2011), the last column to the right states the relevance of the scope 3 categories stated in the “Rapportering av utsläpp i Scope 3 för fastighetsägare” (Fastighetsägarna, 2022).

<i>Upstream or Downstream</i>	<i>Scope 3 Category</i>	<i>Category Description</i>	<i>Relevance for real estate companies</i>
Upstream scope 3 emissions	<i>1. Purchased goods and services</i>	Extraction, production, and transportation of goods and services purchased or acquired by the reporting company in the reporting year	High
	<i>2. Capital goods</i>	Extraction, production, and transportation of capital goods purchased or acquired by the reporting company in the reporting year	High
	<i>3. Fuel and energy-related activities (not included in Scope 1 or Scope 2)</i>	Extraction, production, and transportation of fuels and energy purchased or acquired by the reporting company in the reporting year.	Medium
	<i>4. Upstream transportation and distribution</i>	Transportation and distribution of products purchased by the reporting company in the reporting year between a company’s tier 1 suppliers and its operations (in vehicles and facilities not owned or controlled by the reporting company). Transportation and distribution services purchased by the reporting company in the reporting year, including inbound logistics, outbound logistics (e.g., of sold products), and transportation and distribution between a company’s own facilities (in vehicles and facilities not owned or controlled by the reporting company).	Low
	<i>5. Waste generated in operations</i>	Disposal and treatment of waste generated in the reporting company’s operations in the reporting year (in facilities not owned or controlled by the reporting company).	Low
	<i>6. Business travel</i>	Transportation of employees for business-related activities during the reporting year (in vehicles not owned or operated by the reporting company).	Medium
	<i>7. Employee commuting</i>	Transportation of employees between their homes and their worksites during the reporting year (in vehicles not owned or operated by the reporting company).	Low
	<i>8. Upstream leased assets</i>	Operation of assets leased by the reporting company (lessee) in the reporting year and not included in Scope 1 and Scope 2 – reported by the lessee.	Low

<i>Downstream</i>	<i>9. Downstream transportation and distribution</i>	Transportation and distribution of products sold by the reporting company in the reporting year between the reporting company's operations and the end consumer (if not paid for by the reporting company), including retail and storage (in vehicles and facilities not owned or controlled by the reporting company).	Not relevant
	<i>10. Processing of sold products</i>	Processing of intermediate products sold in the reporting year by downstream companies (e.g., manufacturers).	Not relevant
	<i>11. Use of sold products</i>	The end use of goods and services sold by the reporting company in the reporting year	Medium
	<i>12. End-of-life treatment of sold products</i>	Waste disposal and treatment of products sold by the reporting company (in the reporting year) at the end of their life.	Low
	<i>13. Downstream leased assets</i>	Operation of assets owned by the reporting company (lessor) and leased to other entities in the reporting year, not included in Scope 1 and Scope 2 – reported by the lessor.	High
	<i>14. Franchises</i>	Operation of franchises in the reporting year, not included in Scope 1 and Scope 2 – reported by the franchisor.	Medium
	<i>15. Investments</i>	Operation of investments (including equity and debt investments and project finance) in the reporting year, not included in Scope 1 or Scope 2.	Low

Appendix 2.

Below is the interview guide that was used during the semi-structured interview with the companies in the study. The original interview guide was written in Swedish.

Introduction

Thank the respondent for taking the time to participate in this interview.

Short introduction of us, the background of the interview and the plan for the coming interview.

Ask if we can record the interview.

Explain how the respondent's answer will be processed.

- Can you please tell us about yourself, your position at the company and how long you have been working there?

Motivation factors to scope 3 emissions management

- Why have you chosen to report on scope 3 emissions?

Management of scope 3 emissions

- How do you manage your scope 3 emissions?
 - Internally
 - Reporting? Measurements? KPIs/targets?
 - Choice of suppliers? Supply chain policies?
 - Externally
 - How do you work with your suppliers to reduce your scope 3 emissions?
 - How do you work with your tenants to reduce your scope 3 emissions?

Challenges with scope 3 emissions management

- What (if any) are the challenges with scope 3 emissions management?

End of interview.

Thank the respondent for their time.

Explain again how the answers will be processed.

Explain that the respondent has the right to be anonymous if they wish to be.

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