



INTEGRATION OF EMISSION REDUCTION-PROFITABILITY TRADE-OFF TO STRATEGIC MANAGEMENT

Original equipment manufacturer in the heavy material handling industry

Lappeenranta–Lahti University of Technology LUT

Industrial Engineering and Management, Master's Thesis

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Examiners: Professor Timo Kärri

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ABSTRACT

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This thesis examines how carbon (CO₂) emission reductions can be integrated into strategic management of a global manufacturing company in a meaningful manner that takes profitability into consideration. The thesis focuses especially on the strategic planning process and strategic decision making aspects while also taking the critical role that leadership plays in supporting the integration. The thesis comprehensively gathers information from literature and industry experts to gain best practices for the Focal Company.

The thesis uses a qualitative research approach to answer the research questions. The thesis begins by addressing these questions and with other background information. Following, is a comprehensive literature review, which focuses on strategic planning, strategic decision making and emission reduction integration to these as well as role of leadership in this. Additionally, a single-case study was conducted in a form of semistructured interviews with Focal Company's internal employees and with external experts. The research questions are addressed by comparing the results of the interviewees with existing literature, and then the conclusions are drawn to highlight the main takeaways of the study.

The thesis highlights that integrating emission reductions into strategic management is complex but essential for a company's long-term success. Meaningful integration requires refining strategic planning processes, integrating decision making tools that balance emissions and financial outcomes, strong leadership and change in corporate culture to make emission reduction thinking a new norm. Without these elements, efforts risk being ineffective. For the Focal Company, this thesis presents a tailored path forward by leveraging best practices, addressing internal barriers, and establishing clear roles and metrics.

TIIVISTELMÄ

Lappeenrannan–Lahden teknillinen yliopisto LUT

LUTin insinööritieteiden tiedekunta

Tuotantotalous

Rosa Lindkvist

Päästöjen vähentämisen ja kannattavuuden tasapainottelun integrointi strategiseen johtamiseen

Alkuperäinen laitevalmistaja raskaan materiaalin käsittely alalla

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Tässä diplomityössä tarkastellaan, miten hiilidioksidipäästöjen (CO₂) vähentäminen voidaan integroida globaalin teollisuusyrityksen strategiseen johtamiseen tavalla, jossa myös kannattavuus otetaan huomioon. Työ keskittyy erityisesti strategiseen suunnitteluprosessiin ja strategiseen päätöksentekoon, jonka lisäksi johtamisen kriittistä roolia osana integraatiota tarkastellaan. Työssä kerätään kattavasti tietoa kirjallisuudesta ja alan asiantuntijoilta, joiden tavoitteena on selvittää parhaat käytännöt kohdeyritykselle.

Diplomityössä käytetään kvalitatiivista tutkimusmenetelmää tutkimuskysymyksiin vastaamiseksi. Opinnäytetyön alussa käsitellään nämä kysymykset ja muuta taustatietoa. Sen jälkeen seuraa kattava kirjallisuuskatsaus, jossa keskitytään strategiseen suunnitteluun, strategiseen päätöksentekoon ja päästövähennysten integrointiin näihin, sekä johtajuuden rooliin tässä muutoksessa. Lisäksi dataa kerättiin puolistrukturoitujen haastattelujen muodossa kohdeyrityksen sisäisten työntekijöiden sekä ulkopuolisten asiantuntijoiden kautta. Tutkimuskysymyksiin vastataan vertaamalla saatuja haastattelutuloksia olemassa olevan kirjallisuuden kanssa. Lopuksi työn keskeiset havainnot tiivistetään.

Työ osoittaa, että päästövähennysten kytkeminen strategiseen johtamiseen on haastavaa mutta välttämätöntä yrityksen pitkän aikavälin menestykselle. Integrointi edellyttää strategisten suunnitteluprosessien uudelleen suunnittelua, päästöjä ja taloudellisia lukuja tasapainottavien päätöksentekotyökalujen integroimista, vahvaa johtajuutta sekä yrityskulttuurin muuttamista sellaiseksi, jossa päästökysymykset ovat arkea. Ilman näitä, tehdyt ponnistelut ovat usein tehotomia. Kohdeyritykselle työ esittää räätälöidyn polun eteenpäin hyödyntämällä parhaita käytäntöjä, puuttamalla sisäisiin esteisiin ja määrittämällä selkeät roolit sekä mittarit.

ABBREVIATIONS

BSC Balanced Scorecard

SBSC Sustainable Balanced Scorecard

R&D Research and Development

ICE Internal Combustion Engine

LCA Life Cycle Analysis

CEO Chief Executive Officer

CFO Chief Financial Officer

LRP Long-Range Plan

IEA International Energy Agency

M&A Merger and Acquisition

MAC Marginal Abatement Cost

P&L Profit and Loss

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1 Introduction

This chapter presents the background, research problem, objectives, research questions, limitations and methodology of the thesis. After reading this chapter, the reader should have a clear understanding of the topic, objectives, limitations, and overall structure of the thesis.

1.1 Background and Research Problem

Sustainable development was defined in 1987 by the United Nations (UN) as meeting the needs of the present without compromising the ability of future generations to meet their own needs (Brundtland 1987). This definition can be seen to be one of the starting points of sustainability as it is perceived today. After this, there have been tremendous amounts of new definitions, frameworks, and regulations, all aiming to promote sustainable development.

As the population constantly grows while also the standard of living increases consistently, natural resources are under more and more pressure at all times. Increased material and energy usage has driven tougher legislation and sanctions. (Despeisse et al. 2012). Carbon dioxide emissions sit at the core of sustainability issues (Changsong et al. 2023). Hence, the UN, the European Union (EU) and individual counties have implemented carbon emission reduction targets for upcoming years. In addition to these, numerous other initiatives and regulations have been introduced to improve transparency and encourage companies toward green transition, such as the Paris Agreement, the EU Taxonomy, the Sustainable Finance Disclosure Regulation (SFDR), and the Corporate Sustainability Reporting Directive (CSRD). (Ibishova, Misund & Tveterås 2024).

Businesses face a hard yet vital problem of implementing sustainability into the core of their business operations. It is seen that for a company's long-term success, sustainability needs to be incorporated into their business. (Hart & Milstein 2003). Yet for many companies, ways on how to do it are still missing (Despeisse et al. 2012).

Overview of the Focal Company

Focal Company is a global manufacturer of heavy material handling equipment. They are operating in over 120 countries and have 5207 employees. They are a publicly traded company in OMX Helsinki and in 2024 they generated 1.72 billion euros of sales and are a Large-cap company. They operate in marine terminals, distribution centers, manufacturing, and heavy logistics for which they provide equipment, parts and services, and automation and robotics solutions.

The Focal Company operates through five divisions, each responsible for managing its own operations, R&D, and sales, while functions such as HR, finance, marketing, sourcing, and legal are centrally led but with strong divisional ownership. In contrast, sustainability, strategy, and technology are fully centralized and shared across all divisions. The organizational structure of the Focal Company is illustrated in Figure 1.

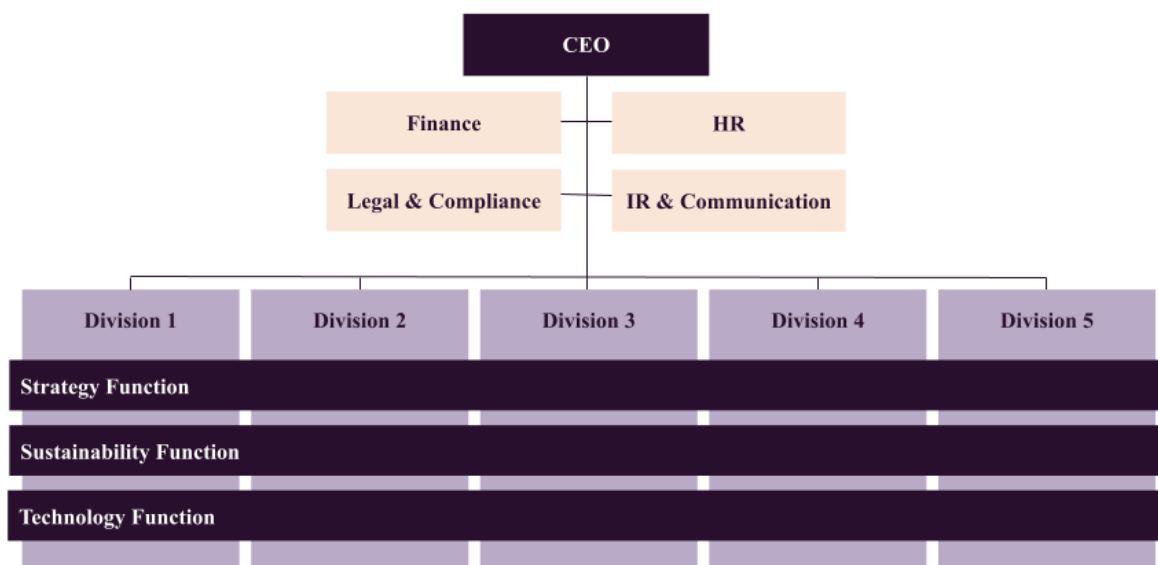


Figure 1. Organizational structure of the Focal Company

Each division has its own leadership team, reporting to the President of the division, who is also a member of the Focal Company's corporate leadership team. These divisional leadership teams typically include representatives of functions that are primarily managed within the division, such as operations, R&D, and finance. Centralized functions (strategy, technology, and sustainability) are governed at the corporate level, although divisions collaborate closely in implementing related initiatives. Hence, divisional leadership teams do not usually include dedicated representatives for these functions. However, there are

exceptions to this: one division has a sustainability representative in its leadership team, and another division has its own strategy representative in its leadership team. Additionally, the sustainability function has recently appointed specific team members to be responsible for each division. This model is still evolving and is in the process of being formalized in terms of governance.

The Focal Company has announced their commitment to sustainable and profitable growth. They have three strategic focus areas which include technology led growth, service growth, and processes and internal efficiency improvements. They are committed to the Science Based Targets initiative (SBTi) of limiting the rise of global temperature to 1.5°C. They have listed for their own 2030 targets carbon neutrality in their own operations (Scope 1 & 2), and 40% reduction from 2023 in Scope 3 CO₂ emissions which include emissions from both upstream activities (such as purchased goods and services) and downstream activities (such as the use of sold products by customers). As the Focal Company is a heavy material handling manufacturer, most of their emissions are coming from their use of their equipment in the customer end (Fig. 2).

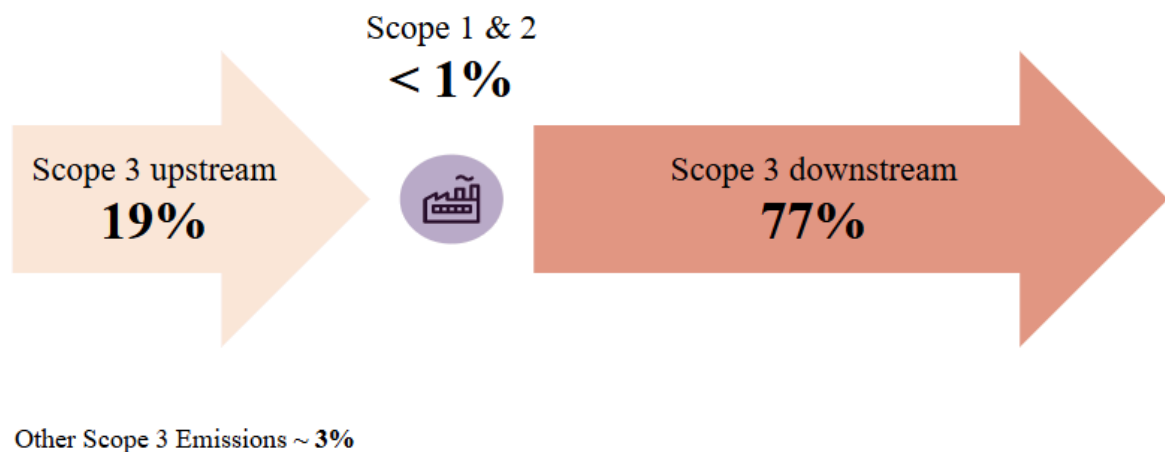


Figure 2. Focal Company's emission sources

As major part of their emissions are coming from Scope 3 downstream one of their key strategic focuses is electrification of their equipment. Additionally, they also reduce emissions through for example their own operations and sourcing. As of 2024, 41% of their sales come from eco-portfolio sales, which includes electric and hybrid equipment and services related to the circular solutions.

1.2 Objectives and Research Questions

This thesis primarily aims to find ways carbon emission reductions can be implemented into the strategic management of the Focal Company while considering profitability. The thesis also aims to add generalizability to the results and understand the phenomenon from a wider perspective by using literature review and benchmarking as research methods. More specifically, emission reduction integration is studied from strategic planning process, and strategic decision making perspectives. Additionally, the role of leadership in this change was delved into. The goal of the Focal Company is to find ways they could effectively deepen their emission reduction integration into these processes while maintaining profitability.

In order to understand the relationship between profitable growth and emissions the following research questions are presented:

- *How can emission reduction be integrated into the Focal Company's strategic planning process?*
- *What are the most effective ways emission reductions and profitability can be balanced in the Focal Company's strategic decision making?*
- *What role does leadership play in the integration of emission reductions into the strategic management processes?*

The first research question aims to understand how emission reduction perspective could be integrated more in-depth into the Focal Company's strategic planning process. To understand this, the current practices need to be understood. Then, from the external best practices and literature, can the most fitting practices be picked for the Focal Company to implement. Ultimately, the goal is for the Focal Company to have deeper emission reduction integration in their strategic planning process than it is currently.

The second question delves into strategic decision making specifically. Here, the aim is to understand the best and most effective ways the Focal Company could implement emission reductions into their strategic decision making, while also keeping the focus on profitability of the company. By discovering the best practices, tools, and processes from

external experts and literature, this question provides the Focal Company with valuable knowledge on how their strategic decision making process could be improved.

Finally, the third question focuses on the role of leadership in driving this kind of change within an organization. This question aims to understand how the leadership team of a company can support this change the best. This provides valuable insights as the strategic management process and strategic decision making mainly lie in the hands of the top management of companies.

1.3 Methods and Data

The thesis is carried out by using a qualitative research approach which includes literature review and empirical study. The literature review provides an in-depth understanding of the existing frameworks, research, and knowledge relevant to the topic of the thesis. It involves identifying pertinent studies, concepts, and methodologies, while also establishing the significance and relevance of the empirical study within the broader academic context.

Literature review is followed by the empirical study. The empirical study is based on interviews from the Focal Company presented before and from external experts. The internal interviews focused on mapping out the current practices of the Focal Company but also to gain insights on issues and suggestions from the internal interviewees. The external interviews, on the other hand, focused on gaining best practices from industry leading companies regarding emission reduction integration into internal processes. The questions in the interviews are formatted to meet the needs of the Focal Company but also to complete the literature review. Moreover, the interviews were planned in a way that supports the research questions as they delved into the subject from the perspective of the Focal Company and the external experts while relying on the theoretical framework. The data and methodology described above are explained and justified in more detail in chapter 3.

1.4 Structure and Limitations

This thesis consists of six chapters. The thesis structure and chapters are illustrated in Figure 3. The first chapter establishes the background context, the objectives, research questions, methods used, and scope of the thesis, and introduces the Focal Company. The

second chapter presents the theoretical framework and best practices from literature in detail. This is established by literature review and synthesis of the gathered theories. The third chapter introduces the methodology and data used to conduct the empirical study. This chapter presents how the research is done and how the interviews are conducted. The chapter explains and verifies the methods selected and used in this thesis. The fourth chapter presents the results of the empirical research by analyzing the interview data. The fifth chapter discusses the empirical findings and compares them to the relevant literature. There also theoretical contribution, managerial implications, reliability, and future research topics are discussed. Finally, the sixth chapter concludes the thesis and discloses the main takeaways.

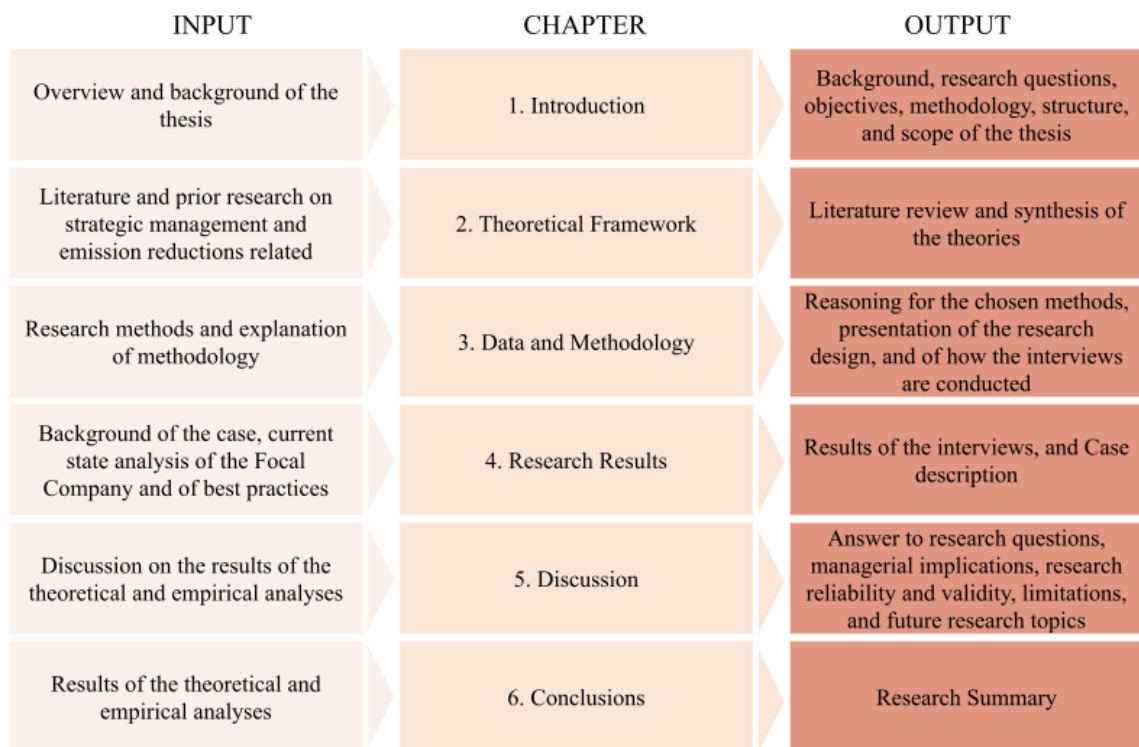


Figure 3. Structure of the thesis

The thesis focuses on examining emission reduction integration to strategic management in the limits of what is relevant for the Focal Company. The thesis does not focus on how to implement emission reductions into the strategy of a company or the implementation of the emission reduction strategies, as the Focal Company already has these executed. The thesis focuses specifically on CO₂ emissions and does not consider other greenhouse gases or pollutants. Accordingly, the terms carbon emissions and emissions are used throughout the thesis to refer to CO₂ emissions unless otherwise noted. More specifically, the focus is on

CO2 emission reduction perspective rather than for example CO2 compensation. Also, investment decision considerations are not at focus, as it is its own category of decision making and would require its own deep research.

2 Theoretical framework

This chapter provides a holistic understanding of strategic management and emission reduction integration. To do that, the strategic management is sectioned to the strategic planning process and decision making separately. The chapter begins by defining basic concepts like strategic management, planning, and decision making, and how they are perceived by literature. Also, the role of leadership in strategic planning is addressed. The second part of the chapter starts by delving into the emission reduction perspective of strategic planning and decision making, and the role of leadership in driving this change.

Conceptually, strategic management is addressed as processes involving strategic planning and decision making whereas leadership is addressed as the human and behavioral dimension that enables and drives these processes. In this thesis, the term “leadership team” is used to refer to the executive team, aligning with the vocabulary commonly used within the Focal Company.

2.1 Introduction to Strategic Management

Strategy means a pattern of purposes, policies, programs, actions, decisions, and resource allocations that define what an organization is, what it does, and why it does it. To simplify, it is how an organisation competes (Abraham 2012, 10). Strategies can differ based on the organizational level, function, and time frame. (Bryson 2016). Strategic management withholds everything a company does regarding its strategy. It includes the steps of strategic planning as well as the implementation process of the strategy. Strategic planning is a process, consisting of various steps, aiming to develop a strategy to achieve its strategic objectives. Strategic decisions set guidelines for how an organization interacts with and responds to its external environment (Harrison 1996). Strategic decisions are mainly made as a part of the strategic planning process. (Abraham 2012, 10–13).

2.1.1 Strategic Planning

Strategic planning is a structured, action-oriented, and forward-looking approach to defining an organization’s direction, aligning its actions with its mission, and responding to external and internal challenges. It aims to find the best possible fit between the

organization and its resources and environment. It is driven by the leadership teams of organizations. While various strategic planning models exist, they share several common elements, such as environmental analysis, stakeholder involvement, issue identification, strategy formulation, implementation, and continuous assessment (Haines 1995; Poister & Streib 1999; Abraham 2012; Bryson 2016). Figure 4 represents a comprehensive, step-by-step strategic planning framework that synthesizes the essential aspects of multiple theories while maintaining a logical and iterative process.



Figure 4. The ten steps of the strategic planning process

The strategic planning process begins with establishing a consensus among key decision makers regarding the need for strategic planning, its scope, key steps, objectives (Bryson 2016), and identification of potential barriers to the strategic planning process (Haines 1995, 19–20). The process often feeds from the outcomes of the previous year (Bryson 2016). In the second step, organizations must identify formal and informal mandates placed on the organization. These can be regulatory requirements or investor or customer expectations for example. (Bryson 2016). The third step includes an assessment of the organizational vision, mission and values with tools such as stakeholder analysis. The step aims to create an ideal vision of the future and this way sets a clear direction for the strategic planning. (Haines 1995, 26; 29; 34; Bryson 2016). In the fourth step, external and internal analyses are conducted to support the strategic planning (Poister & Streib 1999).

The assessment should include understanding the political, economic, social, technological and physical environments the organization is operating in as well as the organization's stakeholder groups and financial results. SWOT, PESTEL, Stakeholder and Competitor Analyses, and Balanced Scorecard can be useful tools in this step as well as measuring customer and employee satisfaction. The analysis should include the right people around the organization to ensure that the analysis is as accurate as possible. (Haines 1995, 39; Bryson 2016). The external analysis includes industry, competitive, market, and environmental trends analyses. The internal analysis includes financial and a company analysis. (Abraham 2012, 2–3). In the fifth step the most stressing strategic issues are identified. Strategic issues are critical challenges affecting the organization's mandates, mission, and values, such as products or services, clients, costs, financing, organizational or managerial issues. (Poister & Streib 1999; Abraham 2012, 3; Bryson 2016). In the sixth step, based on the strategic issues identified in the previous step, strategic alternatives are discovered (Abraham 2012, 3). To bridge the gap between the future vision and the current state, strategies should be tried to narrow down to 3-7 core strategies (Haines 1995, 45). Then the strategic choice is made by analyzing the alternatives, using criteria, and arguing for the best alternative (Abraham 2012, 3). In this step strategic plans should be done for short and long term. The short term plan often covers the upcoming year and long term plans the next three to five years. The plans should outline strategic objectives, actions, necessary resources, assigned responsibilities, schedules, and performance metrics. It should also specify key indicators that signal when action is needed and backup plans to address potential challenges or unexpected changes. (Haines 1995, 49–50; Abraham 2012, 4). Lastly, before moving on, the decisions of the strategies need to be verified by the top management (Bryson 2016). In the seventh step, budgeting for the upcoming year is aligned with the selected strategic short term plans. Good budgeting should follow, not lead, the strategic annual planning (Haines 1995, 49–50). As setting the vision, mission, and value statements in-depth and forming them well is recognized as one of the most important success factors in strategic planning (Haines 1995, 14), they are revisited in the eighth step. Here, based on the chosen strategies, the initial mission, vision and values are formatted and aligned into a final version. The vision should describe what the successful implementation of strategies and fully achieved potential would look like. This step should be done together with the top management of the company. (Poister & Streib 1999; Bryson 2016). In the ninth step, an effective implementation plan is created. Implementation of the

strategy should be planned together with the top management as well as with the leaders in different functions of the organization. The implementation plan should include roles and responsibilities, expected results, schedules, specific steps, resource allocation, communication plan, monitoring process and accountability procedures. (Bryson 2016). Especially the role of well-planned communication is vital in the implementation phase (Haines 1995, 62). In the final step, once the implementation is completed, the strategies should be monitored and assessed as the time goes. (Haines 1995, 69; Bryson 2016). There should be an annual strategic review and update where the success of the strategic plan and implementation is assessed and changes in the operating environment are reacted to. This means updating the annual priorities and the implementation if needed. (Haines 1995, 70).

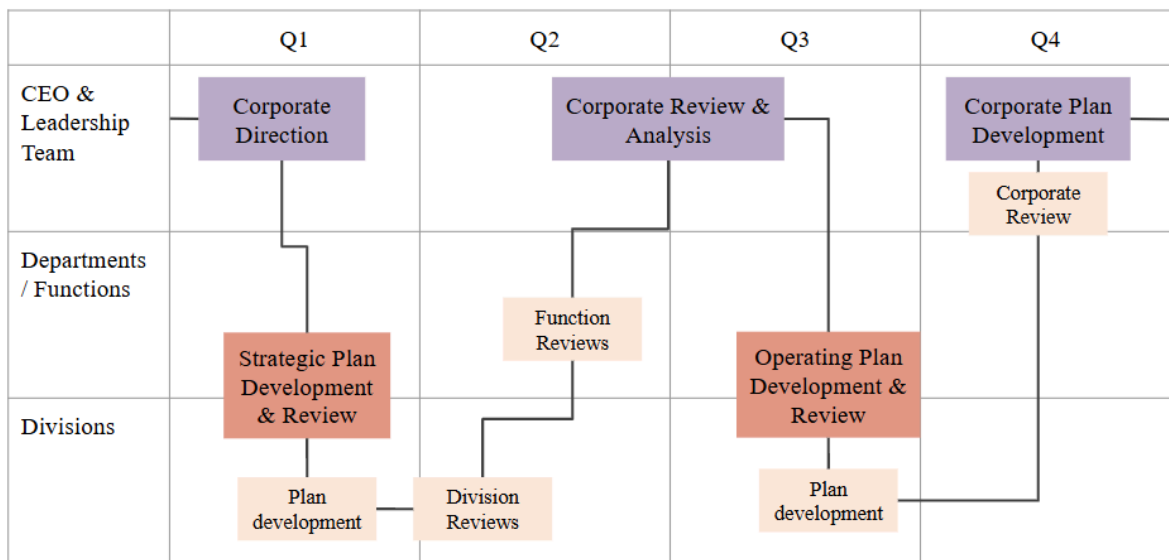


Figure 5. Annual Strategic Planning Process, according to Bryson (2016).

As stated before, the strategy planning process is an iterative process that goes through different organizational levels. Based on the process presented above and Bryson (2016), the process can be illustrated in a diagram that breaks it down annually and quarterly, as shown in Figure 5. This model is closer to the planning process organizations use in their operations in reality.

Success factors in Strategic Planning

Strategic planning is a multi-step process that requires a systematic approach to ensure success. Given its complexity, the process is vulnerable to failure if not executed systematically. Common pitfalls include failing to define ideal future vision from the start

or not analyzing vision, mission, and value statements in-depth and forming them too shallow, overcomplicating the process, not including all organizational levels needed in the planning process, keeping it separate from operational activities, ineffective or nonexistent implementation plan or not implementing at all, playing it too safe and not considering all the options, incorrect performance metrics, conducting only long range financial forecasting, or not taking external factors such as competition into account. (Haines 1995, 14).

A well structured strategic planning aligns goals, establishes quantifiable measures to identify success, involves stakeholders, and enhances adaptability to changing business environments (Haines 1995, 12). To maximize effectiveness and organization-wide engagement for the agenda, organizations should engage representatives from various levels of the organization in the planning process (Haines 1995, 4; Poister & Streib 1999). To ensure that budgets and action plans are cascaded to the functional teams, should they be involved in the process tightly (Haines 1995, 6).

Beyond the planning process, poor implementation has been seen to have even greater influence on failure of a strategy than for example lack of clear or viable vision. Implementation has to be planned, carried out and monitored to ensure the success of a strategy. Since strategy implementation is not solely dependent on the leadership team, who has been tightly involved during the planning process, effective communication must be a central focus from the early stages of implementation. (Rummler & Brache 2013, 81).

Incentives

Measurement systems is a part of the tenth step of the strategic planning process. Consequently, measurement is not only essential for managing an organization and guiding its strategy but also plays a key role in motivating employees in their work. To be effective, every individual's goals should be directly linked to their job outputs and aligned with the organizational level goals, which are defined in the strategy. When individual goals are well-defined, they contribute to both personal development and performance improvement while also serving as a basis for rewarding achievements. (Rummler & Brache 2013, 65–66; 184; 206). Building on this, incentives and reward systems are crucial for reinforcing desired behaviours and driving performance. Properly designed incentives not only recognize employee achievements but also guide actions toward strategic outcomes.

These rewards can be tied to financial performance, sustainability goals, safety targets, or other key organizational objectives. However, for incentives to be effective regarding organizational performance, they must be closely aligned with the organization's mission, vision, and overall strategy (Kurittu & Rankinen 2023, 106–107). Equally important is ensuring that the incentive structures do not unintentionally promote counterproductive behaviors or create conflicts between different objectives. Moreover, while financial rewards can be motivating, overemphasizing pay-for-performance risks diminishing intrinsic motivation. Striking the right balance is essential to maintaining a healthy, engaged, and high-performing workforce. (Epstein & Buhovac 2014, 147).

Setting incentives for the executive level is especially difficult, because it has been found that they often prefer short-term results rather than long term even if the reward for the latter would be higher. Therefore the board of directors need to build executive level incentives in a way that rewards management for increasing shareholder value, ensuring that company leadership remains focused on the long-term interests of investors and stakeholders (Flammer, Hong & Minor 2019).

The Role of Leadership

The board of an organization should provide strategic guidance to ensure the organization's growth and prosperity, and ensure accountability of the organization to its stakeholders, including shareholders, employees, customers, suppliers, regulators, and the community. It should also ensure that a highly qualified leadership team is managing the organization. These guide the overall direction and strategy of an organization. (Epstein & Buhovac 2014, 68). The board of directors monitor and advise the leadership team to ensure that they are making decisions in a way that is consistent with the organisational objectives (Eccles, Ioannou & Serafeim 2014).

The role of the leadership team is undeniable in strategic management. As strategic decisions set the guidelines for the entire organization, the leadership team naturally holds the responsibility for making such decisions (Harrison 1996; Elbanna 2006). The leadership team is responsible for shaping the organization's vision, setting strategic goals, and ensuring effective decision-making. They oversee operations, allocate resources, and develop policies that guide the organization toward long-term success. Additionally, they build and maintain relationships with stakeholders, foster a positive and innovative work

culture, and motivate employees to achieve common objectives. Additionally, they oversee operational activities and continuously reflect the positioning of the organization with external disruptions. Ultimately, the leadership team's commitment to strategy formulation, execution, and assessment is essential for sustainable growth and long-term success. With the authority to determine the organization's course — whether bold and disruptive or cautious and stable — they also bear the responsibility for its overall success. (Jabbar & Hussein 2017).

Although as stated above, the leadership team has a major role in strategic management of an organization, it is worth noting that a wide range of organizational levels needs to be engaged in the strategic management processes to ensure their execution. The strict top-down management rarely works efficiently in today's business environment. (Haines 1995, 4).

2.1.2 Strategic Decision Making

Strategic decision making is at the core of almost every company and has long been a central topic of discussion regarding strategic management (Rahman & De Feis 2009). Strategic decisions are often complex entities made for shorter and longer terms with influences of different stakeholders. Strategic decisions are made constantly in organizations and especially within the strategic planning process (Abraham 2012, 10).

What a strategic decision means for a company can differ between industries (Elbanna 2006). A strategic decision can be identified and made based on key criteria: It must define the organization's relationship with its environment while considering the organization as a whole as the unit of analysis. It should cover all major functions within the organization and provide structured guidance for administrative and operational activities. And lastly, a strategic decision must be critically significant to the long-term success of the organization. The challenge comes from combining the organization's capabilities with the most significant external factors. With the right strategic decision, the company can move from their current strategic positioning to their desired strategic positioning. (Harrison 1996).

Decision-makers often operate under constraints such as time pressure and cognitive biases, which introduce elements of bounded rationality into the process (Rahman & De Feis 2009). Bounded reality suggests that the decision-makers aim to be rational but they

are often limited by factors like time or knowledge. Strategic decision-making is not solely a process bounded to rationality but also a political one. Organizations function as political systems where those with more power have greater influence over decisions (Eisenhardt & Zbaracki 1992). Individual choices are shaped by past organizational experiences, established norms, and core values. However, strategic decisions are often made collectively, which helps reduce the dominance of individual biases in the process. (Kazakova & Greiger 2016). Nonetheless, in strategic decision making the experiences of the leadership team can impact the strategic choices made, since they often are in charge of them. In strategic decision making organizations must also take into consideration the stakeholders and understand what stakeholders they perceive as the most important. The stakeholders have a significant impact on how organizations prioritize issues. This includes regulations that come from governments organizations operating in, suppliers, customers, as well as competition, among others. (Kolk & Pinkse 2007).

To succeed in strategic decision making, there should be a clear and organized approach — a strategic decision making process (Harrison 1996). Strategic decision making process refers to the series of actions, dynamic factors, and structures which results in a commitment to a specific strategic action (Mintzberg, Raisinghani & Théorêt 1976; Elbanna 2006). It consists of action-taking steps that indicate how to make a decision (Nutt 2008) and often includes a description of the factors which affect the decision-making including key stakeholders and their roles in the process (Elbanna 2006). Understanding and refining strategic decision making processes is crucial, especially in rapidly changing environments where adaptability and informed decision making play a vital role in maintaining competitive advantage. Organizations that strike the right balance between structure and flexibility, rationality and political considerations, and data-driven analysis and intuition are more likely to navigate uncertainty successfully and achieve sustainable success. (Eisenhardt 1989).

Mintzberg, Raisinghani, and Théorêt (1976) describe strategic decision making as a complex, iterative process supported by multiple interrelated activities rather than a strictly linear sequence. The process (Fig. 6) typically begins with the recognition of a need for action, triggered by events such as opportunities, problems, or crises. This is followed by diagnosis, in which management aims to understand the triggering factors and identify the cause-effect relationships for the decision situation with existing knowledge and the

gathering of new information. Following this, organizations explore potential courses of action either by identifying ready-made solutions or by developing new, tailored alternatives. Benchmarking is a commonly used approach during this stage, enabling decision-makers to compare their organization's practices with those of competitors or other relevant actors (Nutt 1999). The process then moves toward narrowing down the options and reaching a final decision. When the number of alternatives is excessive, initial screening helps reduce complexity by eliminating unsuitable options early on. The remaining alternatives are evaluated through intuitive judgment of the decision makers, negotiation within groups (bargaining), or systematic expert analysis. If the individual responsible for the decision lacks the authority to implement it, final approval must be sought from higher-level management, such as the CEO or board of directors. (Mintzberg, Raisinghani, & Théorêt 1976).

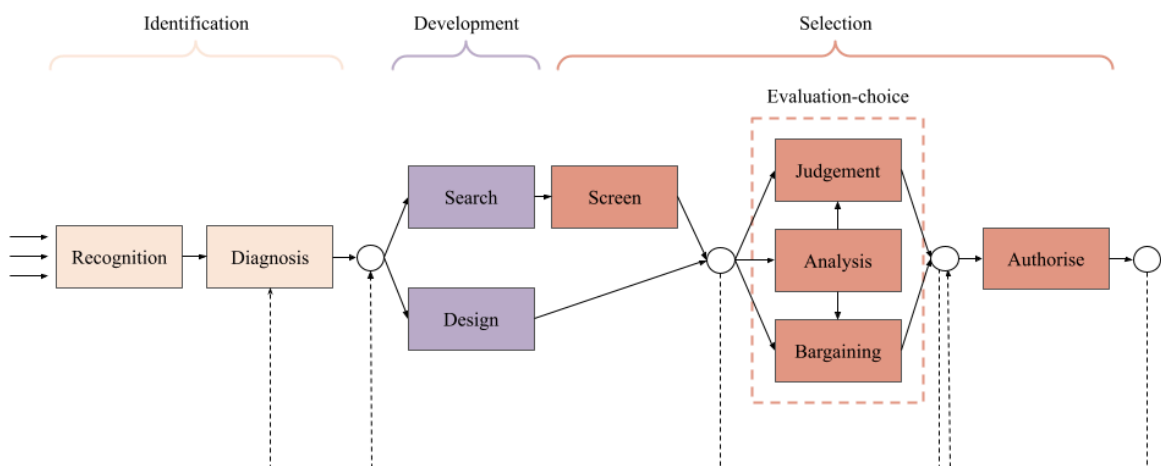


Figure 6. Strategic decision making process, according to Mintzberg, Raisinghani & Théorêt (1976).

The strategic decision-making process is influenced by a wide range of interrelated factors and supporting mechanisms that shape both its structure and effectiveness. Planning and resource allocation determine how the organization approaches the decision. Information-sharing mechanisms define how information and insights are gathered and disseminated throughout the process. Political dynamics within the organization also significantly impact outcomes, as internal and external stakeholders often aim to influence decisions to align with their own agendas (Eisenhardt & Zbaracki 1992; Dean and Sharfman 1996). Also, factors such as the degree of which data is collected and analyzed before decision making, market instability and technology changes in the industry, and quality of implementation to be influential to strategic decision making effectiveness and

quality. (Dean and Sharfman 1996). Additionally, various dynamic factors, such as delays, interruptions, and feedback loops, can influence the pace and effectiveness of the decision-making process. (Mintzberg, Raisinghani and Théorêt 1976). Also certain characteristics of the decision can significantly influence the strategic decision making process. Key factors include the decision's strategic importance, the level of change it brings, magnitude of its potential consequences, uncertainty related to actions, information, and overall outcomes, perception of crisis, perceived risk, time pressure, organizational stress, how decisions are interconnected, frequency of the decision, familiarity, and whether the decision is planned or made on the spot. These characteristics affect factors such as how rational the process is, how much financial data is used, the level of formal rules followed, decision distribution, and internal politics. (Papadakis, Lioukas & Chambers 1998).

Strategic decision making traditionally involves long time horizons, which allow for information gathering and analysis, as it often is for example in the strategic planning process (Kazakova & Greiger 2016). However, strategic decision making can also happen in high-velocity environments. In these cases rapid adaptation is necessary to remain competitive and decision-making must be both structured and flexible. Instead of strict step-by-step processes, they use data and intuition when making decisions. (Eisenhardt 1989). Understanding the strategic decision making process as a whole as well as the various influences affecting the process and decision making, is vital in refining existing processes.

Strategic Decision-Making Tools

Strategic decision making frameworks specify relationships between the action taking steps, context, content, and decision outcomes (Nutt 2008). Strategic decision making has been a topic of interest in literature for a long time, hence many tools have been created to assist decision making. As strategic decision making is consistently practiced in the strategic planning process, Trainer (2004) listed ten strategic decision making tools that are often seen to be useful: SWOT, TOWS, Nominal Group Method, Affinity Diagrams, SMART Language, Responsibility Matrix, Flowcharting, Cause-and-Effect Diagrams, presentation of qualitative data, and Goal Attainment Teams. Each of these tools support different stages of the strategic planning process and the decision making within. SWOT and TOWS help assessing internal strengths and weaknesses as well as external

opportunities and threats. Nominal Group Method and Affinity Diagrams can facilitate group decision-making by structuring ideas and prioritizing key factors. SMART Language and Responsibility Matrix can be used to ensure that the objectives are clear and measurable and to define roles for accountability. Flowcharting and Cause-and-Effect Diagrams map processes, identify inefficiencies, and analyze root causes of problems. Presentation of qualitative data can help decision makers to visualize insights for better-informed decisions, and lastly, Goal Attainment Teams align efforts toward achieving strategic objectives through collaboration and progress tracking.

Rahman and De Feis (2009) examined the use of different strategic decision making tools regarding complexity and time pressure of the problem. As strategic decisions are often complex in nature (Brunelli 2015, 10), the best tools Rahman and De Feis (2009) found to be the Incremental Model, Delphi method, and the Environmental Scanning Method. The Incremental Model aims to reduce complexity by dissecting complex decisions into a series of simple decisions and this way guides the decision maker towards the solution. The Delphi method uses rounds of opinions to form a consensus which avoids biases. Lastly, the Environmental Scanning Method gathers information of the organizations' external environment and uses it for the leadership team to plan the future actions based on this gathered information. (Rahman & De Feis 2009).

One famous combination of tools to support strategic decision making is the Balanced Scorecard (BSC) and Strategy Maps. The BSC provides a multidimensional perspective by evaluating financial performance, internal business processes, innovation and learning, and customer satisfaction. Hence, the BSC goes beyond financial outcomes by presenting targets and performance metrics for a wide range of strategic objectives. This enables organizations to balance trade-offs and leverage synergies between different factors, ensuring that decisions support the overall execution of the strategy. By focusing on a holistic approach rather than solely prioritizing financial perspectives, the BSC helps align efforts across various dimensions to achieve sustainable and comprehensive success. The Strategy Maps complement the BSC by visually illustrating the causal relationships between strategic objectives across the different perspectives, thereby clarifying how value is created and how various initiatives interconnect. The integration of BSC and Strategy Maps with value-focused thinking further enhances strategic decision making by ensuring that all actions and evaluations are aligned with the organization's core values and

long-term goals. This combination facilitates a structured yet flexible approach to strategic planning, allowing decision-makers to better navigate complexity, identify priorities, and achieve strategic coherence across the organization. (Kunz, Siebert & Mütterlein 2016).

To make the strategic decision making processes efficient, the right tools and frameworks should be selected to support the decision makers. In addition to these mentioned before, there is a world full of more. To choose the right ones, companies need to assess their needs and capabilities as well as the decision making situations.

Success Factors in Strategic Decision Making

Successful strategic decision making is characterized by several key factors. One of the most important is the use of structured processes, which tends to be effective in all conditions. A structured approach typically begins with making the need for action clear, and taking time to understand the problem to understand where contribution is needed. This is followed by setting clear and measurable objectives, data collection, and stakeholder collaboration. (Harrison 1996; Nutt 2008).

Organizations that rely on ready-made solutions and quick fixes are more prone to failure. Similarly, frequently revisiting and modifying past decisions rarely results in efficiency or productivity. Instead they should encourage an unrestricted search for solutions, explore available options thoroughly, and involve key individuals before making a decision on actions taken. (Harrison 1996; Nutt 2008). Successful organizations also cultivate an ongoing and agile approach, continuously gathering real-time data and considering multiple alternatives. This flexibility and responsiveness often lead to superior outcomes, and is especially useful in high-velocity situations. (Eisenhardt 1989). Alternative courses of actions need to be regularly explored with attention to the key stakeholders, time and cost limits, the decision makers' cognitive capacity, and social and political barriers. Each alternative should be assessed based on their likely outcomes, with a focus on the risks and consequences. From these the alternative that is most likely to achieve the goals should be chosen within the boundaries of rational choice. The chosen action should be carried out within the established way of doing business, while considering timing of the action and balance between risks and the wanted outcome. Regular measurement and flexibility are necessary to adjust actions as needed. (Harrison 1996). By prioritizing these essential steps

early in the process, decision-makers can navigate complexity, mitigate risks, and drive their organizations toward long-term success (Nutt 2008).

The best practices also include accepting uncertainty, and ensuring the responsible manager takes ownership of the decision process, investing in both idea creation and implementation. Effective implementation is crucial to ensure smooth execution and follow-up. Lastly, these companies that are successful in strategic decision making and implementation maintain a long-term focus, consistently monitoring and measuring progress and adjusting as needed to ensure success. (Nutt 1999).

It has been found that information and data collection and analysis by managers enhance the decision-making process, while aggressive leadership strategies improve cross-departmental communication (Dean & Sharfman 1996; Papadakis, Lioukas & Chambers 1998). Managerial workload also impacts decision making: When managers are overwhelmed with crisis decisions, they may lack the capacity to focus on problem-solving or opportunity-driven decisions. This can reduce flexibility and innovation, ultimately diminishing competitiveness. To prevent this, the leadership team should have well-constructed decision-making tools. (Mintzberg, Raisinghani & Théorêt 1976).

Companies operate within a strategic gap, balancing internal capabilities (management, technology, policies and resources) with external factors. There are three states of the strategic gap: positive strategic gap, negative strategic gap, and zero strategic gap. A positive gap allows organizations to leverage resources, technology, and policies to seize opportunities. A negative gap on the contrary means that the organization is unable to exploit available opportunities, deal with perceived threats, meet its legal requirements, or fulfil its expected responsibilities. A zero gap, where internal capabilities perfectly match with the external environment, is nearly impossible to achieve due to uncertainty and constant change. Ideally, companies should aim for a small positive strategic gap, where capabilities would be exploited as efficiently as possible while having the means to respond to external possibilities and threats. Regular assessment of strengths, weaknesses, opportunities, and threats helps manage this balance. (Harrison 1996). Hence, for organizations to succeed in decision making, they should focus on aiming their solutions towards the right strategic gap.

On the other hand, companies with unsuccessful strategic decision-making often suffer from poorly defined objectives and a lack of clear accountability, which can result from resistance to change or top management prioritizing personal agendas over the company's overall goals. If alternative actions are not assessed and the potential risks of chosen actions are not thoroughly considered, is decision making more likely to fail. Neglecting key stakeholders and external factors, such as customer loyalty, often also lead to poor outcomes. (Harrison 1996; Nutt 1999).

In conclusion, effective strategic decision making requires structured processes, continuous evaluation, stakeholder involvement, and the ability to adapt. Organizations that embrace these principles are better positioned to achieve long-term success while mitigating risks and navigating complexity.

2.2 Strategic Management and Emission Reductions

Corporate sustainability is a holistic approach to do business in the terms of sustainability development. It focuses on economic, social and ecological sustainability of production processes, management and innovation. (Wolters 2023, 26). Emissions sit at the core of these issues (Changsong et al. 2023). Over the years, interest in corporate sustainability has grown, driven by both external and internal factors (Lozano 2015; Kurittu & Rankinen 2023, 11; Wolters 2023, 25).

Sustainability performance has been seen to be a key factor when discussing long-term vitality and resilience of companies. There has been found a linkage between financial and sustainability performance. (Hart & Milstein 2003; Zumente and Bistrova 2021; Ibishova, Misund & Tveterås 2024). The higher the carbon emission intensity of a company is, the stronger the influence is. There are many ways carbon emission reduction initiatives can impact a company's financial performance. Companies that have implemented sustainability can have more efficient operating capabilities which are driven by efficiency and productivity. These lead to cost savings and this way better competitive edge and higher valuation of a company. (Despeisse et al. 2012; Zumente and Bistrova 2021; Ibishova, Misund & Tveterås 2024). Especially for manufacturing companies, which are constantly aiming to lower costs of production to stay competitive, cost reduction and efficiency improvements, driven by material and energy savings, can be a strong incentive

to pay attention to sustainability aspects when planning the corporate strategy (Despeisse et al. 2012). Additionally, carbon emission reduction efforts can improve market perception and stakeholder trust which can increase demand, sales, and access to capital, thus having a positive impact on financial performance. By complying with regulatory requirements and implementing effective risk management strategies, can companies mitigate environmental and regulatory risks which enhances stable operations and possibly higher financial performance. (Ibishova, Misund & Tveterås 2024). Although sustainable performance has been seen to offer long-term financial benefits, the short-term return on investment tends to be slow (Hart & Milstein 2003). Many businesses operate on tight margins which leave less room for investments that don't show immediate financial returns, hence causing possible issues with sustainable investments. Organizations also often are still missing the implementation of tools to assess these kinds of projects. In these cases especially, profitability tends to outweigh sustainability. (Bhattacharya, Nand & Castka 2019). While studies indicate a positive relationship between economic and financial performance, this does not guarantee that a more sustainable company performs better in the stock market or ensure superior financial outcomes (Ibishova, Misund & Tveterås 2024).

Despite the interest towards sustainability and emission reductions and the positive results that sustainable operations have been seen, the transition towards it has been quite moderate (Kurittu and Rankinen 2023, 11). There are seen to be many different reasons and factors that are behind this. Three significant reasons are budget (Hart & Milstein 2003), tools to assess sustainability-profitability trade-off (Bhattacharya, Nand & Castka 2019), and engagement of the leadership team and the board of directors (Kurittu and Rankinen 2023, 12). The way to incorporate sustainability into the operations of an organization is through the strategy process. When sustainability is incorporated into the strategy process, the whole organization is committed to the sustainability goals, and it can be progressed within the organization. (Kurittu & Rankinen 2023, 73-75).

So it is clear that there is a growing interest and need to move towards corporate sustainability and emission reduction integration but for now, companies have had quite limited tools to navigate towards more sustainable business practices. Hence there is a need for investigating deeper into how sustainability can be implemented into strategic decision making of a company and that way into the core of the business strategy.

2.2.1 Emission Reduction in the Strategic Planning Process

Incorporating sustainability into an organization is perceived harder than implementing other strategies, because traditionally new strategies aim to bring more profit. However, when sustainability is integrated into the strategy, the aim is to bring social, environmental, and broader economic benefits in addition to improving just financial performance. Managing this combination has many complexities, the first one being that there are many aspects that need to be considered, compared to how there is traditionally only one. Firstly, systems and mindsets need to be adjusted accordingly to enable this. Secondly, measuring brings paradoxical difficulties as financial performance is often clearly measurable with short-term metrics, whereas sustainability metrics are long-term and often include uncertainty. (Epstein & Buhovac 2014, 27). Despite these complexities, integrating sustainability into core strategy and strategic processes is crucial. If sustainability initiatives are implemented as spot projects to fulfill regulative requirements or to satisfy external stakeholders, they are prone to failure, and waste the organization's resources. Instead, the initiatives implemented should compliment the strategy to be successful and effective. To succeed in this cross-functional understanding of the goals and priorities needs to be in place. (Broccardo & Mauro 2024). Emission reductions for example, needs to be a strategic priority for organizations if they aim to effectively reduce their emissions. They need to achieve the level they want to focus on reducing emissions, as opposed to merely compensating for them. For successful implementation, sustainability needs to be driven into the vision, processes, structures such as management, governance and performance systems, culture, and capabilities. (Okereke, Wittneben & Bowen 2012; Engert, Rauter & Baumgartner 2016).

Several factors can influence sustainability integration processes. Organization's size, scope and structure can influence their internal corporate sustainability processes and therefore the integration of sustainability into strategic management. Externally the industry type, structure and the position within the industry can affect the integration. Supporting and hindering factors can include organization's management control, stakeholder engagement, learning and knowledge management, transparency and communication, managerial attitudes and behaviours, organizational culture, complexity of the issues, and investments. (Engert, Rauter & Baumgartner 2016).

Even though the implementation of sustainability into organizational strategies is often perceived as harder (Epstein & Buhovac 2014, 27), the strategy building processes in sustainability strategies and "conventional" strategies do not differ in a major way (Engert, Rauter & Baumgartner 2016). The transitions consist of problem structuring, creating visions and alternatives for the future, breaking down institutional and financial structures if needed, operational activities, evaluation, monitoring, and learning (Loorbach & Wijsman 2013). Therefore, the strategic planning framework presented in Chapter 2.1.1 (Fig. 4) can be adapted to incorporate sustainability and emission reduction into the strategic planning process. The following sections will detail how emission reductions can be effectively implemented within each of the ten steps of the framework.

Step 1. Initiate the Strategic Planning Process

The planning process is typically conducted annually, often beginning at the start of each year (Bryson 2016). However, when it comes to integrating emission reductions, the initiation of the process may not follow such an automatic timeline. Emission reduction integration is driven by a combination of internal and external factors. Organizations are motivated by factors such as profitability, credibility, influence in shaping climate policy, fiduciary obligations, risk mitigation, and ethical considerations (Okereke 2007). Internally, cost savings, management commitment, organizational targets, and competitive advantage are seen to be especially important drivers (Jeswani, Wehrmeyer & Mulugetta 2008; Engert, Rauter & Baumgartner 2016). Key external drivers include energy prices, market dynamics, regulatory and governmental directives, investor pressure, public opinion, environment-oriented consumer demands, reputational concerns, the expectations of financial institutions, and advancements in technology. (Okereke 2007; Lee 2012; Lozano 2015; Engert, Rauter & Baumgartner 2016). It is important to recognize that these drivers can vary depending on the industry, geographic operating area, and the organization itself (Lozano 2015). For example organisational structure and design can have an influence on how emission reduction matters are seen and implemented. Organizations that see emission reductions solely as a compliance requirement have to constantly be alerted and reactive for new changes. These companies also often see emission reductions as a cost and a burden rather than as an opportunity. (Epstein & Buhovac 2014, 58-59).

In this step also the scope, key steps, objectives, and identification of potential barriers to the strategic planning process are identified (Haines 1995, 19-20; Bryson 2016). Implementing emission reduction into strategy processes and strategic decision making faces several challenges which are often multilevel and intertwined with one another. Financing emission reduction initiatives are seen as one of the main barriers, including insufficient internal finances, difficulties in accessing external funding, and the potentially high costs associated with these initiatives. Additionally, several other factors hinder the integration of emission reduction efforts, including the complexity of implementation, regulatory gaps, policy instability, leadership or management changes, the absence of a robust policy framework, uncertainty of government actions, and market unpredictability. (Okereke 2007; Jeswani, Wehrmeyer & Mulugetta 2008; Panjaitan et al. 2023). Same as the drivers, also the barriers are heavily influenced by the countries they operate in as well as the organization itself (Panjaitan et al. 2023).

Companies tend to prioritize low-cost operational adjustments over capital-intensive investments in advanced technologies. The decision on what measures to take is often influenced by their risks, level of effectiveness, cost, capability, and uncertainty about the implementation process. (Panjaitan et al. 2023).

Step 2. Identify Organizational Mandates

In the second step, organizations must identify both formal and informal mandates that apply to them. These may include regulatory requirements as well as expectations from stakeholders such as investors or customers. (Bryson 2016). It is seen that the regulatory mandates the organization is compliant to has a significant influence on their sustainability strategies (Kolk & Pinkse 2007). The regulatory environment sets minimum standards for what the organization must do regarding sustainability, including emission reductions. (Epstein & Buhovac 2014, 55). The major carbon emission reduction policies implemented worldwide include the carbon cap policy, the carbon emissions tax policy (carbon tax), the carbon emission trading policy (cap-and-trade), and the takeback regulation as well as incentive programs encouraging companies to invest in low-carbon production and operations. To maximize the profits with the consideration of the policies, can companies develop strategies such as output adjustment, carbon trade, green technology input, and remanufacturing. Recycling and remanufacturing waste can increase economic benefits by

decreasing production costs, in addition to reducing carbon emissions. Carbon cap-and-trade, on the other hand, has been seen to be more efficient than mandatory environmental regulations in controlling emissions. (Ma et al. 2022; Wang et al. 2024).

Successful stakeholder engagement requires a well-planned strategy (Engert, Rauter & Baumgartner 2016). Stakeholders can be identified as an entity that either can be affected or affects the organization, or has to be both. Stakeholders can also be categorised as core stakeholders, which impact due to their power or legitimacy, or as fringe stakeholders, which have remote or weak influence, or are uninterested to influence. Typical stakeholders include shareholders, customers, suppliers, employees, regulators, and communities. (Epstein & Buhovac 2014, 49). Two stakeholders have been identified to have a direct impact on emission reduction efforts of a company. These are regulators and the market actors. The regulators set, change and monitor the rules and laws the companies are compliant to, hence they have strong influence on the minimum requirements of emission reductions for the companies. Market actors on the other hand refer to customers, suppliers, competitors, investors and human resources. This group does not have the same power to enforce rules that must be followed by the companies but they have other ways to have direct influence on the emission reduction decision a company makes, as they are the stakeholders that the companies engage with through economic transactions. Therefore, these stakeholders can for example influence by choosing greener products, pulling investments, or refusing to work with emitters, which all can lead to economical issues for the companies. Lastly, also stakeholders such as NGOs, the media and the public, which do not have a direct impact on the company's actions, should be considered as they can influence for example through communication and information. (Cadez, Czerny & Letmathe 2019). However in the end, how an organization chooses and prioritizes stakeholders determines how emission reductions are considered in strategic decision making (Epstein & Buhovac 2014, 49).

It is also valuable to view stakeholder dynamics through the lens of business ecosystems theory. A business ecosystem is a network of interdependent entities of suppliers, customers, competitors, regulators, and other actors, that co-evolve their capabilities around a shared set of innovations and value propositions. In such ecosystems, companies do not operate in isolation but are part of a broader value-creating system. Especially in emission reduction efforts, value chain players related to upstream suppliers and

downstream customers must cooperate strategically rather than act independently to effectively reduce emissions. This can include joint innovation, knowledge sharing, and aligned incentives. Ecosystem thinking shifts the focus from firm-centric control to co-evolutionary strategies, where long-term success and resilience depend on the health and coordinated actions of the entire network. (Moore 2006).

3. Create Initial Organizational Mission, Vision, and Values

Emission reduction goals should be integrated into finance-driven strategic planning rather than treated as an afterthought (Kurittu & Rankinen 2023, 78). Establishing a clear vision, mission, and organizational values that prioritize environmental advocacy is critical for embedding emission reductions as a core element of strategy (Quazi 2001; Epstein & Buhovac 2014, 29). These foundational principles, along with supportive strategies, structures, and systems, must be implemented not only at the organization-wide level but also within individual business units (Epstein & Buhovac 2014, 56). The company's image and strategic objectives significantly influence how sustainability targets are used to enhance strategic positioning (Dahlmann, Branicki & Brammer 2019). Ultimately, how and which sustainability issues are implemented into the process needs to be decided based on the vision, mission and values of the organization. (Kurittu & Rankinen 2023, 78).

4. Conduct External and Internal Environmental Analyses

In the fourth step, external and internal analyses are conducted to support the strategic planning (Poister & Streib 1999). Different topics and drivers influence strategic management decisions between sustainability and conventional strategy building processes (Engert, Rauter & Baumgartner 2016). Because of these potential differences, it is important for organizations to conduct additional emission reduction related external and internal analyses, when implementing them as a part of the strategy and strategic processes.

The organization needs to identify the ideal strategic position for them so the position matches their strengths and weaknesses. Externally, understanding of the overall business context is important since different companies and industries have different opportunities and risks as well as varying regulations and other external pressures. The manufacturing industry for example is a big polluter whereas service sectors are not. How these industries

can and should implement sustainability therefore varies. (Epstein & Buhovac 2014, 56–57). Naturally, also the outcomes of the emission reduction initiatives vary across companies, countries and industries. More specifically, understanding the markets and industry-wide trends is vital (Ibishova, Misund & Tveterås 2024). Markets can affect what to sell and how to sell, also regarding sustainability. Related, organizations should also monitor competitor strategies and strive to do better than them. (Epstein & Buhovac 2014, 55; 74). External analyses should also include understanding stakeholder demands and environmental factors such as natural resources and climate change (Engert, Rauter & Baumgartner 2016).

Organizations should have a clear understanding of their own greenhouse gas emissions development. They also need to assess the effect that carbon-related risks and opportunities could have on business and consider their impact on costs and revenue. Internal resources available to achieve emission reductions should also be considered. Human and financial resources have an important impact on how emission reductions should be implemented. Financial resources are needed for an organization to implement emission reduction initiatives as well as to train their employees about emissions. The employees across the organization need to be qualified and motivated to drive emission reduction initiatives in the organization. (Epstein & Buhovac 2014, 73; 77).

5. Identify Key Strategic Issues

In the fifth step based on the mandates recognized in the second step, mission and values set on the third step, and the findings from the fourth step, the most stressing strategic issues are identified (Poister & Streib 1999; Abraham 2012, 3; Bryson 2016).

6. Develop Strategic Alternatives and Select, Formulate, and Refine the Optimal Ones

Based on the strategic issues identified, strategic alternatives are discovered and analyzed. The strategic alternatives should be planned for short- and long-term. (Abraham 2012, 3–4). To actually bring the sustainability vision alive, emission reduction goals need to be part of the short term strategy in addition to the long term goals and strategies. This way it is part of the mission, vision and values, and the implementation and budgeting of the company. (Kurittu & Rankinen 2023, 83–84). The plans should outline strategic objectives, actions, necessary resources, assigned responsibilities, schedules, and performance metrics. In sustainability matters the long term planning is often for even further than the usual 3-5

years, as the transitions can be slow and their effects often only can be seen in longer timeframes. (Haines 1995, 49-50; Abraham 2012, 4). A wholesome, continuous and organization-wide consideration and evaluation of the potential initiatives is needed to understand what should be implemented and when (Lynch 2018, 490). Systematical prioritisation is important when assessing and implementing the long term strategic goals and emission reductions (Kurittu & Rankinen 2023, 83). Organizations need to assess how emission reductions relate to their current state and what will be implemented, and how the implemented elements reflect back to emissions (Epstein & Buhovac 2014, 183).

Organizations need to choose which carbon management activities they want to pursue and to which level, when considering their strategy. The carbon management activities include emission reduction commitment, product improvement, process and supply improvement, new market and business development, organizational involvement, and external relationship development. Emission reduction commitment usually involves setting carbon reduction targets and measurement to achieve them. In order to track the progress, the organization needs to quantify their carbon footprint. Product improvement focuses on reducing the emission burden throughout the product life cycle. Process and supply improvement involves all energy-efficiency and emission reduction activities in the supply chain and in the organization's own production processes. New market and business development aims to explore new sustainable and low-carbon or carbon-free opportunities. Organizational involvement is an activity focused on increasing the awareness and commitment of management and employees in regards to the strategy chosen. External relationship development can include voluntary programs, the Carbon Disclosure Project (CDP) or carbon offset projects such as the Emissions Trading Scheme (ETS) and the Clean Development Mechanism (CDM). (Lee 2012). Based on their assessed greenhouse gas emissions, they can identify and prioritize areas where emissions can be reduced. Then based on the evaluated carbon-related risks and opportunities and their affects on business, the organizations should develop strategies that include these carbon reductions, so the organization is adapted to respond to the risks and opportunities it faces. (Epstein & Buhovac 2014, 73–74).

The strategies that are chosen need to be inline with these visions and values as well as with the mission and culture, but it also needs to be aligned with the geography, customers, products, communities, and other stakeholder requirements (Epstein & Buhovac 2014, 29).

When thinking about what to implement, organizations must decide what to implement locally and what company-wide (Epstein & Buhovac 2014, 55). Global organizations often have to have emission reduction strategies for different areas regarding the areal requirements and expectations (Epstein & Buhovac 2014, 58). Strategic emission reduction decisions can be seen to fall under three categories: general emission reductions, value chain emission reduction impacts, and emission reductions in a competitive context. (Epstein & Buhovac 2014, 77).

To succeed in sustainability integration into organization's operations, needs causal relationships between various alternative actions, the impact of these actions on sustainability performance, likely reactions from the various stakeholders, and potential and actual impacts on financial performance be understood. When these linkages are identified and relevant metrics are established, can organizations create rules for decision making and further develop the organization's sustainability and emission reductions. (Epstein & Buhovac 2014, 52). Organizations should have frameworks prepared for managing environmental initiatives, and they should implement green processes or product designs. Additionally, organizations should focus on environmentally friendly partnerships, such as supplier or customer relations. (Quazi 2001).

7. Align the Budget with the Strategies

In the seventh step, budgeting for the upcoming year is aligned with the selected strategic short term plans. (Haines 1995, 49). There are often challenges on how to integrate emission reduction impacts and financial performance into decision making and strategy processes. Long-term financial gains of emission reduction initiatives often can be conflicting with traditional capital budgeting format. That is why it is important that for example risks and reputation impacts are measured and integrated into decision making. When driving this change through the organization various management systems, such as capital budgeting, and product costing must be (re)designed and aligned (Epstein & Buhovac 2014, 28; 59).

8. Establish a Clear Organizational Mission, Vision, and Values

In the eighth step, the mission, vision, and values are finalized to align with the chosen strategies together with the leadership team. The vision should describe the successful

implementation of strategies and the organization's full potential. (Poister & Streib 1999; Bryson 2016). To implement emission reductions into strategy organizations need to set purpose in line with the emission reduction goals and ambitions which is backed by the leadership team. After this is set, operational targets to achieve the emission reductions need to be developed. (Lynch 2018, 490).

9. Create a Structured Implementation Plan

Strategy in itself isn't sufficient enough, so it has to be ensured that the implementation of the strategy is efficient (Alkhodary 2023). In the ninth step, an implementation plan which includes roles and responsibilities, schedules, expected results, specific steps, resource allocation, communication plan, monitoring process and accountability procedures is created (Bryson 2016). Defining roles, responsibilities and the timing are crucial for success. Without clear division of responsibilities or understanding the time frames, sustainability initiatives might end up just laying around. (Lynch 2018, 490). To ensure the presence of emission reductions within the company's strategy, it is essential that the company has a dedicated person with capabilities to understand the climate issues, such as environmental manager, in the management team (Panjaitan et al. 2023). The plan needs to entail what concrete steps are taken to implement sustainability into the day-to-day operations, as well as the allocation of resources to sustainability initiatives. Monitoring and evaluating the progress of strategic plans is also important so organizations can identify areas for improvement and adjust their strategies accordingly. (Alkhodary 2023).

Especially, an effective communication plan plays a vital role in the successful implementation phase (Haines 1995, 62). If an organization has a clearly defined and well-communicated sustainability strategy, they are more likely to achieve their sustainability goals (Alkhodary 2023). Transparency is essential, as it simplifies complexity, making it easier to manage and support the achievement of organizational objectives. Both internal and external communication are crucial for enhancing transparency and integrating sustainability into corporate practices. (Engert, Rauter & Baumgartner 2016). Communicating ambitions, initiatives, and achievements keeps sustainability visible and deeply integrated within the organization (Lynch 2018, 490). Additionally, learning and knowledge management play a key role in transforming

employees' perceptions and attitudes, ensuring that sustainability becomes a shared commitment across the organization (Engert, Rauter & Baumgartner 2016).

10. Monitor, Evaluate, and Adapt the Strategy

To manage performance, it needs to be measured. That's why setting the measurement systems is also a part of the strategic planning process. Measurement serves as a critical tool for organizations, enabling them to communicate direction, establish accountability, define roles, allocate resources, and evaluate performance. In its simplicity, it is used to monitor, control and improve performance on all organizational levels. All measurements of different units and individuals should aim for the same end goals which are determined in the organizational strategy. (Rummler & Brache 2013, 182–183). However, defining and implementing effective measurement systems is a challenging task. To gain a comprehensive understanding of an organization's progress, a holistic approach to measurement is necessary — one that extends beyond financial metrics to include operational and strategic performance. (Kaplan & Norton 1992). Sound metrics are vital, as they ensure that the right indicators are being monitored and aligned with strategic priorities (Rummler & Brache 2013, 185). While challenging targets often enhance performance, overly difficult goals can hinder it. Targets that are ambitious yet achievable direct attention to relevant activities, increase effort intensity and duration, and lead to discovery and use of task-relevant knowledge and strategies. They also enhance creativity in problem solving and ways-of-working. The effect of targets and performance enhances when the individuals are committed to the target. (Ioannou, Li & Serafeim 2016). To maximize effectiveness, the measurement system should be a well-structured and cohesive package, where metrics complement and reinforce one another rather than functioning as isolated data points. This ensures that the metrics aren't conflicting with one-another and all aim for the same strategic goals. (Rummler & Brache 2013, 185). One common pitfall is an overreliance on historical data and lack of predictive capabilities, making them inadequate to use in effective decision making. An effective measurement system should feed back into management processes, driving continuous improvement at the individual and adaptation, business unit, and organizational levels. It should help define the organization's strategy, communicate it effectively across the organization, and guide its implementation to achieve desired outcomes. (Epstein & Buhovac 2014, 145).

Without appropriate management systems, are also sustainability risks as well as opportunities hard to manage (Epstein & Buhovac 2014, 59). To drive the change needs concrete and measurable goals to be established with a clear schedule (Kurittu & Rankinen 2023, 126). The measurements should include non-financial measurements in addition to financial when integrating emission reductions into strategic management (Engert, Rauter & Baumgartner 2016). The emission reduction metrics should be verifiable, controllable and consistent with each other and the strategy (Kolk & Perego 2014). A measure for individual or business unit performance can be determined primarily by the organization's strategy and the actions taken by the individual or the business unit that contribute to the success of the strategy. The performance indicators can be used to monitor whether the emission reduction strategy is achieving its objectives and how it is contributing to the overall organizational performance. The reason behind weak indicators to organizational metrics should be examined. Based on this the inputs and processes need to be better defined or executed. This can also provide opportunities to identify potential benefits to improve organizational effectiveness or profitability from sustainability that might have been overlooked before. (Epstein & Buhovac 2014, 138).

Carbon emissions should be a Key Performance Indicator (KPI) for a company that wants to lower their emissions (Ritz 2022). Emission reductions can be monitored as absolute or intensity-based. Absolute emissions reduction lowers total greenhouse gas emissions, while intensity-based targets reduce emissions relative to an economic or operational metric (e.g., per unit of output). (Donovan 2019). Organisations should measure absolute targets, rather than intensity-based ones, as they are linked to measurable reductions in carbon footprints, emphasizing the importance of clear, firm commitments for achieving significant emission cuts (Dahlmann, Branicki & Brammer 2019). Relying only on intensity targets can mislead companies into increasing total emissions if production grows. Measuring absolute emissions provides a clearer view of environmental impact. (Donovan 2019). Additionally, long-term target timeframes and high ambition are associated with greater emissions reductions. Overall, improvements in environmental performance are driven by absolute targets, extended time horizons, and ambitious goal-setting. (Dahlmann, Branicki & Brammer 2019). It is also found that organizations that set more challenging carbon reduction targets tend to achieve a higher percentage of their carbon reduction goals, indicating a stronger commitment to sustainability (Ioannou,

Li & Serafeim 2016), indicating that organizations should challenge themselves when setting up the carbon reduction targets.

To manage the change, sustainability needs to be measured within the organization (Kurittu & Rankinen 2023, 87). Tools and different metrics and KPI's need to be established. As established before, the Balanced Scorecard (BSC) is a useful tool in strategic decision making. In addition to this, it is a well-known way to set measurements for a company, as it sets a manageable amount of measurements of the four perspectives it presents that still would show the most relevant indicators of the company's state. (Kaplan & Norton 1992). Regarding sustainability and emission reductions, it is a bit outdated. Of the three elements of sustainability (people, planet, and profit), it is currently measuring only the profit side with the financial perspective. If emission reduction is identified as a core strategic issue, organizations might add a sustainability dimension as the fifth dimension for the BSC to match the measuring needs of organizations today. This dimension would normally include social, environmental and economic performance indicators, but can be also narrowed down to emission reduction performance indicators. This tool is often referred to as the Sustainable Balanced Scorecard (SBSC). When sustainability or emission reductions is its own dimension, it highlights the importance of it for the organization and the strategy. This helps turn sustainability visions and strategies into concrete actions that can be measured and monitored. (Epstein & Buhovac 2014, 152; Kalender & Vayvay 2016). Another version of the SBSC is when emission reductions are considered in all of the four perspectives of BSC rather than making it its individual perspective. Measures in the financial dimension can be for example percent of sales revenue from low-emission or green products, revenue from carbon credit trading or recycling initiatives, energy costs, or fines and penalties for pollution. Measures in the stakeholder dimension can be for example customer satisfaction with eco-friendly products or practices, or percentage of customers or suppliers engaged in emission reduction programs. For the internal business process dimensions reductions of CO₂ emissions from production or operations, or energy consumption or emission intensity per unit of output, can be used as measurements. Measures for learning and growth dimension percent of emission reduction trained staff, or number of green innovation initiatives launched. (Epstein & Buhovac 2014, 151; Hansen & Schaltegger 2016). The SBSC created should be cascaded down in the organization for it to be effective. (Epstein & Buhovac 2014, 152).

An effective management control system may help to foster the integration process but might demand extensive resources or be problematic in terms of the identification or implementation of suitable structures. Environmental (ISO 14001) and quality management systems (ISO 9001) are popular management systems. (Epstein & Buhovac 2014, 59; Engert, Rauter & Baumgartner 2016). In addition GRI, ESRS, SASB, and Stakeholder Capitalism Metrics are other common reporting frameworks that include measurements of operations and sustainability from various perspectives. These give good guidance on the measurements, but to ensure the most efficient measures, organizations need to modify and specify the measurements to their specific needs. The measures need to support the organization's short and long term goals and strategies, rather than being something that is just easy to measure. (Kurittu & Rankinen 2023, 87-88).

Success Story

Novo Nordisk has integrated sustainability into its core strategy through strong top management commitment, transparency, and active stakeholder engagement. They recognize the importance of addressing the needs of all stakeholders, not just shareholders. The triple bottom line (economic, social, environmental), which is also reported in their annual report, is managed by the leadership team to ensure it stays in focus of the company. A dedicated team is responsible for driving, challenging and monitoring the triple bottom line strategies. They monitor issues and future affecting trends, engage and build relationships with stakeholders to find more sustainable solutions, communicate and embed the sustainability strategy throughout the organization, and help business lines to embed sustainability into processes. Novo Nordisk designed a framework that aimed to strike a balance between corporate control and decentralized decision making called *The Novo Nordisk Way of Management*. It sets standards amongst the whole organization, including values, vision, commitments, and fundamentals of the organization. To ensure the integration of the framework, they included three elements: facilitators, sustainability reporting, and balanced scorecard. The facilitators are a team that visits business units assessing whether the units are compliant to the company-wide minimum standards as set in the framework. They also identify best practices applied, and help and facilitate the units in correcting their ways. Sustainability reporting ensures that the sustainability way of thinking is integrated into the operative practices of the organization. To the four areas of BCS, they have implemented sustainability. The BSC is cascaded down from corporate

level to operational levels. The BCS ensures that all units and individuals work towards the strategic goals and not towards something that is not necessary. (Morsing, Oswald & Stormer 2019).

Incentives and Emission Reductions

As mentioned before, implementing a sustainability strategy requires redesigning and aligning various management systems. These also should include performance evaluation processes. (Epstein & Buhovac 2014, 59). Measuring performance is important when implementing sustainability into the core of strategy as it facilitates improvement (Epstein & Buhovac 2014, 137). Incentives should be guiding the actions of the board as well as all of the employees towards the emission reduction goals set. The incentives need to be set according to the strategies set and individually for different organizations. (Kurittu & Rankinen 2023, 107–109). Indicators can be used when defining goals and targets for new programs to improve sustainability performance. To change the corporate culture and achieve emission reductions as desired, measurements of the initiatives and performance is crucial. (Epstein & Buhovac 2014, 137–138). There are many ways incentive structures can be used to enhance emission reductions. Organizations can for example provide awards for example emission reduction initiative ideas or compilation of these projects. Incentives can also be for example that some of the incentive payment that is paid for the employee is based on how much of the emission reduction goals are met, how much of the yearly turnover is from low-emission equipment, or the amount of emission reductions. (Kurittu & Rankinen 2023, 109–110). Organizations can also set internal taxes on for example business units for producing additional emissions. Another way to provide incentives is giving employees options on company shares. For this to improve sustainability, employees need to understand the correlation between sustainability and shareholder value. (Epstein & Buhovac 2014, 146–149). As the effect of targets and performance enhances when the individuals are committed to the target (Ioannou, Li & Serafeim 2016), it is important to ensure through communication that the individuals at all levels are committed to the organization's strategy and carbon emission reduction goals.

As leadership commitment has been recognized as a major driver for sustainability integration (Jeswani, Wehrmeyer & Mulugetta 2008; Lee 2012; Lozano 2015), it is important to ensure that the incentives also drive the leadership team commitment and interests towards the right direction. One way the management can be committed to the

emission reduction are incentives linked to sustainable performance. Climate-linked incentives strengthen the alignment within the leadership team and board of directors. To ensure profitability, there should be financial and other incentives as usual. Though this alone does not ensure the green transition of a company, it does help the management to drive the company towards the right direction and communicates the ambition and goals of the company to stakeholders such as investors, customers, suppliers as well as employees. (Eccles, Ioannou & Serafeim 2014; Ritz 2022).

Incorporating corporate social responsibility (CSR) criteria into executive compensation has been seen to have many benefits for organizations. Also, there has been evidence of a positive relationship between executive level and CEO total compensation and sustainable performance of a company (Kolk & Perego 2014). Linking sustainability with compensation encourages the leadership team to consider wider societal impacts and stakeholder groups in addition to the traditional focus on shareholder value and financial performance. Sustainable incentives can strengthen the integration of emission reductions into corporate strategy, as top managers are responsible for strategic decisions and are also the primary beneficiaries of these incentives. The link to compensation has a positive impact on long-term orientation and firm value, it increases the amount of social and environmental incentives and green innovations, and reduces emissions. Since CSR initiatives often require long-term investments, integrating them into executive incentive structures encourages managers to balance sustainability initiatives with others that might have better ROI. This approach ensures that even less immediate but financially material sustainability efforts receive the attention they deserve, ultimately contributing to both corporate success and broader societal impact. (Flammer, Hong & Minor 2019).

When planning the emission reduction incentives for an organization internal factors such as strategy, current compensation practices and culture, and implementation costs and past financial performance needs to be aligned. If incentives conflict with corporate strategies and goals, there are conflicts of interest in decision making, negatively affecting both incentives and strategy efficiency. A balanced rewarding system aligns shareholder and stakeholder values with the corporate strategy, giving guidance to top management in decision making. Transparency of the rewarding has also been highlighted to be important in incentive planning. External factors affecting are institutional context, such as regulatory and stakeholder pressures, and stakeholder saliency. (Kolk & Perego 2014).

Even though it was found that more difficult carbon reduction targets result in higher percentage of goals being achieved, if monetary incentives are included, the effect may weaken. The reason can be the long-term horizon of the goals. They can be seen as too remote, of lower priority, or as more likely to be affected by factors outside of the individual's control. Short term targets on the other hand provide more frequent and immediate opportunities for regular feedback. (Ioannou, Li & Serafeim 2016). Hence, it is vital that the emission reduction incentives need to be carefully designed so they promote the right actions short and long term.

2.2.2 Emission Reduction in the Strategic Decision Making

For emission reductions to be considered in every decision made, organizations need clear guidance and frameworks on how to assess these decisions (Kurittu & Rankinen 2023, 84). Hence, emission reductions must be also integrated into strategic decision making processes of the organization. This includes fostering learning structures and fundamental changes to rethink their environmental relationships. By embedding sustainability into the core strategic decision making, organizations can ensure a wholesome approach to managing their environmental impact while driving long-term value. (Engert, Rauter & Baumgartner 2016).

One of the key challenges organizations face in integrating sustainability is balancing it with profitability. They must make strategic decisions regarding whether to invest in developing new low-carbon technologies or optimizing existing ones, or whether to introduce low-carbon solutions to mainstream markets or focus on niche segments. The success of such climate change innovations often depends on a company's bargaining power and its willingness to collaborate with stakeholders. Organizations must assess their industry position and determine how much they should cooperate with competitors, suppliers, and other stakeholders to drive sustainable innovation. (Pinkse & Kolk 2010).

Beyond traditional financial metrics like profitability or cash flow, a broader set of factors must be incorporated to emission reduction-focused strategic decisions. Careful consideration of numerous external and internal factors is vital in these decisions. Organizations need to reflect on regional and industrial regulations and the possible future standards, and rising cost pressures due to increasing energy and commodity prices. They should also consider the carbon intensity of their industry, opportunities for consumption

and recycling, stakeholder and consumer pressures, as well as the influence of lobbyists and activists. (Lynch 2018, 487). Competition is another crucial aspect of strategic decision making. Organizations can map the industry on a matrix considering vulnerability to climate risks and climate competitiveness. Comparison between competition doesn't automatically give all the answers to emission-profitability trade-off, but understanding the competition also from sustainability perspective can help identify areas for improvement, set realistic goals, and enhance the overall sustainability strategy. (Lash & Wellington 2007). Additionally, the feasibility and cost of available technologies play a significant role in shaping these decisions. Internally, organizations must consider their policies, resources such as finances, capability of employees and range of products available, and the nature of the business. The strategic context, including existing and upcoming legislation, organizational incentives, costs, and timing, should also be considered the decision-making process. (Lynch 2018, 487–488).

Although significant research has been conducted on decision making in manufacturing companies, much of it has focused on catering to customer needs while minimizing total costs or maximizing revenue with no consideration over absolute carbon emissions of their production activities (Changsong et al. 2023). Decision making in an organization has to reflect on the emission regulations it is compliant to (Kolk & Pinkse 2007). It has been found that carbon policies placed can have a major impact on shaping the corporate strategies and manufacturing decisions (Ma et al. 2022; Wang et al. 2024). The factors affecting the decision making and emission considerations are the global spread of the organization as well as the industry they are operating in (Kolk & Pinkse 2007). Depending on the state of environmental awareness the organization has, they need to understand their carbon footprint early on in the decision making process. This can be done with the help of tools such as the Green House Gas Protocol. Secondly they need to assess their carbon related risks and opportunities as a part of their process. Then the process is used to adapt the business accordingly. (Lash & Wellington 2007).

One compelling framework for integrating sustainability into strategic decisions is the concept of Shared Value Creation. Shared Value Creation argues against the idea that social improvements are costly for an organization. It claims that organisations that create social value also increase economic value. Three main ways that this can be achieved are by reconceiving products and markets, by redefining productivity in the value chain, and by

enabling local cluster development. Reconceiving products and markets focuses on developing innovative products and services that address societal needs while opening up new market opportunities. Redefining productivity in the value chain involves improving operational efficiencies by addressing social and environmental challenges. For instance, reducing waste or saving energy can enhance productivity while cutting costs and reducing risks. Enabling local cluster development emphasizes the importance of strengthening the communities in which an organization operates, by for example investing in local suppliers or infrastructure, which are mutually beneficial for the organization and the community. The three areas feed into one another. For example, better local cluster development can also enhance productivity, while innovative products can also foster stronger community partnerships. This lens should be applied to strategic decision making of an organization. It changes the way an organization prioritizes between economic and social benefits. Furthermore, it claims that creating shared value is an integral part of profit maximization. Each of these areas need tailored metrics to guide the decision making. (Porter & Kramer 2019). Shareholder Value Analysis can be combined with the Shared Value Creation to integrate emission reductions to decision making. Creating value for employees, customers, suppliers, the community, and other stakeholders also improves shareholder value. A well-known metric for Shareholder Value Analysis is economic value added. It takes into account the cost of capital and assets involved in profit creation. Emission reduction initiatives can be considered in shareholder value analysis by reducing resources used and the risk involved of the profits generated or costs decreased by the initiatives. Shareholder Value Analysis can be used across the organization, as long as all the employees using it understand the creation of shareholder value. (Epstein & Buhovac 2014, 154–155).

As discussed before Sustainable Balanced Scorecard (SBSC) can be used as a tool to measure the sustainability performance, alongside with the classical BSC perspectives (Epstein & Buhovac 2014, 151–152; Hansen & Schaltegger 2016; Kalender & Vayvay 2016). SBSC can be used as a strategic framework to integrate sustainability into decision making while maintaining financial performance. It considers environmental, social and economic perspectives all in one system, rather than needing parallel systems for all. This adaptation ensures that sustainability is not treated as an isolated responsibility but rather as a core component of business strategy. SBSC makes comparing and balancing the

sustainability perspective with financial perspective easier for decision makers when for example considering organizational goals. It visualizes sustainability related strategic objectives in the strategy maps. Organizations can adopt different SBSC structures depending on their strategic orientation. Some organizations, particularly those focused primarily on short-term profitability, may treat sustainability as an add-on, using the SBSC to track environmental and social performance separately from financial goals. Other organizations take a more integrated approach, embedding sustainability KPIs into financial, customer, internal process, and learning and growth perspectives. This allows companies to assess how sustainability efforts contribute to efficiency, cost reduction, and competitive differentiation, making sustainability a key factor in operational and strategic decisions. When the sustainability aspect is fully implemented, SBSC treats financial, environmental, and social performance as equally important when considering profitability. These organizations use a triple-bottom-line approach, ensuring that strategic decisions balance economic success with environmental stewardship and social responsibility. In this model, sustainability is not only integrated into decision-making but actively drives innovation, stakeholder engagement, and long-term resilience. Companies following this approach see sustainability as a value creator rather than a cost burden, leveraging it to enhance brand loyalty, develop sustainable products, and future-proof their business models in response to evolving market and regulatory landscapes. (Hansen & Schaltegger 2016). Also well-known tools such as SWOT can be used with a sustainability perspective when implementing sustainability into the strategy (Kurittu & Rankinen 2023, 83).

By adopting emission reductions into the organizational strategic decision making, organizations can effectively balance sustainability with profitability, create shared value, and contribute meaningfully to a sustainable future. However, as this area is still evolving, there remains a lack of well-established tools to support this integration, particularly when it comes to managing the trade-offs between financial performance and emission reduction goals. Continued development of frameworks and decision making tools will be essential for supporting organizations in this transition.

2.2.3 The Role of Leadership in Emission Reduction

When driving the integration the top management and the board are responsible for setting the bases for emission reductions in the organization and driving it forward. The board is in

charge of setting general goals and future state of will. The leadership team is responsible for making these become reality, and reporting the development to the board. They need to identify the most significant emission reduction hotspots for the company, conduct assessment of the current situation, define the vision, and set clear goals. They also need to appoint persons responsible for the goals, consider the requirements and opportunities brought by the emission reduction goals in decision making, develop a culture that encourages responsible and sustainable operations, and provide an incentives program that rewards emission reduction initiatives. (Kurittu & Rankinen 2023, 70; 132). To do all this the top management needs to understand the risks and opportunities of environmental and social trends and how their stakeholders are responding to them, and they need to be able to align social and environmental objectives with the financial ones (Gitsham 2019). In the integration phase, the role of top management is needed in almost all of the steps of the strategic planning process discussed before. Hence, this change is driven by the board and the leadership team and would most likely happen without their commitment.

Emission reduction integration is often managed top-down. The leadership team needs to understand the strategy, support it, and communicate the mission, vision, and the strategy to the rest of the organization. If the leadership team is not knowledgeable enough and doesn't support the strategy, the strategy is likely going to fail as the people of the organization, the ones executing it, are not actively driving it forward. (Epstein & Buhovac 2014, 57). It is their role to cascade the understanding of the trade-offs to the managers. They need to help to deal with emission reduction-profitability trade-offs by leading by example. They need to lead the cultural change, so the employees are passionate and committed to the organization's values, mission and vision. They also need to lead through formal implementation systems such as performance measurement and evaluation, compensation, and incentives. (Epstein & Buhovac 2014, 29). In addition to leadership commitment, the employees in all levels need to be committed to the agenda. Here operational management is in an important position. Once they have committed to the agenda, can it be cascaded to the very bottom of the organization. To embrace this, communication channels should be developed through the organization, from the top management to the employees. This encourages all the levels of organization to engage and propose new emission reduction projects that are inline with the organizational strategy. To facilitate this performance management process can be used. It is a tool used to set

individual targets, and to monitor them and company-adorsed behaviours performed by the individual. Enabling the cross-level communication helps embed emission reduction thinking within the organisation by bridging the gap between the emission reduction goals and operational practices. This allows employees at all levels — not just the leadership team — to play a role in suggesting and implementing emission reduction initiatives. This demonstrates how internal dynamics support emission reduction efforts, reduce barriers, and enhance the overall quality of implementation. (Broccardo & Mauro 2024). This way the emission reduction integration slowly becomes also bottom-up in addition to top-down, since the goals still come from the top but the bottom can also have an influence on the emission reduction matters.

In addition to internal communication, the top management also needs to be able to articulate the rationales behind the emission reduction objectives. Top management must also be very aware of the organization’s stakeholders and interact with them. (Gitsham 2019).

2.3 Summary of the Theoretical Framework

The theoretical framework explored in Chapters 2.1 and 2.2 offers a comprehensive foundation for integrating emission reductions into strategic management. It highlights how strategic planning and decision making processes must evolve to incorporate emission reduction objectives and identifies the crucial role of leadership in enabling this transformation. At the core of this framework is the notion that emission reduction initiatives cannot be treated as isolated or secondary tasks. Instead, they must be deeply embedded into an organization’s mission, vision, and operational activities through strategic planning and decision making structures. This approach ensures that in the long-term emission reductions are not made by the cost of the company’s profitability but rather is a factor enhancing it. Table 1 summarizes the key components and the key takes of each vital component.

Table 1. Summary of the theoretical framework

Component	Key Outcomes
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Strategic Planning	<p>Systematic approach is a must. Of the ten steps, especially formulating mission, vision and value statement in steps 3 and 8 is vital. Additionally the steps 9 and 10 are crucial to ensure that the strategy becomes reality.</p> <p>In a change such as emission reduction integration, in addition to these steps, also communication and appropriate structures and systems were highlighted as key factors in success.</p>
Strategic Decision Making	<p>A clear and structured strategic decision making process that has emphasis on data collection should be in place.</p> <p>All strategic decision making is influenced by many factors (political powers, stakeholders, time, biases, etc). For the strategic decision often the most influential factor is cost or profitability, but when incorporating emission reductions, many other internal and external factors also influence, such as regulations, future standards, and so on, but especially meaning and influence of different stakeholders is enhanced.</p> <p>There are many tools that can be used to support strategic decision making (SWOT, Delphi method, BSC, etc). When implementing emission reductions and balancing that between other factors tools such as SBSC, Shareholder Value Analysis, and Shared Value framework can be useful.</p>
Leadership	<p>In the strategic planning process and decision making the role of the board and the leadership team are crucial as they are setting the vision and goals, and they are often the ones making the strategic decisions.</p> <p>During times of change, such as emission reduction integration, the role of the leadership team and leadership magnifies as on top of the usual responsibilities they have to manage and drive the change.</p> <p>The role of effective communication is present always in these processes but especially during times of change.</p> <p>The change is often managed mainly top-down, but it is vital to add elements of bottom-up management.</p>
Measurement Tools	<p>To manage and make strategic decisions on performance, it must be managed.</p> <p>Emission reductions should be KPIs, in addition to other KPIs the company has, for companies that are driving this change. Measurement tools such as SBSC help align financial and emission reduction KPIs. Other management and reporting systems that could be implemented are ISO 14001, GRI, ESRS, SASB, and Stakeholder Capitalism Metrics.</p>
Incentive Structures	<p>Incentive structures that are in line with the long term strategic goals guide the employees to work toward the common goal, but there mustn't be overemphasis on pay-for-performance.</p> <p>When driving change into the organization, incentives can be a powerful way to drive the change. In emission reduction integration, incentivizing the leadership team has seen to be especially important, but as do all incentives, these must also be in-line with the targets and strategy.</p>

Emission reduction must be treated as a strategic priority and integrated into all ten stages of strategic planning. Organizations need to align their internal capabilities, financial

planning, and stakeholder expectations to effectively embed sustainability in their core operations. Emission reductions require system-wide changes, affecting management systems, organizational culture, KPIs, and resource allocation. Tools like the Sustainable Balanced Scorecard (SBSC) are recommended for aligning financial and sustainability metrics. Effective strategic decisions weigh both environmental and financial factors. Concepts such as shared value creation help in redefining productivity and innovation by simultaneously considering economic and social value. Lastly, the leadership team and the board play a pivotal role in driving this change. Their commitment, communication, and example-setting are essential to building internal buy-in and cascading sustainability throughout the organization.

The theoretical framework illustrates a shift from viewing sustainability as a constraint to recognizing it as a value creator. When integrated effectively, emission reduction strategies not only mitigate environmental impact but also improve operational efficiency, stakeholder trust, and long-term profitability.

3 Data and Methodology

This chapter presents the research methodology and data collection process, and justifies the chosen approach for conducting the empirical part of the thesis. Given the nature of the research, this thesis employs qualitative research as explored in this chapter. This research is an embedded single-case study carried out for a global manufacturer in the heavy material handling industry. Data was gathered through two rounds of interviews: the first with selected representatives from within the company, and the second with experts from leading organizations specializing in emission reduction, as well as industry consultants.

3.1 Methodological Approach

This thesis uses qualitative research as the research approach. A qualitative research method is used when the research subjects are hard to quantify. It focuses rather on understanding processes, experiences, and meanings from the observer's perspective, than comparing matters in numerical manner. It investigates relations between categories that are subject to change during the research process. Qualitative research can be used to discover even complex cause and effect relationships between subjects, but also to understand nuance differences amongst them. It focuses on rich, and detailed data, which is often collected through methods such as interviews, observations, or textual analyses. (Hirsjärvi & Hurme 2022). As this thesis examines the role of emission reductions in strategic planning process and decision making, and the best practices related, is qualitative method natural choice of research method. These topics require an understanding of nuances and causal relationships, which are difficult to measure numerically. The qualitative research of this thesis includes literature review and an empirical case study in the form of interviews.

Literature review lays the theoretical foundation for the thesis. It collects the relevant, and often scattered, information on the research topic into a cohesive and systematic whole. It goes through the key concepts, theories, and relevant empirical studies to the research topic. (Salminen 2011, 6–7). Case study focuses often on one phenomenon in detail. One purpose of a case study is to offer a description of the phenomenon but also to identify cause and effect relationships that explain underlying reasons within a real-life context. To gain a comprehensive understanding, case studies often rely on multiple sources and

methods to collect data, such as interviews, and an analysis of the collected data. (Johannesson & Perjons 2021, 46–47).

This thesis employs a single-case study methodology, focusing on the phenomenon of integrating emission reductions into strategic management. The case centers on the implementation of this process within the Focal Company, which serves as the primary context. To gain benchmarking and best practices, the study incorporates comparative insights from external industry experts which, however, are not analyzed as in-depth independent case studies. More specifically, this research follows an embedded single-case design, as it examines multiple sub-units (Yin 2014, 51–57) within the Focal Company, such as leadership roles, strategic planning processes, decision making tools, and performance metrics. This embedded approach allows for a more nuanced understanding of how emission reduction is operationalized across different organizational layers.

As this thesis was conducted in collaboration with the Focal Company, the case study approach allowed for an in-depth investigation of the Focal Company's employees' perspectives and experiences related to the research topic. Additionally, external interviews provided further insight into the applicability of the findings and enabled a comparison of best practices. Overall, the combination of the literature review and the empirical case study provided a comprehensive approach to examine the research questions and to understand the complexities of incorporating emission reductions into strategic management. This methodological approach allowed an in-depth understanding of the complexities and nuances of the research topic, enhancing the depth and relevance of the thesis findings.

3.2 Data Acquisition Methods and Analysis

This thesis uses semi-structured interviews as the data acquisition method. Interviews are an effective way to gather complex and detailed information. They provide access to deeper, often hidden, understandings of the research topic. From interviews emotions, attitudes, opinions, and experiences from the respondents can be understood. A semi-structured interview is based on a set of questions that are predefined but open-ended. This way they can be discussed in a flexible manner and they allow the responder to formulate their answers in their own words. It allows the responder to describe the

experiences in their own words and enrich their explanation through their personal real-life examples. This enables collection of versatile and detailed information. The contextual information gained helps in analyzing the research results in a wider context. As the interviews provide a holistic understanding of complex issues from different perspectives, are they well-suited data collection method to use in qualitative research. Typically, interviews are recorded or transcribed to support thorough analysis. (Johannesson & Perjons 2021, 59–60; Hirsjärvi & Hurme 2022).

The thesis consists of two batteries of interviews. Therefore the aim of the semi-structured interviews was twofold as well. The first was to gain a deeper understanding of how emission reductions are integrated into the Focal Company's strategic planning process and decision making process, the challenges, improvement needs, trade-offs, and tools used. The second was to get best practices from industry experts in how emission reductions could be successfully integrated into the strategic planning process and decision making process.

The interview question framework was created together with the Focal Company to answer their needs but also reflecting on the theoretical framework. The question frameworks can be found in Appendices A and B for the internal interviews and in Appendices C and D for the external interviews. They are presented in both English and Finnish, as the interviews were conducted in the interviewee's preferred language. Providing the frameworks in both languages enhances transparency and supports the repeatability of the study. In total 8 internal and 6 external interviews were conducted during the span of three weeks in March and April in 2025. The internal interviewees were selected based on the significance of their role regarding strategic planning process and decision making in the Focal Company. The internal interviewees were selected to represent different divisions and functions, but also the organizational level of the company, so a comprehensive understanding could be gained through the interviews. The internal interviewees consisted of the relevant members of the leadership team as well as of the sustainability team of the Focal Company. The internal interview information can be seen in Table 2 below.

Table 2. Internal Interview Information

Internal interviews		
Interview number	Role in the Focal Company	Duration (mm:ss)
1	President of Division A	38:59
2	President of Division B	35:41
3	President of Division C	41:54
4	President of Division D	29:46
5	President of Division E	45:07
6	Vice President, Sustainability	33:32
7	Senior Vice President, Strategy, Sustainability & Technology	35:12
8	President and CEO	53:28

The external interviewees were selected based on their expertise and experience regarding the implementation of emission reductions into the strategic planning process and decision making. The external interviewees were either consultants with experience on these matters or employees from companies in similar industries than the Focal Company that are known to be leaders in these matters. The external interview information can be seen in Table 3 below.

Table 3. External Interview Information

External interviews		
Interview number	Job title	Duration (mm:ss)
9	Senior Management Consultant, Energy and Climate Practice	32:40
10	Manager of Sustainability Programs, X Product Business Area	57:08
11	Vice President, Electrification	23:54
12	Manager Technology Partner Ecosystems	43:12
13	Manager, Industry & Built Environment	56:37
14	Global strategic manager sustainability	55:06

The interview structures remained consistent throughout the interviews, but slight modifications on the order or the formatting of the questions was done during the interviews to match the interviewee better. Additionally, sometimes supplementary questions were asked to ensure the clarity and to get the most out of the interviews. To avoid overly restricting or to limit guiding the answers, often questions were left somewhat open-ended and open for interpretation. Of the internal interviews, the longest lasted 53

minutes whereas the shortest lasted 29 minutes. On average they lasted 39 minutes. The longest of the external interviews was 57 minutes, whereas the shortest was 24 minutes, and the average length was 45 minutes. The interviews were conducted with a hybrid model, where some were face-to-face, but most via video call. The interviews were recorded and transcribed. Overall the interviews were successful in producing quality data for the thesis that is delved into in the next section.

4 Research Results of the Empirical Study

This chapter presents the findings from the interviews. It begins with a brief introduction to the case of the thesis. Then it will delve into the strategic management practices of the Focal Company based on the internal interviews. Following, the chapter goes through the best practices regarding the implementation of emission reductions into strategic management through the results of the external interviews. Finally, the chapter gives advice on how the Focal Company should implement emission reductions based on the best practices gathered from the interviews.

4.1 Overview of the Case

This thesis aims to find ways carbon emission reductions can be implemented into the strategic management while considering profitability. The thesis is conducted in collaboration with the Focal Company which is why the case mainly reflects on the emission reduction integration into their processes specifically. The Focal company wants to understand how they can integrate emission reduction more in-depth into their strategic planning process, as they feel that currently emission reductions are now more an outcome of the process than a defining factor. This is why also emission reduction integration into strategic decision making is also under assessment.

Currently the strategy function is in charge of the refinement of the strategic planning process yearly. This is worked together with the division and other functions. The annual strategic planning process of the Focal Company can be seen in Figure 7.

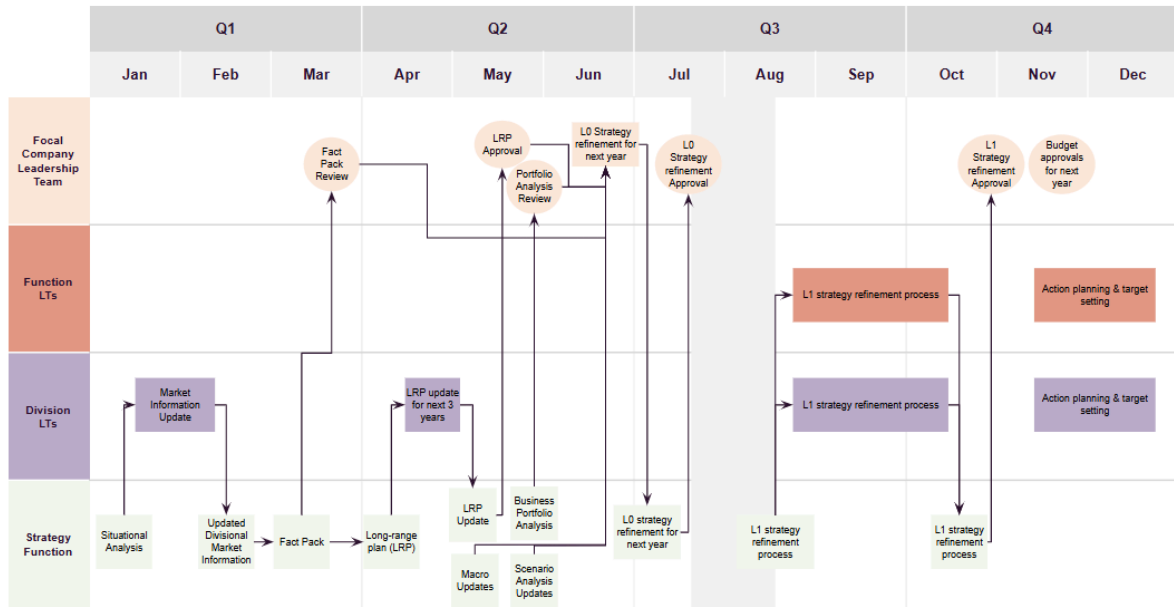


Figure 7. The Strategic Planning Process of the Focal Company

In addition to the emission reduction integration into strategic planning process and decision making, leadership came into the equation as the responsibility of the process and strategic decision making strongly falls under the leadership team of the company.

4.2 Strategic Management and Emission Reductions in the Focal Company

The internal interviews were conducted to gain insights of the current state of the Focal Company's strategic management. This included understanding the level of emission integration to the current processes and how they are seen to progress in the upcoming years. It also included understanding the drivers of strategic decision, challenges, metrics and tools used as well as the role of incentives, culture and leadership. The open-endedness of the questions provided a comprehensive understanding of the emission integration to the strategic planning process and decision making of the Focal Company.

4.2.1 Strategic Planning Process in the Focal Company

The interviewees were asked how they see that emission reductions are integrated into the Focal Company's strategic planning process currently, metrics they would need in the process, and how incentives could be used.

All of the interviewees brought up the emphasis on emission reductions through the strategic priorities, such as electrification, and this way it is in the discussions. The interviewees said that there are strategic goals related to emission reductions that are cascaded down to divisions and functions and it is strongly included in the long term vision of the company.

In the interviews especially three processes within the strategic planning process were highlighted to have emission reduction integration to at least some degree. These processes were Long-Range Planning, where the divisions plan their action for the upcoming years, budgeting, and product portfolio planning. In these processes emission reductions are included but often are a result of decisions, rather than being an influencing factor in the decision making. Hence the effectiveness of these tools regarding emission reductions was questioned.

“I think that the [sustainability] function could be more strongly involved, but of course it's more important that it [emission reductions] is included as a theme.”

One interviewee brought up that there is a slight disconnect between strategic planning and emission reductions. Strategic planning often has a time span of three to five years whereas emission reduction issues often have a time span of even tens of years. This is a problem in planning but also in the bigger picture in the company culture. The interviewee saw that the culture lacks visionaryness and the ability to look far beyond the normal three to five years. Another interviewee highlighted that emission reductions are somewhat separate also in a sense that it is not reviewed at the same time the Focal Company reviews their annual goals and does the annual updates. This causes emission reductions to be more of an afterthought rather than a factor that would be included in the decision making within the planning process. Often the calculation of the emissions are conducted only after the decisions have been made. It is involved in the strategic planning process as a theme, but deeper integration was called for by almost all of the interviewees.

The interviewees were asked of their views on how the role of emission reductions should evolve during the upcoming years. The interviewees agreed that the topic of emission reductions will remain a matter of interest in the strategic planning and most likely the significance of it will grow, partly also because of the long-term emission reduction commitments the company has made. Even though there is a strong internal commitment to these targets, almost all of the interviewees also brought up that the development of the markets and other external factors needs to be closely monitored as they are recognized to have a strong influence over the emissions the company emits. One interviewee highlighted the importance of technological readiness, suggesting that the company should more proactively invest in R&D to ensure the position of a market leader. By taking a forward-looking approach, the company can help shape market developments rather than simply responding to them.

A lot of interviewees brought up the need for sustainability to be integrated better and more deeply into the business division's operations and planning process. The interviewees agreed that sustainability should be centrally driven, but the division should also have people in sustainability responsibilities. At the moment most of the planning and in-depth analysis is done at the company level. It is seen that the divisions will take more responsibility on these matters and the emission reduction will be integrated into the strategic planning of the divisions, instead of them making the plans solely based on the financial goals. In addition to this the emission reduction and sustainability function integration into the product roadmaps and planning was seen as a high potential.

“...integrate the sustainability function closer into our R&D and Product Management teams... because you really would want to have this discussion at a very early stage when the ideas are flowing.”

The emission reduction perspective should be included early on in the product planning, because that is the stage where things can be influenced. When the products are ready, really the only way the emission of a machine can be influenced is through the sales.

One change that was brought up several times was that, as the emissions from the Scope 3 downstream decreases through the upcoming years because of the company's strategic focus, attention will increasingly shift toward reducing Scope 3 upstream emissions. Also the focus was seen to potentially shift from equipment to services as they are a key element in emission reductions. Also the role of R&D in this transition was seen as valuable by an interviewee. This includes solutions such as modularity and design for serviceability, which means that the manufacturing processes are simplified to lower the lifecycle costs of the equipment.

Measuring

All of the interviewees agreed that metrics and KPIs are seen as an important part of strategic decision making. Three of the interviewees thought that the metrics needed to follow and lead this change were in rather good shape as it is now. This was based on the fact that most of their emissions come from Scope 3, and they do have metrics for example for how much of the sales are electric equipment and the for the service side of business. In addition to these for example metrics such as amount of electric equipment are in the product portfolio and, share of fossil free steel in equipment are in use. Certain sustainability and emission reduction metrics that are being followed and reported to the leadership team monthly and quarterly. CO2 emissions are also being followed from the intensity based metrics for the whole company, but two of the interviewees highlighted that there is a need for better following and understanding the absolute emissions since they are actually the ones that tell the evolution of the company's emissions.

On a divisional level, many of the interviewees hoped for better visibility on the progress of the emission reductions compared to the plans and targets and seeing their role in the organization wide development. Two of the interviewees highlighted the need to understand where the emissions are coming from better and on a more concrete level on their own operations and in different locations. Without this knowledge, it is hard for them to efficiently and proactively do initiatives that could mitigate the emissions. Two of the interviewees thought that also the daily decisions could be measured, such as how many employees came to work by car and what kind of car it was, in addition to the organizational emissions being measured and monitored.

“For example, if the car park would be checked every day to see how many cars there are, and how many of them are electric or ICE... such a way would maybe bring it closer to everyday life and measure what we [employees] have control over.”

A couple of the interviewees mentioned Internal Carbon Pricing as an interesting way to make emissions measurable in euros and this way integrate it to decision making. One proposed that this could be especially useful in sourcing decisions.

Incentives

All of the interviewees thought that the incentives are a good way to embed emission reductions deeper into the company culture and decision making. The degree to which the incentives should be used varied. The interviewees emphasised that the most important thing is that the incentives are in-line with the strategic goals and that they are something that the employee can have an effect on. Especially long-term incentives were seen as easy to connect to long-term strategic goals. The short-term incentives were thought to be linked more to actions and activities that support the long-term goals. Most of the interviewees thought that these incentives should be integrated to every level of the organization, but the goals that the incentives are linked to should reflect on their role and the things they have influence on. An interviewee highlighted that the long-term incentives are based on earnings and value creations whereas the short-term incentives could be tied to specific emission reduction initiatives. This way they could reward short-term actions as well.

“In the short-term there must be means-based incentives and in the long-term there must be ones based on goals.”

Some specific groups where the role of incentives regarding the emission reduction efforts was seen more significant by the interviewees. These included R&D, sales, and marketing. The incentives that are tight to emissions could be for example related to sales of electric equipment or services. A couple of the interviewees highlighted that especially

incentivizing sales is important as the sales of an electric equipment often requires much more effort than selling a diesel equipment. Hence the employees should be motivated to make the extra effort.

“The selling cycle [of an electric equipment] is two, three, four times longer, which might lead to salespeople giving up on it and falling back to what is easy [ICE vehicle], and that's where incentives definitely plays a role”

Few of the interviewees saw that the potential bonuses related to emission reductions are a byproduct of the change, but a useful tool to give the first push towards the change. In the long run, the most important thing is to give people opportunities and the freedom to explore and learn new, and to gain experience. The feeling of success and the praise internally as well as from the customers is something that motivates the employees strongly, sometimes even more than monetary incentives.

One interviewee also suggested that in addition to incentivizing the employees, the customers should also be incentivized to buy the electric or other eco-friendly equipment of services. This could be done e.g. through some kind of performance-based packages or volume based discounts for example. The interviewee also suggested that the Focal Company could provide workshops for the customers to really understand their pain points and work together to solve these problems. The Focal Company should function more as a consultant than as a sales person. Incentivizing the customers to reduce their emissions also would help the Focal Company to reduce their emissions since a large amount of their emissions come from the usage of the equipment.

4.2.2 Strategic Decision Making Processes in the Focal Company

The strategic decision making process of the Focal Company was mapped in the interview. The interviewees were asked of the most significant influences they have to balance between, and the biggest challenges in embedding the emission reductions into decision making.

Interviewees brought up that emission reductions are embedded into the strategy, with electrification and technology led growth at the core of the strategy, which reduces the amount of the trade-off situations. Some felt that especially long-term strategic decisions are not as hard as they have agreed on the long-term drivers and are committed to the goals set. However, one interviewee highlighted that it is important to keep the long-term focus also in the short term decision making. It is important that the long term goals are kept in mind always, so when making decisions, they don't conflict with them.

“...it's important to have a pragmatic approach and understand the big picture... It's important not to be too siloed, and to see only one division or product group, but try to create a holistic understanding of how everything will reflect on the Focal Company.”

Regarding emission reductions, the interviewees brought up two ways the company can aim to reduce their emissions: either by reducing emissions of the customer operations by offering low-emission or emission free products, or by lowering the emissions in their own operations. The first one requires understanding the customer needs and market development over time, as responding to these needs often involves R&D efforts that take time. So the decision making is strongly connected to long-term customer demand and value creation. Understanding market trends and customer needs indeed was one of the most critical factors in strategic decision-making that was identified by all of the interviewees. They stressed the importance of actively listening to both markets and customers, rather than making assumptions about what they want or whether the market is speeding up or slowing down. They emphasized also that the competitors need to be closely monitored, as their actions also reflect the market and customers. These all collectively define the prices in the markets and the bargaining powers. These reflect very strongly on the strategic decision making of the company, especially regarding the product portfolio, and sourcing. One interviewee highlighted that the aim is to always be ahead of the customers and competition. A challenge regarding these, brought up by all the interviewees, is understanding and predicting the markets and customer demands correctly in the long run. An interviewee stressed that even though the strategy commitments have

been made long and short term, the regular checks of these should lead to comparing the changes to internally predicted changes. This ensures that the goals are actually still viable, or allows for adjustments to the course of action if changes in the external environment impact the original targets.

“The right anticipation of market readiness and the right speed of developing the offerings are the biggest challenges we have had so far.”

Accepting facts, even when they contradict previous forecasts, enables decisions to be grounded in reality and they can be reasoned with facts to customers, employees and other stakeholders. Additionally, few of the interviewees brought up the need to understand the ways that the company could potentially influence the markets or the customers. This way they wouldn't be so tight up to the market fluctuations. Interviewees suggested for example lobbying, customer engagement or customer workshops. One interviewee believed that stronger external pressure, from for example customers or legislators, would make the embedding of emission reductions easier, as it is seen as the most influential driver in decision making.

Interviewees highlighted that the own operations side requires balancing between green benefits and costs. They brought up that the costs can be mitigated for example by government funding programs, tax rebate programs, or selling the produced energy to the grid, if the initiative is about generating own green electricity. However the most important thing is that the business case needs to be compelling, so it doesn't sacrifice the stakeholder interest simply just to be greener. The interviewee emphasised that the business cases for compliance related initiatives are easy to justify, as ignoring them would bring extra costs via sanctions, the challenge is finding and selling the opportunities that arise.

As for any company, the interviewees highlighted that resources are not endless, which can make it challenging to balance the level of investments put into emission reductions versus other investments. They emphasised that for a publicly traded, profit-driven company, it's essential to evaluate the return on investment for each decision to ensure financial viability.

Hence all of the interviewees noted that the decisions are still very much driven by the numbers of cost versus benefit. Here the time span and the return on investment payback time comes in as a factor. An interviewee said that as the financials are monitored quarterly, can sustainability investments be hard to fit in as their payback times might be for a very long time period or the monetary value can be hard to prove some of the interviewees noted. Many of the interviewees stated that another major factor in addition to the financials of the decision, is how it contributes to the strategic targets set.

“I think we are maybe not in a place where we have the perfect balance [between emission reduction goals and cost considerations] but we do allow higher costs for example on electricity and heating”

When balancing between these factors all of the interviewees agreed that there are no clear rules of thumb that could be used. Few of the interviewees hoped that there maybe could be calculations or rules that would monetize CO₂ emissions or rules that would give indication on how much of an extra cost is acceptable in different scenarios. One interviewee pointed out that especially for sourcing, certain guidelines or processes that give permission to source something that might be a bit more expensive but emission friendlier are needed.

Currently, the company estimates financial outcomes first and then assesses the associated emissions. While emissions are considered in decision making and strategic planning, they do not significantly influence the decisions themselves. Several interviewees suggested rethinking this approach: instead of basing scenarios on financial projections, they argued that scenario planning should begin with emission reduction targets. Market developments would then be layered into these scenarios, and financial implications derived from that foundation. This would allow the company to evaluate how emissions and market dynamics shape financial performance, rather than treating emissions as an afterthought. Other interviewees proposed a slightly different approach that would start with market forecasts and use them to estimate both emissions and financial results. All in all they saw that emissions should be a more integrated element of strategic foresight regardless of the starting point.

One important factor that three of the interviewees discussed was the optimization of the cost structure and resource balancing of the Focal Company. How can they balance costs to allocate sufficient investments in R&D activities to maintain technological leadership. One of the interviewees also suggested that the Focal Company needs to be more agile in its strategy, but especially in R&D, to keep pace with the rapidly evolving market landscape. Another interviewee pointed out that the problem with this is that a faster R&D process often is more expensive, which again leads back to balancing between investing in different resources. One way to go around this would be to change the processes completely, suggested an interviewee.

One suggestion of a way to integrate emission reductions into decision making by an interviewee was that all of the initiatives that are on the table would be gone through with the emission reduction lens. If it is made transparent from the start what the emission of an initiative would be, it is easier to include it in the decision making as an influencing factor. Also a need for frequent and systematic simulation and analyzation tools for emissions was brought up by many of the interviewees. Internal Carbon Pricing is also something that was seen of value by some of the interviewees in strategic decision making and emission reduction integration. An interviewee also suggested the use of an internal fund for sustainability and emission reduction initiatives, so the initiatives wouldn't go through the same process as other initiatives to get funding internally. This would prioritize these initiatives and make them easier to execute without the same pressure of return on investment short term. Another interviewee suggested that tools demonstrating the benefits of purchasing low-emission steel to end customers could support not only sales but also the Focal Company's internal decision making. This would be similar to the way the company currently provides customers with information about incentives and benefits offered by various institutions for investing in the green transition.

4.2.3 Culture and Leadership in the Focal Company

Interviewees were also asked of the cultural changes needed and the difficulties within to embed emission reductions into the decision making. All of them agreed that there is still room for improvement but the magnitude of it varied amongst the interviewees. Interviewees were also asked of the role of leadership they see in this change, where they all agreed that the role of leadership is vital.

One cultural change that was brought up by a couple of the interviewees was the need to change the culture towards more risk taking and agile. One interviewee pointed out that being more wary of risks has worked for the Focal Company for the previous decades but now the markets and customers are changing faster, which requires the same from the company. Additionally, the role of communication was highlighted in all of the interviews as a vital cultural factor in embedding the emission reduction into all levels of the organisation. Constant and consistent communication is needed for these matters to become an everyday factor in all of the decision making within the organisation. This includes fostering a clear understanding of why emissions need to be reduced, the current state of the organisation's emissions, where they are actually coming from, and the ways to address them by the company or as an individual. This includes communicating and visualising the strategy and aim that are set across the organization and integrating sustainability into everyday behaviors, such as how employees commute or travel for work (e.g., air travel). One of the interviewees gave an example where one of the regions of the company has agreed that all the new company cars of the employees will be electric.

“It [emissions] should be a natural question to ask when you meet the suppliers or the customers, and when you do your decision making... we should always bring it to the table for a discussion with our external partners.”

A way of communication that was highlighted was leading by example in which especially the role of leaders is magnified. In general, all interviewees emphasized that leadership plays a crucial role in driving this type of organizational change. Such initiatives are unlikely to succeed without the full commitment of the board of directors and the leadership team. The owners and the board were seen as key players in strategic decision making, as they are responsible for setting the company's long-term direction, which guides all subsequent strategies. Their commitment is first reflected in the establishment of clear targets and strategic shifts, after which it is the responsibility of the leadership team to effectively communicate this vision to employees.

“Any change of this type, which is a new thing through the entire organization, will not happen without leadership, it has to start from there”

“... we [the leadership team] make sustainability decisions in a controlled manner, and this way it is shown that the decisions can also be made because of the other goals and not just because of the financial goals.”

“It can't be that we encourage the team to take calculated risks but when the decisions come to us [the leadership team], we are not in support of these decisions, or we want an absolute risk-free type of decision.”

Leaders need to communicate the change in a manner that resonates with the audience, lead by example, and make decisions that are in-line with the wanted change. By this the leaders give permission to the employees to make decisions and come up with ideas that might be less profitable but are in-line with the change. Inspiring people to innovate and to be active are key tasks for leaders according to the interviewees. They said that the change cannot happen from bottom up, if the permission is not given to act accordingly. The management is in charge of keeping the topic relevant and on the table. The management maintains the direction and makes sure that they are heading towards the goals and long-term vision and strategy on a daily basis. The interviewees pointed out that the top management possesses a lot of valuable information. Therefore it is up to them to provide insights for the entire organization.

“...it is left for the executive management to think about how to deal with those pieces [balancing profitability and emissions], as there are no clear guidelines on whether growth initiatives should take precedence over emission targets — or vice versa.”

Currently the organization is mainly managing its sustainability matters from the corporate level sustainability function. Organizational structural changes that four of the interviewees highlighted was that the accountability and responsibility of the sustainability function needs to be cascaded down. It needs to be integrated into the core of each division.

“...it can't be that it [the push for emission reductions] only comes from the Sustainability function, but it has to come from the CEO, and of course the division presidents have the most important [role] of all.”

“... if there is a broader field of people who are responsible for it [emission reductions], it is more efficient, and the impact is wider than if only one person is responsible for reducing emissions.”

They saw a potential in a sustainability representative becoming part of the divisional leadership teams. This way sustainability and emission reduction considerations can become a defining factor in decision making. In addition to these, it was suggested by two of the interviewees that the sustainability integration to R&D, sourcing and product strategy would be stronger than it is now. Currently the company does have some sustainability resources in these functions.

Additionally, two of the interviewees mentioned that the culture within the company needs to change towards the thinking that emission reductions are an equal not a separate element in all of the decision making. This requires the elements mentioned above, such as leadership, communication, cascading the sustainability function to divisional level and so on.

A couple of the interviewees also pointed out that they don't necessarily think that the culture needs to be revolutionized and even thought that the Focal Company might be putting too much effort into internal webinars and other internal information sharing since there has been that already quite much and the change is gradual. They emphasised more on the importance of keeping the topic relevant by bringing it up in discussions and

focusing the efforts on external change such as finding sustainable suppliers and selling the low-emission equipment.

4.3 Best Practices in Emission Reduction Integration from External Experts

The external interviews were conducted to get best practices on emission reduction integration to strategic management. This included understanding the concrete steps that were taken in other companies, how the accountability is structured, challenges they have faced and how these have been overcome, metrics and tools used as well as the role of culture and leadership. The open-endedness of the questions provided a comprehensive understanding of how the emission integration can be done to the strategic planning process and decision making in companies.

4.3.1 Emission Reduction Integration to Strategic Planning Processes

The interviewees were asked how emission reductions have been integrated into their strategic planning process or to the companies they have advised. They also were asked of the difficulties they have faced and overcome as well as successful examples of the integration. While perspectives varied, common topics were understanding the company's emissions, and the use of KPIs and incentives.

There was one topic which all of the interviewees mentioned which was that emission reductions must be integrated into the company's strategy in order to have any real impact. Whether through high-level goal setting, financial steering mechanisms, or practical tools and systems, emissions-related efforts cannot remain as isolated initiatives. They need to be tied to the strategic direction, planning processes, and decision making structures of the company. However, before emission reductions can be meaningfully tight to strategy, three interviewees highlighted the first thing is that a company needs to understand where their own emissions are coming from. If companies don't understand where their emissions are coming from, they are often setting goals, targets and initiatives by random selection, which rarely gives them efficient outcomes. One of the interviewees pointed out that in addition to understanding your emission hotspots, the company also needs to understand where the regulatory and reporting gaps are.

“Some companies have a strategic direction and they do a load of initiatives, but they don't see any results. That's because they [the strategy and initiatives] are wrongly placed.”

The interviewee stated that one major challenge was establishing baseline numbers for emission reduction which required measuring metrics not previously tracked. Another challenge that an interviewee mentioned is that there are no standard ways to calculate many of the metrics related to emission reductions. To overcome these requires setting up tools, motivating employees to do the extra effort to set up the metrics, identifying and collecting the data that has not previously been collected. One interviewee mentioned that the challenge with establishing the baseline was gathering reliable data, as there isn't a universally standardized way to calculate carbon footprints. To address this challenge, the company developed a system to categorize materials and components, enabling them to estimate emissions with reasonable accuracy. It is vital to get these numbers in the beginning of the process to gain understanding internally but also to have something to bring to the table when discussing with different stakeholders.

“If you only talk about where you need to be, but you don't know where you are, then you're just having a conversation without actions.”

“You need to know where you want to play and how you're going to win. It sets a better ambition for the strategy for reducing emissions.”

After establishing the baseline the interviewees highlighted that the companies need to understand how their emissions link to their strategy, and what strategic choices they can make. For example, for a company that has most of their emissions coming from Scope 3, it might be harder to think of Scope 2 emissions as a strategic decision. Also, when

thinking of the emission reduction initiatives, they need to understand what initiatives can be done within their financial framework or boundaries.

After this the baseline needs to be measured and monitored, which is why the interviewees were also asked for the best methods to do this. Four of the interviewees mentioned the use of KPIs for emission reduction targets. One interviewee gave an example where they have KPIs for example for the initiation or completion of projects. These types of KPIs provide a forward-looking perspective, opposed to backward-looking reduction targets. Another interviewee noted that their company uses annual roadmaps for each KPI and regularly adjusts them through an iterative feedback loop. They also seek feedback from consultants and stakeholders, which feeds into adjustments in both internal goals and public disclosures. KPIs are not static but evolve alongside business strategy. The interviewee also explained that emission reduction goals and targets often require approval, especially for capital investments. Sustainability investments aligned with high-level goals, like achieving net-zero emissions, are prioritized and accelerated. Another interviewee tied KPIs directly to their internal carbon price. The company uses this pricing model to assign financial cost to emissions, integrating these costs into investment decisions. According to the interviewee, this makes the impact of emissions tangible in financial terms and allows for better decision making at all levels.

One of the interviewee's company's cost of capital is linked to their performance targets which includes emission reduction targets. So if the targets are not met, their loan is more expensive which affects their bottom line. Also another interviewee highlighted that emission reduction could be measured by comparing the external changes, such as how has the company value and competitiveness evolved, and how has this affected the price of loans.

One interviewee highlighted the need to have wholesome processes for data collection and reporting, so the data is in one place, accessible, and there isn't need to develop a solution for every new requirement individually. For them this is done by collecting data from various systems and providing a platform that will support the CO₂ calculations and other sustainability metrics, regulatory compliance and supply chain calculations. These activities would otherwise be separate and done in different parts of the company. The reporting is also tricky because it has to be done correctly, so by using a tool that is ISO

compliant it will facilitate the company in creating reports that they can share publicly. Another interviewee stated that CO₂ emissions can be integrated into the financial reporting systems, allowing for the reporting of emissions alongside financial figures. To support the monitoring, four of the interviewees mentioned the use of PowerBI or other visualization tools to help understand the progress of decarbonization initiatives in relation to strategic goals. One interviewee also mentioned Task Force for Climate-Related Financial Disclosures (TCFD) as a reporting framework that they use.

In addition to KPIs, three interviewees pointed out that incentives are key to embedding emission reductions in day-to-day strategic planning and to support the strategic goals. One company they advised applied performance management systems to ensure employees understood emissions as a strategic choice rather than as a nice to have on the side. Two other interviewees also said that their group management team compensation is tied to the compilation of their long-term emission targets, of which emission reduction targets are part of. These targets are also cascaded down to vice presidents and managers, particularly in R&D, sales and marketing.

4.3.2 Emission Reduction Integration to Strategic Decision Making

The interviewees were asked how emission reductions have been integrated into strategic decision making in their company or in the companies they have advised, as well as the tools and frameworks used to support such integration. While perspectives varied, common themes emerged around prioritization challenges, financial frameworks, and tools and methodologies.

Four interviewees emphasized that emission reduction planning is not just an internal alignment process but is also deeply influenced by external factors. Hence, for strategic decision making, a good understanding of the external environment is crucial. One interviewee described how for them, strategic development is an iterative process shaped by what's happening outside the company including customers, government regulations, vendors, and societal expectations. Another interviewee similarly underlined that integrating emission targets into strategy requires a deep understanding of external pressure points, including customer demand, investor expectations, and competitive positioning. Companies need to decide whether to be an early adapter and a forerunner or a follower

who adapts mature technologies. To make this decision, thorough market and competitor analysis need to be conducted. Another interviewee agreed with these views, noting that understanding the future direction of the industry and the right product-market fit is crucial for making strategic, long-term decisions that involve emissions-related considerations. Companies then assess the relevance of emission reduction targets to their business, considering how reducing emissions can improve business and where to focus on reducing their own emissions.

One way an interviewee has seen organizations forcing themselves to reduce emissions is for example by signing up to organizations such as the First Movers Coalition, which forces the member companies to commit to their emission reduction goals. These coalitions can help the company and the industries to move towards greener operations and decarbonize faster. By signing up to these kinds of organizations or movements, can a company force extra external pressure for themselves if needed.

As for the strategic planning, also for making the strategic decisions, the interviewees emphasised that the companies need to understand where their emission hotspots are. This makes it easier for them to reason, and make a strategic decision and prioritize it in the decision making. Even after knowing where the emissions are coming from, the interviewees highlighted that still balancing between emission reduction and other strategic priorities, particularly profitability and resilience, is a major challenge in the strategic decision making.

“Sustainability is still number three in the strategic hierarchy. You have profitability and cost as number one. Then you usually have supply chain resilience... and then number three is reducing emissions, and whilst it is a strategic priority the other two take precedent at the moment”

Another interviewee agreed with this, highlighting the tension between sustainability goals and economic feasibility. It was explained that while there is a strong commitment to reducing emissions, some applications require investments that are difficult to justify based on financial return alone. To address this, the company expanded the scope of their strategy

to include less capital-intensive alternatives and adopted shared technical platforms to reduce the cost of electrification. This approach enables the distribution of initial investment across multiple projects, lowering the financial burden of individual applications. Another interviewee brought up a similar challenge, describing the difficulty of aligning sustainability initiatives with short-term financial metrics. Many decisions are made based on immediate returns, but emission reduction strategies often require long-term thinking. One particular tension mentioned was the need to develop a new, sustainable product portfolio while still maintaining the company's traditional offerings to ensure profitability. This is a challenge crucial to ensuring long-term viability. One interviewee highlights that the cost conflicts appear especially after the "low-hanging fruit" of emission reduction have been addressed. After this further emission reduction investments may not have immediate financial returns. Additionally, four of the interviewees saw that there was a challenge in translating emission reduction efforts into tangible business value. Without a way to do this, can the project be hard to sell for the decision makers.

To solve these issues of conflicting interests, the interviewees proposed several tools they have used. One interviewee highlighted the need to gain understanding of the benefits of emission reductions by understanding the drivers and the markets well enough as well as understanding the funding opportunities that sustainable operations brings. However, as the strategic and investment decisions are often made based on numbers and financials, it can be beneficial to have a tool to justify and support the emission reduction initiatives with numbers. One interviewee told that their company previously lacked the means to financially quantify emissions, which led to decisions being overly focused on short-term gains. However, when for example thinking about a product portfolio, the next 10 years and beyond need to be considered because it takes a long time to develop. To overcome this, the company developed the Internal Carbon Pricing policy, which allows them to make the right long-term decisions. The internal carbon price is defined by the carbon prices reported by IEA combined, which predict how the carbon taxes will be around the world. From this a price curve until 2050 is subtracted and the prices adjusted yearly based on the newest predictions. To this, they have added their own twist to make it fit better to their operations. They have chosen one price curve that they implemented across all the functions and divisions they have. The company has selected the highest price the IEA

provides as a risk mitigation. They are preparing for the future when emissions are taxed. For example in M&A cases, the lowest emitting company which is often the lowest risk option, gets an advantage.

"...if you do not consider the cost of carbon, and new regulations or taxes are introduced later, a high-emission investment could become a stranded asset. That's far more dangerous for a company than missing out on potential revenue from not investing, because in that case, at least nothing has been spent."

The policy says that in every financial decision, the cost of carbon needs to be considered. This allows the company to compare different investment options not only environmentally, but also financially, steering choices toward solutions that make sense on both fronts. The interviewee believes that this is a very strategic and precise instrument to get emission reductions onto the agenda.

"If there is one quick fix I would advise for all companies is to implement an internal carbon price policy that you use to evaluate their decisions going forward"

Another interviewee also recognized Internal Carbon Pricing as a useful tool in the decision making. In addition to this the interviewee also brought up marginal abatement cost (MAC) calculations as a way to identify which emission reductions offer the greatest financial benefit. This could be either through increased revenue or reduced costs.

One way two of the interviewees suggested to go around the profitability and cost issues emission reduction initiatives may cause is to have a central pool of funding for such initiatives. This way employees, division, or functions are not penalized for being delayed or being over the costs because of these initiatives. One interviewee said that in their company, the sustainability initiatives don't have the same requirements financially as

other investments, and they prioritize those sustainability investments that are closely aligned with their high-level goals. The sustainability initiatives are guided through the roadmaps. To the roadmaps employees gather relevant information about the initiatives and what it would actually mean. These roadmaps also take into consideration the regulatory changes, contract considerations, and potential obstacles like local government regulations. These give the management tools to make informed decisions regarding the emission reductions.

To help customers struggling with these same issues, one company that emissions are largely based on Scope 3 emission, uses green funding to support their customers. This means that they help customers get access to preferential interest rates by using equipment which are reducing CO₂ emissions. One interviewee also pointed out that they have a simulation tool to analyze emission impacts of different solutions for customers to help them understand and to help sales of the green products.

To understand the emission hotspots interviewees highlighted two tools: Play-To-Win framework and Life Cycle Analysis (LCA). The Play-To-Win framework evaluates all the choices the organization has which then solidifies the ambition they have. LCA calculates CO₂ equivalents for products. One interviewee said that these need to be combined with more specific targets than just net zero by a certain year. This way the goals and ways how to achieve them become more clear and earlier to grasp and monitor. Two of the interviewees also highlighted the need to categorize materials for better emission tracking and a simulator tool to analyze the emissions of their equipment and how different changes affect those.

4.3.3 Influences of Organizational Factors in Emission Reductions

Interviewees were asked how accountability is structured around emission reductions, where leadership, cascaded structures and different roles were recognized. Additionally, the interviewees were also asked of the cultural changes that this change has required, and the role of leadership in leading the change. All of the interviewees agreed that the role of leadership and the leadership team is vital in driving this change. In addition to this, communication and change management were recognized as key cultural factors.

Accountability for emissions reduction often begins with how responsibilities are structured within the organization. One interviewee highlighted that for publicly traded companies the responsibility for emission reduction typically starts with the board of directors. In Finland, it's common for a board member to oversee sustainability and emission reduction, sometimes with a dedicated working group. Some companies may have a sustainability committee within the board, while in others, the executive team proposes actions for the board to approve. In the executive team, there is also often a person in charge of sustainability. Beneath that interviewees explained that there is often a head of sustainability or sustainability manager or such, who is more in the middle management. For one company the Vice President in charge of sustainability who reports to the CFO. This is because sustainability reports under finance. Three of the interviewees agreed that this is one common way to do this, aligning it with the reporting practices, which are already well-established in the finance department. One of the interviewees mentioned that another common way to do it is to have sustainability as part of the strategic function. They highlighted that the most important thing is to have it in the organization somewhere where they can have an effect on the decision making and processes. In one company, they also have a steering committee which focuses specifically on CO₂ emission targets. They investigate the different paths to achieve the targets. They have different councils for different functions that are responsible for their emissions. For example, the sourcing council is responsible for transport emissions, while for the products, it is a combination between marketing and R&D.

Interviewees that have worked with many companies highlighted that there are many ways to manage emission reductions, including through centralized individuals, decentralized departments, or a combination of both. They highlighted that the most important thing is that it is anchored through the organization to get the change moving forward. Four of the interviewees emphasized decentralized or cross-functional approaches as essential for integrating emission reduction efforts. The interviewees described that their strategy process relies heavily on cross-functional collaboration, where various business units participate in setting and refining strategy and internal goals. While overall policy is set at the corporate level, the execution responsibility, including the associated costs, lies within the business areas. These units are also free to set more ambitious emission targets, depending on their resources. The interviewee highlighted the need for cross-functional

collaboration because the emission reduction issues often go beyond function or limits. For example logistics is often heavily involved, but the decisions they make regarding emission reductions can have influence in other functions such as compliance reporting. To ensure the smooth collaboration and traceability of information, proper tools need to be developed.

“We have a decentralized organizational model, where P&L and decision making are practically brought to the lowest possible level. In other words, the business has pretty much end-to-end responsibility for its own business, product development and services.”

Two interviewees also stated that in the development of the Internal Carbon Pricing policy, the significance of cross-divisional collaboration was crucial. The policy was developed from a mix of top-down and bottom-up perspectives where the guidance came from the top management, but the functions were broadly involved. The development happened on the corporate level, but when they brought it to the functions, they didn't tell them how to use it, they rather had the functions develop their own guidelines that are relevant for them. So the policy and framework were company wide but how to use it was defined more specifically within the functions. They did it this way to ensure alignment, understanding, and buy-in at the operational level. This was seen as essential, because the divisions operate independently but still need to align with common climate-related goals. They believed that the collaboration in the development phase was one of the reasons why the policy was implemented so smoothly.

In addition to decentralized collaboration, three interviewees emphasized the importance of combining top-down and bottom-up approaches. One interviewee, who has worked closely with several companies on this topic, said that most companies opt for a top-down approach where management sets the ambition, vision, and targets, but without a complementary bottom-up dynamic, successful implementation is rare.

“Companies choose to do generally the top down approach but that doesn't always secure it [emission reduction integration] into the organization, and I think that's where a lot require the bottom up approach as well”

Hence, the interviewee sees that the best way to implement this would be through a mix of top-down and bottom-up approaches. This is because the people on the floor level are the ones actually taking the actions to reach those targets and find solutions that can support emission reduction. One interviewee explained that while the CEO and leadership team give the emission reduction targets, these are not only followed top-down but also owned from the bottom-up. Employees are seen as critical to shaping how these targets are implemented. They are encouraged to participate in planning and contribute insights based on their practical knowledge. The employees at all levels can submit their ideas for emission reduction initiatives that are then went through and developed further locally or company-wide. Examples of such initiatives were air audits, window replacements, insulation installations, and switching to LED lighting.

“At the corporate level they may not see what your problems are [at the floor level], and that's why we have to engage in the business area with our local operations,”

“The paybacks are not always what you or I would initially think, and that's where engaging with people that are working at the front lines will generate ideas that make sense”

Although as stated, the change needs to happen across the company, the interviewees still consistently emphasized the crucial role of leadership in driving emission reduction efforts. Four interviewees emphasized that emission reduction initiatives must be anchored at the highest levels of the organization, specifically within the leadership team and CEO. Without this top-level commitment, there is no one positioned to align emission reduction

efforts with the company's strategic direction and balance them with good business practices. These interviewees agreed that leadership must not only set the vision but also ensure that it reaches all levels of the organization. Emission goals need to be supported by clear mandates, KPIs, and incentives that encourage middle management and employees to act accordingly. This internal alignment demonstrates the company's commitment to its sustainability goals both internally and externally. Another interviewee emphasized that leadership plays a critical role in providing guidance, communicating commitment, and fostering an understanding that some decisions may prioritize emission reduction over immediate financial returns. Repetition of the message by leadership ensures it is clearly understood and that permission to pursue sustainability initiatives is granted.

“The CEO is the one that sets our goals. He's the one that says we're going to make this a priority... Personally he felt it was important.”

Three interviewees added that leadership is also responsible for setting ambitious targets, aligning them with company culture, and following up on progress. Leaders must actively engage with their teams, provide the necessary support, and ensure that sustainability becomes integrated into everyday practices.

“Things don't drift, they have to be managed.”

Two of the interviewees brought up that when leaders are committed, knowledgeable, and actively drive emission reduction initiatives, those initiatives are more likely to succeed. However, they also cautioned that overly ambitious targets, set without fully understanding business implications, can have negative consequences. Linking emission reduction targets to company strategy and leadership compensation was seen as an effective way to integrate them meaningfully by the interviewees. One interviewee also emphasized that effective

leadership requires a long-term perspective, with a strong and consistent vision that can withstand short-term pressures and remain stable over time.

The role of communication also came up in most of the interviews. Three of the interviewees highlighted that effective communication is essential to ensure that sustainability goals are understood and acted upon at all levels. When communication is neglected, a significant disconnect between employees and top management as well as between corporate ambition and operational execution can occur. Two of the interviewees emphasized that the organization needs to create a common language that flows through the organizational levels. Understanding of the company's aims, targets, vision, and the reasons behind sustainability efforts must extend beyond top management to the entire organization. Another interviewee emphasized the importance of keeping key internal stakeholders informed about internal sustainability goals, targets, and external developments such as regulations. They noted that important insights often come from employees and managers at all levels, not just senior leadership. Therefore, communication must occur both upward to senior management and downward to key managers, to avoid gaps in planning and to ensure broad engagement. To support this, communication methods in an interviewee's company include meetings, online platforms, training programs, and reporting tools. Employees are encouraged to contribute environmental improvement ideas, such as material or water usage reductions. These tools are designed to be easy and low-effort to ensure wide participation. A major challenge has not been management support, but rather building the infrastructure to gather input from across the company. Establishing this system required significant effort and is still being improved, but processes have gradually become more routine.

One interviewee also emphasized that employee resistance remains a common challenge in change, especially when initiatives are seen as complicating daily work. To overcome this, employees must be involved in the change process early on, and leadership must repeatedly explain the rationale for change and reinforce the importance of sustainability goals. This helps employees to take ownership of new practices. This peer-driven approach created internal momentum, where early adopters helped spread sustainability practices throughout the organization, helping them become the new norm. Additionally, policies and clear directions need to be established early on.

Lastly, change management and organizational culture were consistently highlighted as key factors for embedding emission reductions into daily practices. Two of the interviewees stated that change is a long process that demands time, commitment from leadership and a clear strategy. True change happens when sustainability becomes a vital part of daily operations — similar to how safety has become embedded in many industries. This transformation consists of many small parts working together over time.

4.4 Implications of Best Practices for the Focal Company

This chapter provides a synthesis on the internal and external interviewees. It highlights the deficiencies and suggestions made by the internal interviewees of their strategic management process, and brings suggestions based on those and the best practices introduced by the external experts.

4.4.1 Integrating Emission Reductions into Focal Company's Strategic Planning Process

The integration of emission reductions into the Focal Company's strategic planning processes is a necessary step to align corporate sustainability ambitions with operations. Although sustainability and emission reductions are currently visible within the Focal Company's strategies as themes, priorities and in some actions, based on the internal interviews, their actual impact on planning processes remains relatively limited and they tend to be treated more as outcomes of decisions rather than as criteria that actively shape the decisions. Hence, the interviewees saw that there is room for deeper integration in order to drive emission reductions meaningfully into the company's operations. The synthesis of the best practices and the current status of the Focal Company can be seen in the Table 5 below.

Table 5. Synthesis of the best practices and Focal Company's current strategic planning practices

Best Practices	Current Status of the Focal Company	Proposed steps to take
Emission source mapping and transparency in operational monitoring	General awareness at organizational level but limited insight at operational level	Develop a transparent emission monitoring and measuring and integrate monitoring into day-to-day decisions
Multi-horizon planning and scenario development based on market and emission trends	Strategic planning cycles (3–5 years) disconnected from long-term emission goals	Shift the planning and processes within (such as the Long-Range Planning) to reflect the markets and emissions from which the financial numbers are drawn from
Use of absolute emissions, forward-looking KPIs, and centralized data systems	Some emission related KPIs are tracked but they are largely relative or activity-based metrics	Tie KPIs to absolute emissions and forward looking KPIs, integrating Internal Carbon Pricing and framework such as TCFD, ensure that data systems are centralized
Performance management systems, especially for executive compensation	Emission-linked incentives limited to leadership team	Expand incentives to at least R&D and sales, and explore incentivizing customers in emission reduction

Although the Focal Company knows where their emissions are coming from at an organizational level, many of the internal interviewees did highlight that they do think that better understanding of where the emissions are coming from in a more concrete level and in specific operations and locations is needed. These should be measured transparently, so decisions could be made to reduce these emissions, for example by measuring daily decisions, such as how travelling to and from work or at work is done. This way emission reduction considerations can be integrated into every decision made within the company.

The disconnect between planning cycles was also identified as a structural issue by several internal interviewees. While strategic planning typically spans three to five years, emission reduction efforts often require a horizon of ten to twenty years or more. Bridging this gap requires the Focal Company to develop multi-horizon planning structures, where scenario planning is based on expected market or emission trends, not just financial predictions. This is something that was echoed internally as well by some of the interviewees. This shift from traditional planning logic can help the Focal Company to move away from treating emissions as an outcome and toward treating them more strongly as strategic drivers in decision making.

Additionally, measurement and monitoring practices need refinement. While some key indicators, such as KPIs related to electrified product sales and fossil-free materials, are tracked, they are largely relative or output-based. Tracking absolute emissions and integrating tools such as Internal Carbon Pricing and forward-looking KPIs tied to initiative completions or roadmap milestones. Moreover, the external experts emphasized the importance of adopting robust disclosure frameworks such as the Task Force for Climate-Related Financial Disclosures (TCFD), and centralized data management systems. There needs to be clear and consistent processes for collecting and reporting data, so everything is stored in one place, easy to access, and there's no need to create a new solution each time a new requirement comes up.

Finally, the effective use of incentive structures emerged from both internal and external interviewees. The interviewees highlighted that they could be implemented to all levels of the organization but the important thing is that the incentives are linked to their role and the things they have influence on. Short-term incentives should be based on initiatives whereas long term to their strategic goals. The incentives are seen to have an especially important role in sales and R&D. They also brought up the opportunity to incentivize customers with different programs.

By taking these steps, the Focal Company can move from strategy formulation to execution, building a planning infrastructure where emission reductions are not only visible but central to how priorities are set and decisions are made.

4.4.2 Integrating Emission Reductions into Focal Company's Strategic Decision Making

The integration of emission reduction considerations into strategic decision making processes at the Focal Company is partially in place but remains underdeveloped in practice. Although emissions are reflected in strategy and long-term vision, several internal interviewees acknowledged that decisions are still predominantly driven by financial metrics. Emissions tend to be assessed after decisions have been made, and only occasionally influence the outcome. This presents a fundamental challenge to effective integration: emission reductions are recognized but not consistently implemented in

practice. The synthesis of the best practices and the current status of the Focal Company can be seen in the Table 6 below.

Table 6. Synthesis of the best practices and Focal Company's current strategic decision making practices

Best Practices	Current Status of the Focal Company	Proposed steps to take
Implementing tools to weight the emission reduction-profitability trade-off	No tools to monetize emissions or guidelines on what is acceptable extra cost of emission reduction	Implement Internal Carbon Pricing and MAC to evaluate the trade-off, linking loan price to emission targets, and develop guidelines for certain decisions, such as sourcing
Tools to understand emission hot spots	Some tools are in use	Consider implementing play-to-win framework or LCA to understand where strategic efforts can have the biggest impact
Decarbonization fund	No decarbonization funds at use	Implement a decarbonization fund to allow longer payback periods for strategically meaningful emission reduction initiatives
Gaining proper understanding of the markets, customers, competitors and legislation	General understanding good, but better understanding of especially customers was highlighted as well as more proactive market-shaping approach	Gather knowledge from the customer interface, use simulation tools in decision making, and participate in sustainability coalitions

One clear internal need is for tools that connect emissions to financial impact. From the external experts Internal Carbon Pricing stands out as a widely recognized method for monetizing emissions and incorporating them into financial assessments. Companies using Internal Carbon Pricing use it to evaluate the climate impact of potential investments, making the trade-offs between emissions and profitability transparent. Similarly, marginal abatement cost (MAC) analysis was highlighted as a way to help decision-makers prioritize emission reduction initiatives by their cost-effectiveness. Implementing both of these tools to all decision making could be an answer to the Focal Company's needs. One external expert also emphasized linking performance targets to emission reduction targets. This way the company's loan gets more expensive if they don't complete their goals. This does not necessarily help monetize emissions in all decision making, but showcases in numbers the change and loss if the targets are not met. This creates a strong financial incentive to stay on track with emission reduction commitments. Internally, also the need for some guidelines of how much of an extra cost for example is acceptable in different

scenarios, was called for. Additionally, tools such as Life Cycle Analysis (LCA) and frameworks like Play-to-Win can support strategic clarity, particularly in identifying where emission reduction efforts will have the most impact. These tools can be deployed locally, helping units prioritize effectively within their own contexts.

Another practical suggestion made by internal interviewees, and supported by external examples, was the establishment of a dedicated decarbonization fund. This fund would operate outside traditional investment evaluation frameworks and could finance projects based on strategic alignment with emission targets rather than conventional ROI. Several external companies have implemented such funds successfully, using them to support sustainability initiatives with longer payback periods.

Finally, customer and competitor influence and market anticipation play crucial roles in strategic decisions. Internally and externally the importance of not just responding to market trends, but actively shaping them was emphasized. By joining coalitions, and engaging customers on low-carbon product solutions, can the Focal Company actively try to influence the markets. The external experts also highlighted the need to understand the funding opportunities that sustainable operations bring. Also, simulation tools were also suggested to use also to analyze emission impacts of different solutions internally, and for customers to help them understand and to help sales of the green products.

By embedding these practices into the decision-making process, the Focal Company can move from ambition to implementation turning emission reductions into a competitive advantage while reducing its climate impact.

4.4.3 Changes proposed for Focal Company's organizational culture

The organizational culture plays an important role in whether changes, such as implementing emission reductions into the core of the decision making, are going to be implemented meaningfully. Even with strong goals and plans, progress can be very slow if the people in the company don't fully support or understand the changes. This was something that both internal and external interviewees agreed on. The internal interviews revealed both optimism and caution regarding the readiness of the current organizational culture to support deep sustainability integration. While there is a shared recognition of the importance of emission reductions, the extent to which it is integrated into everyday

decision making and employee behavior varies significantly across functions and organizational levels. The synthesis of the best practices and the current status of the Focal Company can be seen in the Table 7 below.

Table 7. Synthesis of the best practices and Focal Company's current organizational culture

Best Practices	Current Status of the Focal Company	Proposed steps to take
Decentralized accountability and cross-functional co-operation	Centrally lead with limited divisional ownership on emissions	Hold business units accountable for their costs and emission reductions, and cascade target completion into divisional planning and budgeting
Combination of top-down and bottom-up management	Lead almost solely top-down	Implement bottom-up method by engaging the employees at all levels more
Cultivating a culture of experimentation and iterative learning	Risk-aversion and cautious decision making	Re-construct some R&D and ideation processes and give permission to make riskier decisions
Well-thought-out communication and spreading deep understanding of the company's aims, targets, vision, and the reasons behind sustainability efforts across the organisation	Strategy communication well executed but some need for division or site specific communication to spread deeper understanding of why emissions need to be reduced	Build on the existing foundation more personalized communication, involve employees at the beginning of projects to help them take ownership of the changes
The leadership team must be committed and lead by example	Role of leadership has been identified as key factor in driving change and the leadership team is committed to the emission reduction targets	Management practices should be reviewed to ensure that the change is driven by the most effective and meaningful way

Several experts described how emission targets are translated into divisional goals through decentralized, cross-functional planning processes, with each business unit held accountable for their costs and emission reduction outcomes. At the Focal Company, sustainability planning is centralized at the corporate level. A practical implication is that the Focal Company operationalizes a model in which sustainability goals are cascaded into divisional strategic planning, and budgeting. Rather than being isolated at the corporate level, sustainability personnel should be embedded within the divisions into the leadership teams or also into more operational units such as R&D and Product Management. Something the Focal Company could also consider is to have a steering committee which investigates the different paths to achieve the emission reduction targets and drives them.

Also, bottom-up engagement was emphasized by both internal and external interviewees. Internally, interviewees agreed that more visibility on emissions is needed and the frontline employees and divisional staff needs to be engaged more in the emission reduction efforts. Externally, experts emphasized that successful planning processes are co-created with employees, not just decided by top management. The Focal Company could employ some mechanisms to get the practical insights of employees closest to operations such as an easy-to-use ideation tool for all organizational levels.

Communication was acknowledged in all of the interviews as a vital cultural factor. In addition to the existing communication within the Focal Company, internal interviewees expressed a desire for more cross-organizational, divisional, or site-specific communication. They hoped this would help build a deeper understanding of why emissions need to be reduced, the current state of the company's emissions, their sources, and how they can be addressed both at the organizational and individual level. This could include everyday behaviours such as work commute. Externally, the interviewees agreed that the communication needs to be meaningful and there needs to be a deep understanding of the company's aims, targets, vision, and the reasons behind sustainability efforts across the organisation. Involving employees early in the process helped them take ownership of new practices. The Focal Company could build on its existing internal communication infrastructure by integrating emissions more explicitly into everyday channels, ensuring that emission reductions remain a relevant topic in every-day operations.

While historically risk-aversion, and emphasis on cautious and calculated decision making has served the Focal Company well, interviewees noted that the pace of change in environment, markets and customers is accelerating, which requires the company to adapt. Several experts described the necessity of cultivating a culture of experimentation and iterative learning. Leadership plays an important role here: leaders must give permission to make riskier decisions that support their emission reductions, and actively encourage to calculated risk-taking. In general, the role of leadership was identified as significant in driving the change by all of the interviewees. In the end, the leadership team are the ones responsible for setting the goals, implementing the initiatives, and communicating the change across the organization. In order to address the audience in a meaningful way, the management needs to adapt the way they communicate to resonate with their audience. They need to be the ones bringing the topic into conversations and lead by example. This

includes for example taking more calculated risks to advance their long term strategic goals. They need to sustain focus, make symbolic actions, and visible commitment. This way the top management as well as the board can communicate that emissions are a strategic priority of the company. The Focal Company should review its management practices to make sure they are driving the change in the most effective and meaningful way.

In conclusion, shifting the Focal Company's culture requires decentralizing accountability, embedding sustainability professionals throughout the organization, engaging employees bottom-up, and integrating emissions into everyday communication and decision-making.

5 Discussion

This chapter reflects on the findings from empirical research and analyzes them in relation to the relevant literature. The aim is to compare the new insights with established research and identify areas of alignment or divergence. It also addresses the research questions, highlights the theoretical contributions of the thesis, and explores practical implications for management. In addition, the chapter evaluates the reliability and validity of the thesis, discusses its limitations, and offers recommendations for future research.

5.1 Answers to the Research Questions

Carbon emission reduction implementation to the strategic management of a company is a topic that is relevant currently and is expected to stay relevant for the upcoming years. There is increasing pressure especially from the legislation, but also from customers and other external stakeholders (Lozano 2015; Ibishova, Misund & Tveterås 2024). The implementation is vital for companies not only because of the external drivers, but also because it is seen to have an impact on the long-term success of the company (Hart & Milstein 2003). Many still lack clear methods to do so (Despeisse et al. 2012), which is why the aim of this thesis is to find ways carbon emission reductions can be implemented into the strategic management of the Focal Company while considering profitability. The thesis set out to answer three research questions, from which the first is:

How can emission reduction be integrated into the Focal Company's strategic planning process?

It was highlighted by the literature and external experts that first a company needs to understand where their emissions are coming from, in order to implement them meaningfully to the strategy (Epstein & Buhovac 2014, 56–57). Then, to have emission reductions on the agenda, they must be visible and clearly stated on the strategy, mission, vision and targets. (Quazi 2001; Epstein & Buhovac 2014, 29; Kurittu & Rankinen 2023, 73–75). The Focal Company does have a strong understanding of where their emissions are coming, as they know that most come from Scope 3 downstream but also upstream is significant (Fig. 2). However, from the internal interviewees, it came clear that they should have more transparency on the progress of the divisional or site specific emission

reductions compared to the plans and targets and seeing their role in the organization wide development, and where emissions are coming from in a more concrete level on their own operations and in different locations. This could help the employees understand the need for emission reductions better and also the concrete actions they could make to drive the change. This way also the people in charge of these areas could make sure that the right strategic choices and initiatives can be made. The Focal Company does have focus on emission reductions on their strategy, mission, vision, values, and targets.

The theoretical framework demonstrates that integrating emission reductions into strategic planning requires a well-structured process (Haines 1995; Poister & Streib 1999; Abraham 2012; Bryson 2016), where emission reduction considerations are implemented to each step of the process. The empirical study reveals that although sustainability is recognized as an important long-term theme within the Focal Company, it is not yet systematically embedded into the strategic planning process. Internal interviewees described that emission reduction considerations are present but have not been fully implemented into many of the processes in a way that it would affect the decision making but serves more as an outcome of the process.

The external experts emphasized more of the organizational structural and management ways rather than specific processes within the planning process on how emission reduction considerations can and should be implemented into the strategic planning process. Many of them highlighted the importance of decentralization and a mix of top-down and bottom-up management. This is something that was also backed up by literature (Epstein & Buhovac 2014, 57; Broccardo & Mauro 2024). The external experts gave examples of how the company sets emission reduction targets at the group level, but each business area and division is responsible for their operations and contributing to these sustainability goals. The execution responsibility, including the associated costs, lies within the business areas or divisions. Smooth processes for cross-functional collaboration is essential as the emission reduction issues often go beyond business area or division limits. The Focal Company currently does not heavily practice bottom-up management or decentralization. It was agreed by the internal interviewees that the emission reductions should be led from the corporate level, but the responsibility should be cascaded down to divisions or sites more heavily. Also internal interviewees highlighted that emission reductions and the

sustainability function perspective should be integrated into R&D and Product Management. The Focal Company currently practices decentralization to limited amounts.

Using KPIs was something that was highlighted both in the internal and external interviewees, and by the literature (Ritz 2022). The Focal Company has KPIs for emission reductions but something that they could add is KPIs that are directly tied to their internal carbon price or linking cost of capital to their performance targets. This way emissions are monetized in metrics as well and the outcomes of decisions can be seen in euros. The Focal Company currently is more focused on emission intensity metrics but based on literature (Dahlmann, Branicki & Brammer 2019; Donovan 2019) they should measure absolute rather than intensity based as it provides a better view on the carbon reductions of a company. Internal interviewees also suggested more metrics on daily choices that affect the emissions. The Focal Company should also assess if their emission reduction targets are ambitious enough, as literature (Ioannou, Li & Serafeim 2016) highlighted that organizations that set more challenging carbon reduction targets tend to achieve a higher percentage of their carbon reduction goals. If the Focal Company does not have a BSC or SBSC at use in emission reduction metrics, this is a tool that they should have with the integration, according to literature (Epstein & Buhovac 2014, 151–152; Hansen & Schaltegger 2016; Kalender & Vayvay 2016). Also the Focal Company should implement ISO 14001, ISO 9001, GRI, ESRS, SASB, Stakeholder Capitalism Metrics, and Climate-Related Financial Disclosures (TCFD), or at least some of them to support emission reporting if they don't have any of them currently (Epstein & Buhovac 2014, 59; Engert, Rauter & Baumgartner 2016; Kurittu & Rankinen 2023, 87–88).

Incentives was also something that was highlighted both in the internal and external interviewees, and by the literature (Epstein & Buhovac 2014, 137–138; Kurittu & Rankinen 2023, 107–110). It is seen as a powerful way to drive the change and keep the topic on the agenda. The Focal Company has implemented emission reductions into the incentive structures of the leadership team and CEO, but they have not yet cascaded the incentivization of emission reductions from there. The external experts highlight that R&D, sales and marketing are especially important functions to have emission reductions in their incentive structures if emissions want to be reduced, especially in a company that has most of their emissions coming from Scope 3 emissions. This was agreed by the internal interviewees. Incentives for employees could be based on how much of the

emission reduction goals are met, how much of the yearly turnover is from low-emission equipment or the amount of emission reductions, or organizations can for example provide awards for example emission reduction initiative ideas or compilation of these projects. (Kurittu & Rankinen 2023, 109–110). Organizations can also set internal taxes on for example business units for producing additional emissions, or provide employees options on company shares (Epstein & Buhovac 2014, 146–149). Internally one person highlighted that pay-for-performance must not be highlighted too much, also in the emission reductions, to drive innovation and experimentation. This is something that was also backed by the literature (Epstein & Buhovac 2014, 147). One internal interviewee also highlighted the possibility of incentivizing the customers to buy electric equipment.

Internal interviewees also suggested that the way planning is done should be changed as now it is based on finances, and it should be more based on actual market situation and changes or emissions, and the financial numbers should be an outcome of these factors, not the other way around as it is now. This was something that was also advised by the external experts. Also strategic planning and emission reduction processes should be in-line in the yearly planning process, and sight should be longer than the three to five years as it is now, because the emission reductions decisions must be for longer vision.

To summarize, for emission reduction to be effectively integrated into the Focal Company's strategic planning, it must become a clearly defined part of the vision and planning structure, supported by measurable goals, budgeting alignment, and follow-up mechanisms. Insights from external benchmarks highlight feasible models for implementation that could be further explored.

What are the most effective ways emission reductions can be implemented into the Focal Company's strategic decision making?

Effective implementation of emission reductions into strategic decision making requires that sustainability is not treated as a separate agenda but as a core decision criterion. In the Focal Company they currently have very limited tools to evaluate emission reduction-profitability trade-off. While sustainability is discussed at the management level, the interviewees highlighted that the emission reduction is not often a key criteria in the assessment or comparison of decisions. Interviewees reported that decisions are guided primarily by financial KPIs, without tools to assess the cost of emissions. As highlighted

by literature (Pinkse & Kolk 2010), and in the external and internal interviews that balancing between emission reductions and profitability is difficult, and a one important tool to balance between these is monetizing emissions. The Focal Company could implement Internal Carbon Pricing which was praised by the external experts. Internally, some indications of what amount of cost is acceptable in different decisions, especially in sourcing. Internal Carbon Pricing could be used in this. In addition MAC, and central pool of funding for emission reduction initiatives were tools recommended by the external experts for the Focal Company to implement. The literature suggests the Focal Company to use the shared value creation framework to keep emission reductions on the agenda of the decision making and highlighting emissions as a key criteria alongside classical financial metrics (Porter & Kramer 2019). Shareholder value analysis could be combined with this as it can be used in the emission reduction integration as it reframes sustainability as a value creator, not a cost. (Epstein & Buhovac 2014, 154–155). Also internally, it was highlighted that the strategic decision making of the Focal Company is strongly connected to long-term customer demand and value creation. These tools could be then useful for the Focal Company to understand even better the customers, competitors, and markets, and how emissions can bring value to the stakeholders and the company. Additionally, SBSC (Epstein & Buhovac 2014, 151–152; Hansen & Schaltegger 2016; Kalender & Vayvay 2016) and SWOT (Kurittu & Rankinen 2023, 83) were highlighted as a tool to use in emission reduction integration to strategic decision making.

Agreed by the external and internal interviews, and literature (Lynch 2018, 487) was that for strategic decision making, a good understanding of the external environment is crucial. This is something that the internal interviewees hoped for better tools and understanding. They agreed that better understanding of the markets could enhance their technological and R&D readiness to ensure their position as market leader in the future as well. Also, internally more regular reality checks of the situation of the market and the promises and forecasts made, were yearned for. External expert suggested that the Focal Company could join an organisation such as the first mover coalition which provides outside pressure to reduce emissions. Even harder external push was also something that was suggested by some of the internal interviewees. Also, as most of their emissions come from customer use of the equipment, the internal interviewees highlighted that the Focal Company should understand better, how they can influence the customers and markets to buy electric

equipment. External experts highlighted that the Focal Company should look into if there is green funding available for their customer when making investments in eco equipment, which they could use as a selling point.

All in all, the Focal Company could benefit from benchmarking such approaches and adapting them to its own strategic decision making model. Establishing structured decision making tools that include emission evaluation would help ensure consistent consideration across functions and timeframes.

What role does leadership play in the integration of emission reductions into the strategic management processes?

Agreed by the literature (Harrison 1996; Elbanna 2006; Epstein & Buhovac 2014, 57; Jabbar & Hussein 2017; Kurittu & Rankinen 2023, 70) and both the external and internal interviewees was that the leadership plays a central role in strategic management in general but also in embedding emission reductions into strategic management. Therefore it must be anchored at the highest levels of the organization as well and they need to be the ones setting the ambitious goals and committing to those, as it is for the Focal Company currently. However, the external experts and literature highlight that the responsibility and accountability of emission reductions should be anchored across the organization, in places where the people can affect things. It could be through centralized individuals, decentralized departments, or a combination of both. So again the decentralization and combination of top-down and bottom-up is highlighted (Haines 1995, 4). The Focal Company should cascade the responsibility of emission reduction to at least divisional level and this was also echoed internally. Currently the company manages their emission reductions almost purely at the corporate level.

Especially the importance of communication and the role of leadership in it was emphasized by the external experts and literature (Gitsham 2019; Broccardo & Mauro 2024) as well as by the internal interviewees. The strategy communication from top-down perspective is well cared for in the Focal Company. However, internally the interviewees did highlight that it should be even more implemented to all discussions internally and externally, so it would stick to the every-day decisions as well as to strategic decisions. They also emphasized that the leadership needs to lead by example even stronger and give permission to make decisions that might be riskier or more expensive but that are in-line

with the strategy and emission reduction goals. Also, something that the external experts brought up that the Focal Company could integrate is better tools for bottom-up communication regarding these matters. This way the ideas and concerns would flow upward which could also enhance commitment through the organization.

5.2 Theoretical Contribution

This thesis makes theoretical contributions in several areas. Particularly, it expands the understanding of how emission reductions can be integrated into strategic management while considering profitability of a company, specifically on fields of strategic planning and strategic decision making. This is a topic that has not been widely discussed in the literature before. Previous literature has largely addressed sustainability often as a whole either from a policy perspective or focused solely on how sustainability or emission reductions can be integrated into the strategy, not the processes behind it to ensure the implementation. Additionally, the extensive interviews with industry experts and collaboration with a major manufacturer, bring insights to the literature, enriching the research.

The thesis drew synthesis on the steps of the strategic planning process from Haines (1995), Poister and Streib (1999), Abraham (2012), and Bryson (2016), to format a comprehensive, step-by-step strategic planning framework. This framework was enriched with ways to integrate emission reductions into the planning process from the literature. This complemented especially the works of Epstein and Buhovac (2014), and Engert, Rauter and Baumgartner (2016) which both discuss these issues within the wider sustainability context.

The thesis expands the research on strategic decision making that has traditionally focused on catering to customer needs while minimizing total costs or maximizing revenue. It enriched the studies of Pinkse and Kolk (2010), and Lynch (2018) regarding the trade-off between profitability and emission reduction by introducing tools and best practices to manage this balance. Furthermore, it contributes to the understanding of the strategic decision-making process when emissions are integrated, offering practical examples and insights drawn from the empirical study.

Additionally the thesis also supported the theories from Harrison (1996), Elbanna (2006), and Jabbar and Hussein (2017) of the undeniable role of the leadership team in strategic management. The thesis also complemented the research of Kurittu and Rankinen (2023), and Broccardo and Mauro (2024) of the role of leadership in the changes of these processes such as the implementation of emission reductions.

5.3 Managerial Implications

The primary managerial implication of the research underscores the need for the emission reduction integration to strategic management for companies to ensure vitality of their operations in the future. The results highlight the need for a clear and unified strategic framework that embeds sustainability goals, particularly carbon reduction, directly into the core business strategy rather than treating them as add-ons or compliance requirements. Managers should ensure that emission reduction objectives are aligned with the company's overall mission, vision, and values to secure organizational commitment across all levels. Additionally, managers must recognize the importance of developing systematic tools and processes for evaluating the profitability-emission reduction trade-off. Integrating tools such as Internal Carbon Pricing, Sustainable Balanced Scorecard, and emission reduction KPIs will help balance short-term financial pressures with long-term environmental commitments. In particular, the study suggests that incentivizing both executive and operational teams through well-aligned reward structures can reinforce desired behaviors without undermining intrinsic motivation.

Lastly, the thesis emphasizes the pivotal role of leadership in driving the emission reduction integration. Top management must not only communicate the importance of emission reduction but also model the behaviors and priorities necessary to embed sustainability into decision making processes. This includes allocating sufficient resources, setting measurable performance targets, and fostering a culture that encourages cross-functional collaboration and innovation in emission reduction efforts.

5.4 Reliability and Validity

Ensuring the reliability and validity of the research process is essential to establish the trustworthiness and credibility of the findings. Reliability refers to the possibility of

repeating the research with the same outcomes. (Hirsjärvi & Hurme 2022). The research in this thesis has been carefully prepared and documented, enabling its replication and thereby enhancing its reliability. The interviews were conducted in a consistent manner, ensuring that all of the interviewees, whether internal or external, were asked comparable questions. This consistency minimized interviewer bias and improved the reproducibility of the results. However, the interpretation of the interviews is subject to the author's judgment and possible subjectivity, which may weaken the reliability of the research.

Validity refers to the extent to which a research study accurately measures what it intends to measure, how generalizable the results are, and how well the chosen research method addresses the research objectives (Hirsjärvi & Hurme 2022). The thesis used personal interviews to ensure that respondents understood the questions and to allow the interviewer to ask more detailed questions to get even more detailed answers. The combination of internal and external perspectives allowed for cross-verification of themes, improving the depth and accuracy of the findings. The alignment between the research questions, theoretical background, and data analysis further supports the construct validity of the study. As the thesis focuses on a single company context, this may limit generalizability, although this was partly mitigated by including external expert insights. Also, the limited sample size of the research due to limited resources slightly reduces the validity of the thesis.

5.5 Limitations and Future Research Topics

As for any qualitative research, the thesis has some limitations. A common limitation of case studies is that their conclusions and results may not be generalizable to other similar cases (Johannesson & Perjons 2021, 112). The case study does offer valuable insights into the case specified in this context, but further validation is strongly recommended before extending the findings to broader context. Although the Focal Company is a prominent and global player in its industry, and the limitation of generalizability was aimed to be minimized with the external interviewees with similar players in different industries, it is worth noting that the findings may not fully translate to other organizations or industries as the sample sizes were rather small due to limitations in resources.

The thesis investigated how the Focal Company could integrate emission reduction perspective into their strategic management process. Although implementation, communication and different management (such as bottom-up and top-down) styles were discussed, the implementation perspective of strategic management was left out. Further studies could aim to understand this perspective better. The thesis does touch on how to integrate emission reductions into the strategy of a company, but the focus of the study is elsewhere. Hence, future research could delve deeper into this aspect. Additionally, this thesis focused on strategic management on a general level. Future research could delve into specific elements in the strategic planning process or specific decision making aspects such as investment decision making. Furthermore, the study could be continued with a larger sample size of the empirical part to further the validity of the research.

6 Conclusions

The objective of the thesis was to find ways carbon emission reductions can be implemented into the strategic management while considering profitability. More specifically, the thesis studied the implementation of emission reductions into the strategic planning process and strategic decision making. The focus was especially on the implementation of these to the Focal Company with whom the thesis was made in collaboration with. The Focal Company is a global manufacturer of cargo handling equipment. To provide context to the theoretical framework and to reach the objectives of this study, qualitative research was conducted as a single-case study, where the external case interviews were conducted to gain best practices for the Focal Company.

The theoretical section of the thesis delved into the basics of strategic planning and strategic decision making fundamentally and then from the emission reduction perspective. Terminology related was defined and examined, highlighting their roles in shaping corporate direction. The chapter emphasized the integration of emission reduction into strategy processes, underscoring the complexities involved, from financial constraints to stakeholder alignment. Importantly, it stressed the need for a structured yet flexible approach that balances long-term sustainability goals with short-term operational and financial realities. Also, the alignment of incentives with emission reduction goals was discussed. Additionally, the chapter explored the ways and tools of which emission reduction can be implemented into strategic decision making and the difficulties within it. Lastly, the theoretical framework addressed the crucial role leadership plays in strategic management in general but especially in driving this change.

After the literature review, the research methodology and data collection approach were justified. The empirical part of this research was conducted with a qualitative single-case study method and data was collected from 8 internal and 6 external semistructured interviews. The chosen research method was justified based on the nature of the research, which requires an in-depth understanding of the research problem. The aim of the internal interviews was to get a clear understanding of the current state of the Focal Company's practices and the level of emission reduction implementation, whereas the aim of the external interview was to gain best practices from industry experts. The key outcome of the

empirical research was the analysis of the ways the Focal Company could integrate emission reductions to their strategic management processes better.

Lastly, the findings of the literature review and the empirical research were discussed and compared with each other. By this, the research questions were addressed. In addition, theoretical contribution was evaluated, managerial implications explored, reliability and validity addressed, and limitations and future research discussed. The main takeaway of the thesis underscores the ways a company can integrate emission reductions meaningfully, enabling them to have that as a defining factor in every decision made within the company. The theoretical contribution highlighted the importance of complexity but also the importance of addressing emission reductions in the strategic management processes of a company to grow in a profitable manner. The thesis was limited by generalizability due to a single company context. Future research could continue the research to a wider field of industries, include larger sample sizes, or address the components of the thesis even further.

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Appendices

Appendix A. Internal interview questions – English

1. How long have you worked in the Focal Company and what is your job title and role?
2. When facing strategic decisions, what are the most significant influences you consider and have to balance between?
 - Are emission reductions considered in the decision making?
3. What cases have you had in the Focal Company, where emission reduction-profitable growth trade-off has been evaluated and how has it been executed?
 - What tools were used?
 - If this has not happened: Do you have tools or ways-of-working in case you would come across this in decision making?
 - Are there (more) guidelines, tools etc, that you see that would be needed for this assessment to be efficient?
4. To what extent are emission reductions currently integrated into the Focal Company's strategic planning process?
 - What actions where the integration can be seen (for example is considered in some part of the process, has its own part in the process, some tools are used in evaluations etc.)
 - Is it considered as a core topic, a compliance requirement, or a competitive advantage?
5. How do you see the role of emission reductions evolving in Focal Company's strategic planning over the next 3-5 years?
 - What concrete steps are taken
 - Where in the strategic planning process should emissions be considered?
6. What are the biggest challenges in embedding emission reductions more deeply into Focal Company's strategy and strategic decision making?
 - What would make it easier to integrate emission reductions into the core of Focal Company's strategic decision-making?

- What organizational structural or cultural shifts are needed?
 - What role does leadership play in driving this change?
7. What emission reduction metrics would you need to make an informed strategic decision and to lead the transition to the right direction?
 8. What would you see to be the most effective ways to use incentive structures to drive the emission reduction goals?
 - Do you see incentive structures as an effective way to do this?
 9. Is there something we haven't discussed related to implementing emission reductions into strategic decision making and planning process that you would like to point out?

Appendix B. Internal interview questions – Finnish

1. Kuinka kauan olet työskennellyt kohdeyrityksessä, ja mikä on tittelisi ja roolisi?
2. Mitkä ovat merkittävimmät tekijät, joiden näet vaikuttavan strategisiin päätöksiin ja joiden välillä sinun täytyy tasapainotella päätöksenteossa?
 - Otetaanko päästöjen vähentäminen huomioon päätöksenteossa?
3. Mitä tapauksia sinulla on ollut kohdeyrityksessä, joissa päästöjen vähentämisen ja kannattavan kasvun välistä kompromissia on arvioitu ja miten se on toteutettu?
 - Mitä työkaluja käytettiin?
 - Jos näin ei ole tapahtunut: Onko sinulla olemassa työkaluja tai toimintatapoja, jos tällainen tilanne tulisi eteen päätöksenteossa?
 - Tarvittaisiinko mielestäsi (enemmän) ohjeita, työkaluja jne., jotta tämä arviointi olisi tehokasta?
4. Missä määrin päästöjen vähentäminen on tällä hetkellä integroitu kohdeyrityksen strategiseen suunnitteluprosessiin?
 - Mistä toimista integraatio voidaan havaita (esimerkiksi otetaanko se huomioon jossain prosessin osassa, onko sillä oma osansa prosessissa, käytetäänkö joitain työkaluja arvioinneissa jne.)?
 - Pidetäänkö sitä ydinongelmana, vaatimuksena tai kilpailuetuna?
5. Miten näet päästöjen vähentämisen roolin kehittyvän kohdeyrityksen strategisessa suunnittelussa seuraavien 3–5 vuoden aikana?
 - Mitä konkreettisia toimia toteutetaan?
 - Missä kohtaa strategista suunnitteluprosessia päästöt tulisi ottaa huomioon?
6. Mitkä ovat suurimmat haasteet päästöjen vähentämisen syvemmissä sitouttamisessa kohdeyrityksen strategiaan ja strategiseen päätöksentekoon?
 - Mikä helpottaisi päästöjen vähentämisen integroimista kohdeyrityksen strategisen päätöksenteon ytimeen?
 - Mitä organisaatorakenteellisia tai kulttuurisia muutoksia tarvitaan?
 - Mikä rooli johtajuudella on tämän muutoksen ajamisessa?
7. Mitä päästöjen vähentämisen mittareita tarvitsisit, jotta voisit tehdä informoituja strategisia päätöksiä ja johtaa siirtymää oikeaan suuntaan?
8. Mitkä olisivat mielestäsi tehokkaimmat tavat käyttää kannustinrakenteita päästöjen vähentämistavoitteiden edistämiseen?

- Pidätkö kannustinrakenteita tehokkaana tapana tehdä tämä?
9. Onko jotain, mitä emme ole vielä käsitelleet liittyen päästöjen vähentämisen toteuttamiseen strategisessa päätöksenteossa ja suunnitteluprosessissa, jonka haluaisit tuoda vielä esiin?

Appendix C. External interview questions – English

1. What (type of) company do you work for and what is your job title and role?
 - For how long have you been working with strategy, strategic planning and emission reductions?
2. How does your company/the manufacturing companies you have advised, have integrated emission reductions into the strategic planning process?
 - What are the concrete steps that have been implemented?
3. Who in the organization is responsible for ensuring that emission reductions are embedded into strategic decisions, and how is accountability structured in your company/in the manufacturing companies you have advised?
 - Under what organization is sustainability in (strategy, sales, etc)?
4. What have been the biggest challenges in embedding emission reductions into strategic planning, and how have they been overcome in your company/in the manufacturing companies you have advised?
5. What are some examples of successful initiatives where emission reductions were fully integrated into strategy?
6. What frameworks, tools, or methodologies do you use to assess and incorporate emission reduction in strategic decision-making in your company/in the manufacturing companies you have advised?
7. What role does leadership play in driving emission reduction initiatives in your company/in the manufacturing companies you have advised?
 - How does the leadership team actively support and drive emission reduction initiatives?
8. How do you track and measure the impact of emission reduction efforts in your company/in the manufacturing companies you have advised?
 - What KPIs or benchmarks do you use?
 - How are for example cost considerations and ROI incorporated?
9. Is there something we haven't discussed related to implementing emission reductions into strategic decision making and planning process that you would like to point out?

Appendix D. External interview questions – Finnish

1. Minkä tyyppisessä yrityksessä työskentelet ja mikä on tittelisi ja roolisi?
 - Kuinka kauan olet työskennellyt strategian, strategisen suunnittelun ja päästöjen vähentämisen parissa?
2. Miten yrityksesi/neuvomasi valmistavat yritykset ovat integroineet päästöjen vähennykset strategiseen suunnitteluprosessiin?
 - Mitkä ovat konkreettiset toimenpiteet, jotka on toteutettu?
3. Kuka organisaatiossa on vastuussa siitä, että päästöjen vähentäminen on sisällytetty strategiaan päätöksien, ja miten vastuu on organisoitu yrityksessä/neuvomissasi valmistavissa yrityksissä?
 - Minkä organisaation alaisuudessa sustainability on (strategia, myynti jne.)?
4. Mitkä ovat olleet suurimmat haasteet päästöjen vähentämisen sisällyttämisessä strategiseen suunnitteluun ja miten ne on ylitetty yrityksessä/neuvomissasi valmistavissa yrityksissä?
5. Mitkä ovat esimerkkejä onnistuneista aloitteista, joissa päästöjen vähentäminen oli täysin integroitu strategiaan?
6. Mitä viitekehyksiä, työkaluja tai menetelmiä käytätte arvioidakseen ja sisällyttääksenne päästöjen vähentämisen strategiseen päätöksentekoon yrityksessä/neuvomissasi valmistavissa yrityksissä?
7. Mikä rooli johtajuudella on päästövähennysaloitteiden edistämässä yrityksessä/neuvomissasi valmistavissa yrityksissä?
 - Miten ylin johto aktiivisesti tukee ja edistää päästöjen vähentämiseen liittyviä aloitteita?
8. Miten seuraatte ja mittaatte päästöjen vähentämistoimien vaikutusta yrityksessä/neuvomissasi valmistavissa yrityksissä?
 - Mitä suorituskyvyn indikaattoreita (KPI) tai vertailuarvoja käytätte?
 - Miten esimerkiksi kustannukset ja sijoitetun pääoman tuotto (ROI) otetaan huomioon?
9. Onko vielä jotain, mitä emme ole vielä käsitelleet liittyen päästövähennysten sisällyttämiseen strategiseen päätöksentekoon ja suunnitteluprosessiin, mitä haluaisit tuoda esiin?