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Saving the World = Making Money?

Through the Eyes of Decision Makers: Sustainable Value Creation, Competitive Advantage, and Carbon Dioxide Removal

by

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Abstract

This study aims to explore how firm decision-makers view the role of external Carbon Dioxide Removal (CDR) investment in relation to sustainable value creation (SVC) and competitive advantage. To investigate this novel and broad topic, the study develops a tentative framework for how CDR could potentially create competitive advantage through SVC. Consequently, the paper utilized a qualitative multiple-case study with pattern matching against the framework to both validate predictions and uncover novel perspectives. The study found that the framework could predict some outcomes relatively well but also extended and modified it to fit emergent themes from the cases. The most prominent key finding is how CDR investments can contribute to the attraction, retention, and motivation of employees.

Keywords: competitive advantage, carbon dioxide removal (CDR), sustainable value creation (SVC), resource based view (RBV), Key Decision-makers

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Table of Contents

List of Tables

List of Figures

List of Acronyms and Abbreviations

Acronym	**Definition**	**Quick Description**
CDR	Carbon Dioxide Removal	Techniques or technologies designed to remove CO_2 from the atmosphere, helping mitigate climate change by reducing greenhouse gas concentrations.
CSR	Corporate Social Sustainability	Refers to a company's commitment to operate in an economically, socially, and environmentally sustainable manner, often through initiatives that benefit society beyond profit maximization.
CSRD	Corporate Sustainability Reporting Directive	A regulation by the European Union requiring companies to disclose detailed information on their environmental, social, and governance (ESG) practices.
GHG	Greenhouse Gas	Gasses in the Earth's atmosphere that trap heat, contributing to the greenhouse effect and global warming.
SVC	Sustainable Value Creation	Emphasizes the strategic integration of Corporate Social Responsibility (CSR) into the core business operations, prioritizing long-term value generation through the alignment of economic, environmental, and social considerations, rather than treating CSR as a peripheral, philanthropic activity.
RBV	Resource-Based View	A strategic management theory that posits a firm's sustained competitive advantage stems from its unique and valuable internal resources and capabilities, rather than external factors, highlighting the importance of leveraging internal strengths to achieve superior performance and profitability.
VCM	Voluntary Carbon Market	A system where individuals, organizations, or companies can voluntarily purchase carbon credits or offsets to mitigate their carbon footprint beyond regulatory requirements, often supporting projects that reduce greenhouse gas emissions or promote carbon sequestration.

1 Introduction

> "Periodically, major new forces dramatically reshape the business world – as globalization and the information technology revolution have been doing for the past several decades. Climate change, in its complexity and potential impact, may rival them both." (Porter & Reinhardt, 2007, p.26)

In the "State of the Global Climate" report, the World Meteorological Organization (2024) stated that 2023 was the warmest year ever recorded, with a continued rise in concentrations of atmospheric greenhouse gasses (GHG), highest recorded sea levels, record-low Antarctic sea ice content, and severe glacier recession. Our climate is in a state of crisis, and humanity faces increasingly severe challenges. Businesses are among those stakeholders highly exposed to the risks of climate change and will be challenged in persevering in the face of physical, transitional, and liability risks (Zurich, 2023). Zurich (2023) describes physical risks as immediate physical threats from the environment; transitional risks as those involving potentially higher business costs from new policies, laws, and regulations meant to address climate change; and liability risks as those related to a failure to mitigate, adapt, or comply with changing climate laws and regulations. To reduce the imminent risks companies encounter, they will have to act today to reduce their carbon footprints. However, without strict regulation or clear incentives to pursue the corporate sustainability initiatives needed to reach net-zero emissions and prevent the most severe consequences of climate change, adoption of these necessary measures will be slow. Even with significant consensus among leading scientists and researchers on anthropogenic global warming and the severity of climate change, the problem remains that companies are reluctant to pursue sustainability initiatives required to make a real difference.

The significant consequences of this inaction are emphasized by the degree of impact the private sector has on the environment. In 2021, the private sector accounted for 84% of global emissions (Bisbey, 2023) while only contributing \$14.4 billion toward the collective goal for developed countries to mobilize \$100 billion per year in climate financing (OECD, 2023). As these statistics demonstrate, the private sector represents a disproportionately large share of global GHG emissions while contributing a less than proportionate amount to climate financing for global goals. Therefore, one could argue that holding companies liable for taking a leading role in decarbonization is imperative.

The growing concerns about a carbon overshoot and corporate climate action inactivity have generated a considerable body of research supporting the possible business opportunities of pursuing climate goals (Damert et al., 2017; Höglund et al., 2023; Lee, 2012; Mistry et al., 2023; Reeves et al., 2022). Previous research that suggested that there is a tradeoff between climate action and economic growth, is misleading (Levin & Steer, 2021; Mehrhoff, 2023).

1.1 Research Background

One of the prominent theories in understanding sources of competitive advantage is the resource-based view (RBV). This theory suggests that variations in firm performance are largely due to each firm's unique aggregation of resources. Specifically, resources that are valuable, rare, inimitable, and non-substitutable (VRIN resources) are considered key to acquiring a competitive edge (Barney, 1991). Dynamic capabilities—a firm's capacity to remain agile in changing business environments—also contribute to competitive advantage (Teece, 2014). Competitive advantage itself is defined as a firm's ability to create greater value than its competitors (Peteraf & Barney, 2003). This advantage arises from the firm's capacity to either increase customer willingness to pay or reduce production costs using VRIN resources and dynamic capabilities (Brandenburger & Stuart, 1996; Peteraf & Barney, 2003). Essentially, the RBV indicates companies are more likely to implement proactive environmental management strategies when they have, or can acquire, such competitive advantages.

A common misconception is that competitive advantage is solely measured by profits. However, two leading scholars in the RBV field, Peteraf and Barney (2003), clarify that the creation of value is distinct from the appropriation of value. They explain that the amount of value a firm creates sets the stage for how that value is later distributed among stakeholders—the greater the created value surplus, the more potential there is for its distribution. Thus, the focus on value creation, rather than merely on appropriation, is identified as a fundamental source of competitive advantage. Essentially, the RBV supports the idea that firms can achieve competitive advantage through sustainable actions. However, a crucial aspect to consider is that the survival of firms often depends on value appropriation. Chandler (2021) has formulated a theory on a possible solution to this contradiction.

A prevalent perspective on corporate sustainability has traditionally been driven by the discourse surrounding Corporate Social Responsibility (CSR), which views firms 'doing good' as a form of philanthropic behavior that should be pursued in an almost virtue-ethical manner. However, this approach has been critiqued for its lack of strategic framing, with some, like Dahlsrud (2006), showing that CSR is a vaguely defined topic, essentially meaning whatever the implementing firms desire it to mean. In response to these limitations, Chandler (2021) proposed the concept of Sustainable Value Creation (SVC). Chandler emphasizes the critical role of firms' ability to innovate and create value, along with the market's efficiency in allocating resources, as essential drivers of societal development. His approach does not seek to change the fundamental role of the firm; instead, it aims to reshape how business models are conceptualized and executed, aligning them more closely with sustainable practices.

Chandler (2021) advocates for a strategic shift in CSR, proposing that it be integrated directly into the core business activities of a firm rather than existing as a peripheral endeavor. This integration, he argues, facilitates SVC, aligning it with the established definition of competitive advantage. By embedding CSR at the heart of business operations, he posits firms are better positioned to leverage a broad stakeholder value creation approach, which can enhance their competitive advantage as they are better able to create greater value for more people than competitors. Chandler believes that the essence of shaping society lies in the choices and actions of humans composing these stakeholders. He suggests that firms, by actively engaging and listening to stakeholders through countless daily interactions, can adapt their processes to optimize value creation for these stakeholders. In essence, by making CSR central to their business strategy, firms not only sustain their competitive edge but also contribute to sustainable value creation.

Previous corporate sustainability efforts have emphasized reducing carbon emissions. Given the current climate crisis trajectory, the 2015 Paris Agreement—a legally binding international treaty on climate change adopted by 195 parties—was created with the overarching goal of limiting global warming to 1.5℃ above pre-industrial levels (United Nations, n.d.; Yang, 2023). Attaining this goal entails halving global GHG emissions by 2030 and reaching net-zero by 2050 (Science Based Targets, n.d.). Consequently, a significant body of literature has emerged describing various strategies for firms to promote simultaneous value creation and emission reduction (Kolk & Pinkse, 2008; Porter & Reinhardt, 2007; Orsato, 2006).

Although drastic carbon emission reductions in a company’s value chain remain a top priority, they will not suffice on their own or be achieved at the scale necessary to reach net-zero by the deadline set by the Paris Agreement (Matos, 2022; Yang, 2023). Carbon dioxide removal (CDR)—a method by which GHGs are permanently removed from the atmosphere—will be essential to offset residual and historical emissions to reach net-zero (Climeworks, 2023; Mistry et al., 2023; Parry, 2022; Science Based Targets, 2022). Currently, these methods are primarily implemented through investments in external compliance or voluntary markets, as the technology is not yet available for in-house application.

Building on the established frameworks of competitive advantage and sustainable value creation, the exploration of corporate decision-making in the context of sustainability reveals that the role of firm decision-makers is pivotal, particularly in navigating the complexities of external CDR investments. Edwards (1954) emphasizes the tendency of individuals to act rationally and make decisions according to their perceived utility gains. Ueda et al. (2009) build on this notion by arguing that differences in priorities between individuals and society can only be resolved through an integration of values towards sustainable value creation for society. Chandler's (2021) SVC theory offers a novel solution for decision-makers to address this dilemma. The power of decision-makers is significant in determining the direction of a company (Eisenhardt & Zbaracki, 1992), making it essential for these individuals to possess the sustainability competencies and support systems necessary for making strategic sustainable decisions (Eberz et al., 2023). In the context of corporate sustainability decisions, both the findings of Eberz et al. (2023) and Ueda et al. (2009) indicate a synergistic relationship between top management and sustainability managers as essential for driving value creation.

1.2 Research Gap and Purpose

No known attempts have been made to further our understanding of how CDR investments can contribute to competitive advantage. Furthermore, there is limited comprehension of what SVC looks like in practice. A pioneering extensive literature review has combined business model theories into a practical framework for managers to assess actions potentially leading to Sustainable Value Creation (Manninen et al. 2024). However, this study has not addressed its applicability to the real business environment. In light of externally investing money into CDR, its physical value does not pertain to within the firm's borders. Therefore, to utilize this framework in investigating the potential contributions CDR investments have on competitive advantage, we must examine it from the perspective of decision makers. Our aim to discover the interrelation between SVC maturity, CDR investments, and the perceived value derived from these investments is summarized in the research question below:

> *How do firm decision makers view the role of external CDR investment in relation to sustainable value creation and competitive advantage?*

1.3 Delimitations

The research scope and case selection of this study are intentionally narrowed in several key aspects to enhance analytical generalizability, validity, and reliability. The primary delimitations involve the selection of the sample and the interview participants, which are both presented and justified in this section.

The selection of interviewees was comprehensive; it encompassed ten individuals divided into two groups: five sustainability managers and five members of top management, collectively representing our case study. These participants are employed across ten distinct companies that vary in size, industry sectors, and geographical locations. This broad sample selection facilitates the discovery of common themes and varied practices across different environments. This broad approach makes the research findings more robust but also extends their generalizability, producing results that are more pertinent and applicable to a larger population.

To enhance analytical generalization, it is important to identify best practices applicable across various industries and regions. Consequently, it is crucial to ensure that the research does not overly concentrate on the specific traits of a single industry, size, or geographic location of the sample. To preserve the relevance of our findings, we have excluded companies from our sample that do not currently invest in Carbon Dioxide Removal (CDR) and have no plans to invest shortly. This study seeks to uncover best practices, challenges, and the impacts of CDR investments. Omitting these companies allows for more meaningful comparisons and facilitates the drawing of conclusions about effectiveness and strategic implications. Such exclusions ensure that all considered data points are pertinent to the research question.

Interviewee selections were limited to business professionals directly or indirectly involved in the strategic decision making of their firms sustainability strategies. Specifically targeting Sustainability Management (indirect decision-makers), and Top Management, including owners, C-suite executives, and board members (direct decision-makers). This selection criterion guarantees that the insights gained are significant and instrumental in understanding the strategic implications of CDR investments. This focus on sustainability management is due to the professionals' depth of knowledge and practical experience in developing and implementing sustainability strategies. These professionals have intricate knowledge concerning operational challenges and the organizational integration of CDR initiatives. Simultaneously, including top management provides a strategic overview of the company's direction and priorities, making their perspective crucial for understanding the high-level motivations behind sustainability investments and how these align with broader business objectives and competitive strategies.

By concentrating on these two categories, the study captures a comprehensive view of strategic sustainability efforts, ensuring the data is pertinent for analyzing how companies prioritize and integrate CDR investments into the core strategies. This comparative approach enriches the understanding of the decision-making process and underscores the critical factors that contribute to the effective implementation and strategic value of CDR initiatives. The exclusion of other non-strategic stakeholders guarantees a focused and coherent data set, ensuring that the responses are relevant to the scope of the study and that the findings are suitably aligned with the analysis of how CDR investments are prioritized and incorporated into the companies' core strategies.

1.4 Research Limitations

Numerous limitations constrain this paper, with the primary ones including the nature of self-reporting, the characteristics of the sample, and our chosen method of analysis. Detailed discussion of the method of analysis will be provided in the methods chapter.

The study relies on semi-structured interviews, which inherently entail the risk of self-reporting bias. Particularly, participants in high-ranking positions, such as top management and sustainability managers, may portray their organizations more favorably due to social desirability bias. This inclination can result in an overemphasis on positive behaviors and achievements in sustainability practices while downplaying challenges and failures. Consequently, the collected data may not accurately portray the true nature of the company's sustainability initiatives and outcomes, potentially skewing the findings towards overly positive outcomes. To address this concern, we anonymized the interviewees and assured them that no identifying information would be used, aiming to foster more candid responses by alleviating fears of negative repercussions or judgment. By ensuring participant anonymity, we aimed to mitigate the influence of social desirability bias and obtain more accurate and reliable data regarding their sustainability practices and experiences with CDR investments.

While the sample selection for this study aims to capture a diverse and representative range of perspectives on CDR investments, several limitations must be acknowledged. Interviewing only one individual per company may not fully capture the complexity and diversity of perspectives within the organization, as different departments or levels may have varying views on CDR investments. The significant variation in company sizes, from 4 to 100,000 employees, can also lead to challenges in comparing and generalizing the findings. Smaller companies may face different constraints and opportunities compared to larger corporations, complicating the drawing of uniform conclusions. Similarly, the wide geographical scope, with some companies operating in a single country and others in up to 180 countries, introduces inconsistencies due to different regulatory and market conditions.I finally, including companies from seven different industries enhances the study's breadth but also means that industry-specific factors might significantly influence the findings. The distinct challenges and opportunities faced by each industry may limit the ability to draw overarching conclusions about CDR investments.

While it is challenging to entirely overcome the limitations posed by sample specificity, we can address them by clearly contextualizing our findings within the specific industries, sizes, and geographical locations of the sampled companies. Acknowledging these limitations upfront and proposing avenues for future research aids in providing a balanced interpretation of the findings and their relevance to other contexts.

1.5 Outline of the Thesis

This thesis is divided into six chapters. After the introduction, Chapter 2 will review existing literature in the field of corporate strategy, specifically the resource-based view, sustainable value creation, CDR investments, SVC framework, and decision makers. Chapter 3 describes the overall methodology, presenting the research approach, research design, data collection, data analysis, validity, reliability, analytic generalization, and limitations. Chapter 4 presents the empirical data for each case gathered through the interviews. Chapter 5 performs the analysis of this data through cross-case analysis and pattern matching with the tentative framework developed in Chapter 2. Finally, Chapter 6 will summarize the findings of the study and suggest limitations and future research.

2 Literature/Theoretical Review

In this section, we present literature relevant to our research problem, starting with the Resource-based View (RBV), which lays the theoretical foundation for strategy and competitive advantage. We then discuss how Sustainable Value Creation (SVC) can serve as a framework for merging the RBV with sustainability initiatives. CDR investments are introduced as such an initiative. Furthermore, we address the limited understanding of SVC in practice and highlight a contemporary synthesis on interpreting sustainable actions within an SVC framework. This synthesis is used to develop a tentative framework of CDR investments' contribution to competitive advantage. Finally, we assert that due to the external nature of CDR investments, the SVC framework must be examined from the perspective of decision makers.

2.1 Resource-Based View

The thesis builds on the Resource-based View (RBV), which posits that observed differences in firm performance stem from the unique aggregation of resources and capabilities within firms. Resources characterized as valuable, rare, inimitable, and non-substitutable are considered a source of competitive advantage (Barney, 1991). Similarly, dynamic capabilities are also a source of competitive advantage. These include the abilities to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments (Teece, 2014).

The RBV is a firm-level analysis that accounts for performance disparities through efficiency (Peteraf & Barney, 2003), diverging from the focus on industry-level structures (Porter, 1979) or cooperative strategies (Eisenhardt, 1989; Hennart & Verbeke, 2022). Aligning with other theories of value creation (Brandenburger & Stuart, 1996), some argue that firms with superior resources and capabilities can enhance their competitive advantage by increasing customers' willingness to pay for the same cost or by offering comparable quality at lower costs (Peteraf & Barney, 2003). The RBV suggests that companies are more inclined to adopt proactive environmental management strategies if they possess or can achieve a competitive advantage through such means.

Because of the disruptive power of environmental change, some scholars have attempted to reinvent the RBV. However, Hart's (1995) attempt to extend RBV to include natural resources as a unique aspect falls short. He argues that consideration of the ecological environment is inevitable for firms in the future, and we must establish which capabilities support eco-friendly economic practices. His critique is not that the RBV cannot accommodate sustainable behavior; rather, he suggests that the traditional RBV does not go far enough in recognizing the inherent constraints and strategic opportunities presented by biophysical resources. In essence, his Natural RBV posits that in the context of increasing environmental degradation and resource scarcity, firms that can efficiently and innovatively leverage natural resources will not only contribute to sustainability but also secure long-term competitive advantages. This perspective assumes that environmental change is an external factor that will fundamentally alter the concept of value creation. However, we have faced disruptions of similar magnitude before (e.g., IT or telecommunication). Additionally, Hart's framework is based on the assumption—resonating to some extent with Friedman (1970)—that the RBV is about maximizing value appropriation/shareholder maximization, which it is not solely about.

Contrary to the views of some scholars (e.g., Besanko et al., 2000; Ghemawat & Rivkin, 1999; Thomas, 1986), Peteraf and Barney's (2003) definition of competitive advantage as "the ability to create relatively more economic value" (p. 314) distinguishes value creation from the appropriation of that value. This distinction emphasizes the role of resources in creating value differentials over the amount of rent captured by the firm. They argue that the capability to create value is a fundamental concern for all organizations, regardless of their goals or nature. Ultimately, the article posits that the amount of value created sets the stage for value appropriation: the larger the value surplus, the greater the potential for its distribution among stakeholders. This argument implies that environmentally friendly actions by companies could confer a competitive advantage if they result in greater value creation. It is crucial to identify which resources, capabilities, and synergies between them confer such an advantage.

In this subsection, we have outlined the RBV and how the characteristics of resources and capabilities contribute to competitive advantage. Furthermore, we have formulated a definition of competitive advantage through value creation. Additionally, we have established that RBV is inherently configured to explain how sustainability and competitive advantage relate by contending that value creation is distinct from value appropriation. However, capturing the created value is crucial for a firm's survival. Consequently, the subsequent section introduces the Sustainable Value Creation (SVC) theory, which proposes a business model approach for successful long-term survival.

2.2 Sustainable Value Creation

Starting with Bowen (1953), Corporate Social Responsibility (CSR) has been a topic of discussion for several decades. Originally, CSR emerged in response to growing awareness of humanitarian and environmental issues (Latapí Agudelo et al., 2019). However, it was not until the late 1990s that CSR adopted a strategic mindset (Burke & Logsdon, 1996). From this fragmented development, many definitions emerged. Dahlsrud (2006) enhanced the understanding of limitations within the CSR field through an extensive literature review, aiming to unify the varied definitions of CSR. His analysis found that the challenge lies not in defining CSR but in "understanding how CSR is socially constructed in a specific context" (p. 6). Hence, CSR can be interpreted and subsequently implemented in different ways; it is a strategic term whose definition can be manipulated to supplement and support its intended use.

Because of the lack of consistency in its definition, Chandler (2021) argues that there is a weak business case for companies to pursue CSR in its current form. He asserts that implementing CSR currently relies on coercion (through moral pressure, normative associations, or legislation) rather than incentivization and strategic justification. Chandler posits that only when firms voluntarily integrate CSR into their strategic planning and operations will CSR be genuinely and comprehensively implemented, leading to innovation, creativity, and social benefit. Rangan et al. (2015) discovered in a study of 142 business executives that numerous companies' CSR efforts are fragmented and lack coordination, underscoring the importance of formulating cohesive CSR strategies that encompass the full scope of the business. They argue that these strategies must align with the companies' core values and business objectives to ensure successful execution. In essence, there is a need for a new conceptualization of CSR that is grounded in a business strategy perspective.

Chandler (2021) developed an alternative to CSR, the Sustainable Value Creation (SVC) model. He argues that for-profit firms are superior to other organizational forms (e.g., NGOs, governments) in their ability to innovate and contribute to societal development; hence, their profit-driven incentives and value creation mechanisms are essential and should not be fundamentally altered. Instead, Chandler suggests redefining these two terms to align with broader societal values. Firstly, he points out that the concept of profit maximization is flawed, as a firm can never truly ascertain if the profit it generated was the highest possible or what the outcomes of different decisions could have been. Dutta and Radner (1999) support this by examining the behavior of entrepreneurs in a competitive capital market and demonstrating that behaviors other than profit maximization can also attract investment funds and enable survival. Specifically, the authors find that an entrepreneur maximizing the expected sum of discounted dividends is sure to fail in finite time, whereas many other behaviors yield positive expected profits and result in a positive probability of surviving indefinitely. This suggests that a diversity of firm behaviors can coexist in the market, and over time, firms that do not pursue the shareholder maximization strategy may still survive and thrive.

Consequently, Chandler (2021) proposes profit optimization. This concept shifts towards the optimization of short-, medium-, and long-term value creation for various stakeholders. The strength of his argument lies in acknowledging the subjective nature of decisions, recognizing that individuals base their notion of what is optimal on varying sets of values. Therefore, his approach allows for a dynamic response to broader societal values. Essentially, he believes this approach ensures firms' values are consistently applied and enforced in daily interactions with stakeholders, leading to alignment between the firm's interests and broader societal values. Chandler argues that as firms listen to and engage with the needs of their stakeholders, who actively shape the society they desire, it becomes advantageous for firms to adapt their behaviors to ensure their success and advance societal goals. This promotes the idea that doing good and making money are not mutually exclusive but interconnected objectives. In essence, while CSR emphasizes corporate responsibility towards society and the environment, often through external initiatives and philanthropy, SVC seeks to integrate sustainable practices into the core business model, focusing on creating economic and societal value simultaneously.

SVC, being a theoretical concept, might be difficult to visualize in practice. A documentary by the Swedish public service television company (SVT), titled Djurparkskriget (2024) (The Zoo War), introduces viewers to the ethical controversies of the zoo industry. The primary takeaway from the documentary is that zoos engage in a type of greenwashing-like behavior, portraying themselves as protectors of biological diversity by ensuring that captive animals will never go extinct. However, the program explains why this is often not the case. For example, it highlights that captive animals are prone to inbreeding and thus cannot be reintroduced to the wild without risking damage to the natural gene pool. Additionally, most zoos do not participate in reintroducing their animals to the wild, essentially confining them indefinitely.

Djurparkskriget (2024) contrasts this with Damian Aspinall, who operates his zoo with high transparency. His business model focuses on reintroducing animals to the wild and is transparent about which animals cannot be reintroduced, while striving to optimize their welfare in captivity. Aspinall aligns broader societal values, such as opposition to animal cruelty and concern for endangered species, with his core business operations. This approach could offer him two major competitive advantages. In the short term, he might obtain a license to operate as the only ethically perceived zoo. Although currently similar to typical zoos, his clear goals may be enough to distinguish his operations. In the long run, if he demonstrates a successful system that breeds endangered species and reintroduces them to the wild, policymakers might take notice and fundamentally change zoo operations in his direction, potentially giving him a significant lead. Therefore, Aspinall's business model could serve as a practical example of SVC, where he incorporates CSR practices that are peripheral in other zoo firms into the core of his operations.

The theoretical perspective of this research is that SVC is beneficial for deriving competitive advantage from sustainability activities due to its unique perspectives on creating value. Results from Damert et al.'s (2017) study indicate that "companies with a higher organizational involvement and awareness of the risks and opportunities attached to climate change engage more actively in activities aimed at gaining competitive advantages" (pp. 132-133). In this study, we argue that SVC is an extension of RBV that includes a broader temporal and spatial perspective (see section 2.4). As stated in the RBV chapter, competitive advantage separates value creation from value appropriation, thereby allowing sustainability actions—which initially benefit a broad range of stakeholders—to contribute to such an advantage. However, we do not overlook the necessity of firm survival. SVC is simply an optimal approach to value appropriation from a broader stakeholder perspective.

Peteraf and Barney (2003) present a snapshot viewpoint of value creation, failing to account for the temporal and spatial dimensions of value creation. By introducing a more complex understanding of value creation, we can move resources into a VRIN direction. Therefore, we assume that to gain valuable strategic benefits from sustainability, a firm needs an SVC perspective.

In the previous paragraphs, we introduced the concept of Sustainable Value Creation (SVC). This theory emerges as an alternative to the disjointed CSR discourse, seeking to bridge business strategy with broader societal values. By integrating CSR into the heart of business operations and strategy, SVC seeks to redefine the role of for-profit firms in society. It promotes a model where businesses contribute positively to societal progress through their core activities, rather than through peripheral CSR initiatives. Adopting SVC implies creating optimized value for the widest range of stakeholders possible, aligning with Peteraf and Barney's (2003) definition of competitive advantage. In the upcoming section, we will introduce a novel type of corporate sustainability action—CDR.

2.3 Climate Change, Net Zero and Carbon Dioxide Removal

2.3.1 Climate Change

Climate change is inevitable and is already manifesting in phenomena such as the shrinking of glaciers and ice sheets, more frequent and severe storms, prolonged and intense wildfire seasons, and droughts (Environmental Defense Fund, n.d.; NASA, n.d.c). The severe consequences of climate change we observe today are primarily attributed to increased human emissions of heat-trapping greenhouse gasses (GHGs), notably carbon dioxide (CO_2) from industrial activities and the combustion of fossil fuels (NASA, n.d.b). Even if GHG emissions were halted immediately, temperatures would only stabilize, remaining elevated for many centuries and continuing to drive the climate catastrophes already observed and predicted for a warmer climate (NASA, n.d.a). The vast majority of contemporary scientists endorse a dual strategy in responding to climate change: mitigation and adaptation. However, while mitigation actively seeks to reduce and prevent the emission of GHGs into the atmosphere, adaptation merely aims to adjust to the present and anticipated impacts of climate change (European Environment Agency, 2023). The proactive strategy of mitigation is critical for limiting the most severe effects of climate change and thus underpins the majority of international climate goals.

2.3.2 Net Zero

As part of global mitigation efforts to combat climate change and enhance initiatives for a low-carbon future, parties to the *United Nations Framework Convention on Climate Change* ratified the Paris Agreement in 2015 (United Nations, n.d.). A pivotal element of the Paris

Agreement is the commitment to limit temperature increases to 1.5℃ above pre-industrial levels (United Nations, n.d.). Achieving net-zero emissions in the private sector is crucial to meet this target and mitigate the more severe impacts of climate change (Climate Trade, 2022; Temple & Crownhart, 2022; UNCC, n.d.). This necessity is underscored by the private sector's historically disproportionate contribution to global emissions (Bisbey, 2023; Damert et al., 2017) and its comparatively minimal contribution toward the collective goal of mobilizing $100 billion annually in climate financing by developed countries (OECD, 2023). Corporate net-zero commitments are increasingly becoming fundamental components of corporate strategies, catalyzing a wider adoption of net-zero practices across the private sector (IPCC, 2023; Reeves et al., 2022).

Companies that commit to net-zero offer the mitigation of climate risk for economic stakeholders without sacrificing short-term financial performance, and position themselves to gain reputational benefits (Reeves et al., 2022). Additionally, recent studies indicate that proactive climate actions can lead to increased efficiencies, technological advancements, and reduced risks, which collectively encourage investment (Levin & Steer, 2021). Moreover, Mehrhoff (2023) analyzed data from the Network for Greening the Financial System (NGAFS) and demonstrated that a transition to net-zero emissions by 2050 could result in a global gross domestic product (GDP) that is seven percent higher compared to continuing under current policies. He persuasively argues that "the economic benefits of accelerating the transition to a low-carbon economy vastly outweigh its costs" (n.p.).

Previous research on corporate carbon strategy advocates for companies to integrate climate change issues into their strategic management practices, viewing climate change fundamentally as a market issue for companies (Lee, 2012). Additionally, Lee (2012) provides evidence that companies can adopt more sophisticated carbon strategies without sacrificing profitability and utilize these strategies to discover new business opportunities and boost their competitiveness. Furthermore, Damert et al. (2017) detail how companies that exhibit high organizational engagement and awareness of the risks and opportunities associated with climate change—key tenets of the SVC—are more proactive in pursuing competitive advantages. Thus, a substantial body of research and literature consistently supports the business case for integrating climate and carbon strategies into core business strategies.

2.3.3 Carbon Dioxide Removal

To achieve these corporate net-zero goals, it is crucial that companies rapidly reduce their direct and indirect value-chain emissions (SBTi, 2024a). Mannion et al. (2023) report that the most prevalent corporate climate mitigation method today is emissions reduction. Damert et al. (2017) adds that stakeholder pressure and new regulations significantly influence emissions reduction initiatives. However, after minimizing all possible corporate emissions, companies striving for net-zero must neutralize their unavoidable residual "hard-to-abate" emissions through permanent carbon removal and storage (IPCC, 2023; Science Based Targets, 2022). In this context, Mannion et al. (2023) contend that decarbonization yields diminishing returns and that any residual emissions must be managed through CDR methods. These methods include removing GHGs from the atmosphere and storing them in natural "carbon sinks" like forests and soils, or through technological approaches such as direct air carbon capture and storage (DACCS) (Carbon Market Watch, n.d.; IPCC, 2022). To date, significant CDR purchases have primarily been voluntary by a limited number of corporations (Mistry et al., 2023). Furthermore, Mistry et al. (2023) observe that from 2021 to 2022, the size of the CDR market expanded from $380M to $1,096M. These transactions occur in both compliance and voluntary markets external to the purchasers. As previously mentioned, the primary investors in CDR currently are companies aiming to fulfill their corporate net-zero targets. Although it is suggested that a portion of these investments may be philanthropic, there is no conclusive evidence regarding the proportion of CDR purchases made for this purpose. Currently, the market for CDR remains relatively small, indicating that investors are likely more strategically advanced, possessing a broader strategic vision. By 2028, the CDR market is projected to surge to $8.1 billion (BCC Research LLC, 2024). In summary, the potential impact of CDR engagement from firms can be significant—both in terms of mitigating the adverse effects of climate change and securing competitive advantages.

There is a global consensus that drastic and immediate carbon emission reductions alone are likely insufficient to achieve the 1.5℃ target by 2030 without the inclusion of CDR methods (Höglund et al., 2023; IPCC, 2023; Mistry et al., 2023; SBTi, 2024b). Höglund et al. (2023) present a persuasive argument about the crucial role of CDR in mitigating the most severe impacts of climate change. They argue that large-scale implementation of CDR methods, in conjunction with aggressive emissions reductions, is essential to prevent a climate overshoot by 2030. Despite significant and immediate emission reductions, they emphasize that the 1.5˚C threshold is likely to be surpassed by the mid-2030s without substantial action today. They assert that the primary function of CDR, before global net-zero is achieved, will be to forestall climate overshoot and mitigate the most severe effects of anthropogenically induced global warming and climate change. However, companies remain hesitant to invest in CDR as carbon markets are still fragmented and complex (Bisbey, 2023).

Mistry et al. (2023) provide further evidence that CDR is crucial for decarbonizing the global economy and achieving the net-zero targets established by the Paris Agreement. The researchers emphasize the importance of "high-quality" carbon removals, characterized by permanence, verifiability, and additionality. They note that investments in CDR projects failing to meet their promises of removing and storing atmospheric carbon dioxide would diminish the anticipated benefits. Furthermore, they contend that investments made today could facilitate the scaling of durable CDR, reduce its costs, and secure a limited supply of removals for 2030; decisions made today are already determining the winning suppliers for 2023. They also assert that these investments are strategic, as they prepare companies to comply with expected stricter regulatory requirements in the future. Additionally, the report highlights that in Europe, there is an expected convergence of voluntary and compliance carbon markets, with parts of the voluntary markets likely to be incorporated into the compliance market as legal and regulatory developments potentially extend removal mandates to industries previously out of scope.

As mentioned, investments in CDR solutions can be made through transactions in either the compliance market or the Voluntary Carbon Market (VCM). Although the compliance market is critical in advancing necessary carbon offsetting, investments in CDR through the VCM are crucial for bridging the climate financing gap (World Economic Forum, 2023). The VCM allows entities including nonprofits, governments, and individuals to buy and sell carbon offset credits, operating independently of the compliance market (CarbonCredits.com, n.d.). Currently, VCMs suffer from a shortage of high-quality and reliable carbon credits, making it challenging for companies in all CO2 polluting industries to offset their emissions adequately (Walsh and Toffel, 2023). Therefore, it is imperative that companies invest in carbon credit markets now to promote their expansion. This ensures that, once companies meet their value chain emission reduction targets, there will be ample high-quality CDR credits available to achieve their long-term net-zero objectives. CDR credits are distinct from broader carbon credits; while some carbon credits focus on direct CO2 removal from the atmosphere, others aim to prevent carbon emissions by avoiding deforestation and supporting renewable energy initiatives. CDR credits exclusively involve methods that directly remove CO2 from the atmosphere and ensure its durable storage (Hillsdon, 2023; Höglund et al., 2023). This highlights the global significance of investing in externally developed CDR methods to achieve net-zero targets.

Companies must invest in CDR methods today to avert catastrophic consequences of climate change. These investments are critical to scaling the industry and increasing the future availability of high-quality CDR credits. Empirical evidence suggests that companies integrating climate and carbon strategies into their core business strategies can enhance their reputation and competitiveness without sacrificing short-term financial gains. While these studies have predominantly focused on carbon reduction strategies, they also suggest the potential for CDR to yield similar benefits. Given the necessity of investing in CDR to achieve global net-zero and its potential for creating business opportunities—coupled with the scarcity of prior studies—the rationale for investigating CDR as a contributing factor to a firm's competitive advantage through the SVC model appears both significant and warranted.

2.4 An SVC Framework

By diminishing causal ambiguity—the uncertainty in the cause-and-effect relationship between resources/capabilities and competitive advantage (Barney, 1991)—we can enhance our understanding of CDR investments as a source of competitive advantage. Specifically, this involves examining how CDR investments integrate within the SVC theory. However, practical examples of SVC in action are scarce, presenting a challenge to fully comprehend its application to CDR investments.

In a pioneering literature review, Manninen et al. (2024) synthesized a conceptual framework on how SVC manifests in sustainable business model literature (see Figure 2.1). Their findings divide SVC into five core elements, each with questions that assist managers in planning, identifying, and selecting strategic sustainability actions. Value forms address the sources and types of value. Stakeholders focus on for whom the value is created. Temporal view concentrates on when value is created. Spatial view challenges the notion of value being confined within the firm's borders. These elements form the foundation for sustainable value creation. Additionally, tensions and conflicts are raised as issues within the SVC process, highlighting potential challenges and areas for further exploration.

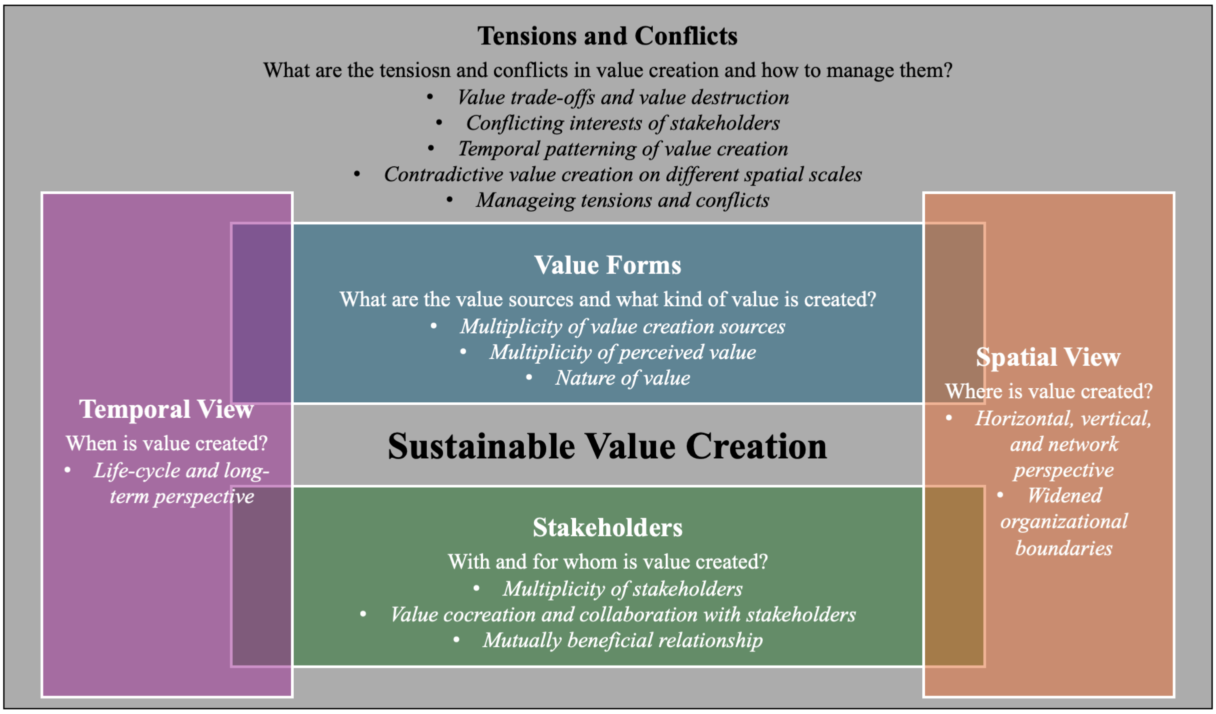

Figure 2.1: The SVC framework (adapted from Manninen et al., 2024)

To tie back into the research question, identifying the competitive advantage entails examining the characteristics of CDR investments' value-creating mechanisms by considering them as resources and their effects on other resources and capabilities. The SVC framework allows us to gain a nuanced perspective on this. We argue that the SVC framework is interrelated and that each component is not independent of the others. For instance, simply identifying where and when value is created is not sufficient to understand how to appropriate that value. Similarly, the temporal perspective must be included to understand when a value form can be appropriated.

The logical order is to identify value forms and place them in the context of stakeholders, spatial view, and temporal view. This holistic picture is then contrasted against tensions and conflicts. Since this study employs a flexible pattern matching procedure (see Section 3.4), a tentative theoretical framework is developed, adapting Manninen et al. (2024) to fit CDR investments. This adaptation allows us to comprehensively understand how CDR investments can contribute to sustainable value creation and, ultimately, competitive advantage.

2.4.1 Value Forms—What Are the Value Sources and What Kind of Value Is Created?

Value form is the closest description one can get to the actual competitive advantage-inducing resource or capability. In a study by Michalisin and Stinchfield (2010), the researchers investigated how firms implementing proactive strategies to mitigate their climate change impacts perform financially compared to less proactive competitors. They found that firms with proactive strategies for addressing climate change typically achieve significantly higher levels of accounting performance than those that do not prioritize climate action. This indicates that beyond just compliance, active engagement in CDR investments can be financially advantageous. Their research employs a matched-pair design to directly assess environmental proactivity and its impact on accounting performance. However, the paper does not delve into the causal mechanisms behind the correlation. We suggest two topics that are relevant to CDR investments: reputational benefits and risk benefits.

Reputational Benefits

Global stakeholders are actively choosing to purchase sustainable products and considering sustainability in their investment decisions (Whelan & Kronthal-Sacco, 2019; McPherson, 2019). Consequently, companies recognized for their environmental stewardship can enhance their brand value and goodwill among consumers, potentially increasing customer loyalty, pricing premiums, and market share. Werther and Chandler (2005) propose that CSR functions as a form of 'brand insurance,' meaning that by engaging in socially responsible activities, companies can safeguard their brands against potential damage from crises or management failures. The authors highlight that in a world of increased affluence and globalization, companies face heightened social expectations from stakeholders who are more connected and informed than ever. They suggest that failing to meet these expectations can significantly harm a brand's image. Essentially, the paper argues that the insurance provided by CSR comes from proactively addressing issues that might later cause public relations crises. By engaging in CSR, companies can demonstrate accountability and responsiveness to societal needs, which can mitigate negative perceptions and reactions in times of crisis. By extension, CDR investments can be seen as a strategic CSR activity that offers similar 'brand insurance' benefits. Firms investing in CDR can not only enhance their reputational capital but also build a buffer against potential regulatory and market risks associated with climate change. This proactive stance can lead to a more robust competitive position by aligning the firm's operations with the growing expectations of sustainability-conscious stakeholders.

Porter and Kramer (2006) criticize the notion of CSR as a form of brand insurance for its indirect connection between good deeds and consumer attitudes, arguing that it is often too tenuous to measure causality effectively. This makes such CSR investments vulnerable and potentially unsustainable in the long term. Van Rekom, Berens, and van Halderen (2013) also challenge this notion, implying that the only way to gain a competitive advantage from CSR branding is through long-term differentiation. They assert that simply hedging against future backlash is insufficient, as it is an easily replicable process. Instead, their research suggests a proactive form of CSR branding that leverages the core business. An SVC-friendly argument in their paper posits that the unique capabilities of a company can address relevant social issues in a distinct way. This implies that CSR activities should be selected and designed based on the company's core competencies, ensuring that these initiatives are effective and resonate with the brand's strengths. Similarly, previous research has shown that innovativeness is a key success factor in establishing a strong CSR branding strategy (Vallaster et al. 2012). In fact, customer response to CSR initiatives that are closely aligned with the core business is more favorable than to purely philanthropic CSR (Chen et al., 2018).

Reputation can also have an upstream effect, sending signals to suppliers of capital, resources, and competence (employees). Michael Schröder (2014) provides a comprehensive review of academic research concerning the relationship between CSR and the financial costs companies incur, particularly focusing on financing. Schröder highlights that companies with robust CSR performances typically experience lower costs related to equity and debt financing. This correlation suggests that the market and financial institutions may view socially responsible companies as lower risk, which could be due to better management practices, stronger reputational standings, or a more stable customer base.

Furthermore, Cruz and Matsypura (2009) developed a framework insinuating that CSR can improve relationships with suppliers by fostering collaboration towards common social and environmental goals. This collaborative approach can lead to innovations in products and processes, as well as more stable and reliable supply chains. Additionally, a study by Nazir and Ul Islam (2020) explores how CSR activities can significantly impact employee engagement and foster innovative behaviors within the workplace. The study demonstrates that CSR-specific activities that address employees' psychological needs—such as autonomy, competence, and relatedness—can intrinsically motivate them. This intrinsic motivation makes work more engaging and encourages employees to be innovative in their approach.

In essence, CDR investments can positively impact reputation both downstream (customers) and upstream (suppliers). Customers value genuineness and require that CDR investments are closely aligned with the core business in a proactive, innovative manner, driven by the brand's intrinsic values rather than mere perception management. As Porter and Reinhardt (2007) suggested, an insurance company should not invest in CDR just to signal environmental friendliness but rather to minimize the risk of rising sea levels damaging their insured customers near the shore. Including an upstream perspective suggests that a well-planned CDR investment strategy could improve financing costs if appropriately disclosed to financial institutions. It could also enhance supplier relationships by co-creating value within networks and attract employees who care about the environment. This strategic approach ensures that CDR investments are not only aligned with the company's core values but also contribute to sustainable competitive advantage by reinforcing trust and collaboration across the entire value chain.

Risk Benefits

By addressing environmental risks proactively, companies can avoid costs associated with regulatory fines and changing laws. Berry and Rondinelli (1998) discuss the increasing integration of environmental protection into competitive strategies in firms from industrialized countries. Their findings suggest a shift towards proactive environmental management, primarily driven by government regulations, legal liabilities, and customer demands. The article highlights that firms adopting proactive environmental management strategies tend to become more efficient and competitive due to these pressures. Aragon-Correa and Sharma (2003) examine environmental proactivity from the perspective of the RBV. They suggest that dynamic capabilities derived from corporate sustainability allow firms to react quickly to regulatory changes.

Other research indicates that the benefits do not have to be passive. Dechant and Altman (1994) explore how companies integrate environmentalism into their business strategies, transforming compliance into a strategic advantage. The study details that these companies often set industry standards, pushing the envelope on what is considered achievable in terms of environmental performance. This proactive approach can influence policy by setting new benchmarks for sustainability. Companies that lead in environmental initiatives often enjoy a first-mover advantage in markets increasingly sensitive to sustainability. By setting high standards of environmental performance, these firms not only meet existing regulations but also help drive legislative changes.

Considering CDR investments in terms of risk benefits shows both passive and active advantages. These investments should be utilized to develop dynamic capabilities to mitigate disruptions from a changing business environment, consequently giving firms a competitive advantage. Furthermore, by acting as environmental leaders and demonstrating what is attainable, firms can set standards for CDR investments. The passive benefits of investing today also have future influences, shifting CDR activity from voluntary to compliance-based.

Hence, if a firm has a functioning CDR investment strategy today, it proactively pushes the rest of the business environment in the same direction and simultaneously avoids any issues from having to “rush” implementation in the future.

2.4.2 Stakeholders: With and for Whom Is Value Created?

A natural integration with the value form is the stakeholder. Freeman (2010) defines a stakeholder as “any group or individual who can affect or is affected by the achievement of the organization's objectives” (p. 46) and emphasizes their capacity and intent to influence the firm (Mitchell et al., 1997). Chandler (2021) categorizes stakeholders into organizational, economic, or societal groups. The first category includes internal stakeholders, while the latter two are external. Chandler (2021) explains that this classification helps identify the primary role of a stakeholder. However, he also notes that “almost all stakeholders exist simultaneously as multiple stakeholder types with network ties among each of them, as well as with the firm” (p. 35). Some literature suggests that corporate commitment to reducing GHG emissions is influenced by stakeholder pressures (Cadez et al., 2018; Damert et al., 2017; McPherson, 2019), indicating that stakeholders value companies with effective sustainability performance.

Organizational Stakeholders

The organizational stakeholders identified in this study are the employees within the firm. Previously, we mentioned that CSR activities can intrinsically motivate employees and attract talent that values sustainability. Investment in CDR should create value for these individuals by providing a workspace that aligns more closely with their values and motivations. The value appropriated by the firm is the increased innovativeness these employees contribute.

Economic Stakeholders

We identify consumers, shareholders, and creditors as economic stakeholders. Recent reports indicate that consumers are willing to pay a premium for green products (Frey et al., 2023; Voigt et al., 2023; Ware, 2023). We have also previously discussed the relationship between CSR and financing benefits. Amel-Zadeh and Serafeim (2018) found that 82% of investment professionals at BNY Mellon consider environmental, social, and governance (ESG) reporting important since their customers demand it. Jiraporn et al. (2014) found that a firm's CSR policy can significantly improve its credit score if the policy is robust.

Therefore, investment in CDR could create value for consumers, as they are willing to pay a premium for products from a green firm. Additionally, shareholders should appreciate the added value from CDR investments as they contribute to higher ESG standards. Creditors might attribute increased value to firms with CDR investments if these contribute to their CSR reputation.

Societal Stakeholders

The most obvious stakeholders for CDR investments are society as a whole, as these investments contribute to the public good. However, focusing solely on this broad stakeholder group may be unstrategic. As with any collective action problem, the vast majority of people on earth would benefit if firms worked together to ensure a more sustainable business environment, but competing interests make such joint action difficult. The value created from each unit of currency invested in CDR would be very small once divided among all individuals globally. Thus, focusing purely on societal well-being would not be sufficient for achieving a competitive advantage, as it would be practically impossible to appropriate any value from this and it would create free-riding problems. However, relating to the risk benefit, if firms can demonstrate what is feasible in terms of corporate sustainability, they could generate enough value for governments to change legislation. Therefore, a more strategic approach to CDR investments is to ensure that governmental agencies can gain value from such investments in order to appropriate from societal stakeholders.

Additionally, risk and reputational damage mitigation need to be considered when addressing societal stakeholders. Mitchell et al. (1997) state that firms should be aware of activist groups, as they possess power and urgency, leading to high potential impact on brand reputation through public campaigns or direct actions such as legal challenges. These activist groups can carry legitimacy since their demands often concern social or ethical justice claims in tune with public sentiment and can be presented in a way that demands immediate attention. Activist campaigns may even translate into changes in public opinion, consumer behavior, and influence regulatory policies. In other words, these groups may have a significant impact on corporate strategies and operational frameworks. Chandler's (2021) SVC model calls for firms to deeply integrate stakeholder engagement into their business models. He states that aligning with stakeholders is crucial for maintaining long-term sustainable value creation for the firm and society. Therefore, an important consideration in CDR investments would be realizing, managing, and cooperating with such groups proactively to mitigate potential reputational and legal risks associated with societal stakeholders.

2.4.3 Temporal View: When Is Value Created?

Temporal view, as synthesized by Manninen et al. (2024), emphasizes the significance of comprehending the process of value creation over time. SVC necessitates adopting a blend of short-, medium- and long-term perspectives to fully grasp how value can be appropriated (Chandler, 2021; Manninen et al. 2024).

This viewpoint contrasts notably with that of Peteraf and Barney (2003) who, at least superficially, appear to focus on a static view of value. For example, Chandler (2021) discusses the concept of life-cycle pricing, advocating for assigning a quantitative value on every step of its life cycle—from raw material to costs of decaying. He contends that this approach enhances market pricing mechanisms, thereby effectively allocating resources. Similarly, Hart & Milstein (2003) developed a sustainable-value framework, which links sustainable development challenges to corporate strategies over time. The framework emphasizes the need for temporal alignment in strategic decision-making to ensure that sustainability initiatives not only yield short-term benefits but also contribute to long-term corporate goals and sustainability. Expanding upon this notion, Dembek and York (2019) posit that adopting a sustainable business model enables companies to strategize for sustainability in the long run, taking into account present and future impacts. They emphasize the importance of strategic timing of CSR initiatives and the importance of planning sustainability efforts in anticipation of future market and environmental conditions.

Dembek and Yorks (2019) perspective on the timing of CSR initiatives can be further expanded to include internal timing, i.e. what stage the firm in question is in. It could be presumed that the reputational benefits of CDR investments hinge on the firm's level of establishment. For instance, a start-up might swiftly reap CSR reputation benefits if CDR initiatives are implemented from inception. In contrast, an older firm already possesses an established reputation, contingent upon its prior actions. Unless these actions were not CSR-friendly, immediate reputational benefits from CDR investments should not be anticipated. However, a study on corporate green branding found that the timeframe is insignificant, while the volume of publicly promoting a new green reputation is paramount (Olsen et al. 2014). Consequently, it appears as if CDR investments would generate a better reputation quicker if a more aggressive disclosure is utilized.

Companies today face regulatory pressures to disclose their carbon emissions and the corresponding offsets utilized for mitigation. Firms in Europe subject to the Corporate Sustainability Reporting Directive (CSRD), enacted in January of 2023, are mandated to disclose their emissions and the quality of the carbon offsets used (PWC, 2023). KPMG (n.d.) highlights an escalating regulatory focus, with the present legal landscape characterized by a patchwork of regulations and standards. However, recent legislative developments such as the European Climate Law of 2021, the EU CSRD of 2023, and the 2024 EU-wide certification scheme for carbon removals signify the importance for companies to prepare for forthcoming climate regulations now (European Commission, 2024; PWC, 2023). In alignment with this notion, KPMG (n.d.) predicts that, "the scope of formal regulation looks set to increase" (n.p.) and advocates proactive engagement for firms participating in carbon markets as regulations evolve. The strategic value in proactive engagement in VCM is also emphasized by Molyneux et al.'s (2023). Their findings reveal that companies are escalating their purchases in the VCM in response to the EU's ongoing imposition of stricter regulations. Therefore we believe that proactive investments in VCM will be beneficial for risk mitigation.

The passive risk benefit is dependent on anticipating a changing regulatory framework, necessitating proactive strategy adjustments to minimize risks associated with compliance costs and penalties stemming from sudden legislative shifts. Analyzing anticipated regulations and proactively adapting strategies can position a company as a regulatory compliance leader, potentially enhancing its reputation and garnering preferential treatment in regulated markets. However, according to Ball (2020), volatility from changing market conditions and technological disruptions leads stakeholders to prioritize and seek more information on companies long-term business plans. Thus CDR investments may confer a passive risk benefit by signaling the firm's commitment to long-term sustainability goals. Conversely, the active risk benefit is contingent on how fast a firm can influence policy makers. Research indicates that firms perceive their influential power over government agencies to be greater the larger and older a firm is (Macher et al. 2011). Therefore, for CDR investing firms, if they can show scale they should anticipate faster value creation.

2.4.4 Spatial View: Where Is Value Created?

The spatial view, according to Manninen et al. (2024), challenges the idea of confining value to the firm's borders. They explicitly emphasize that network participation is critical "when targeting system-level goals, such as SDGs" (p. 8). This perspective finds further support in the mapping tool for sustainable business thinking proposed by Bocken et al. (2015). These scholars advocate for an approach toward value-centered systems that integrate social, environmental, and economic dimensions with the purpose of shared value creation among stakeholders. Through this approach, they argue, the business model can facilitate sustainable innovation to effectively realize system-level goals by mapping the value flow across different stakeholders and geographical boundaries. Thus, in addition to the obvious value locations of reputation and risk benefits associated with the firm, we propose considering two network value locations for individual examination.

In today's carbon offset markets, there exists an insufficient supply of high-quality and reliable carbon credits for companies across all carbon dioxide-polluting industries to adequately offset their emissions (Walsh and Toffel, 2023). Therefore, it is imperative for companies to invest in emerging CDR companies to grow the market. This ensures that after companies achieve their short-term decarbonization goals, there will be a sufficient supply of high-quality CDR credits to credibly achieve their net-zero objectives. Such foresight is essential to leverage risk benefits. If companies heavily invest in aVCM deemed insufficient, any mitigation from future legislative changes or advocacy for such changes may prove inadequate.

The tragedy of the common scenario regarding the climate necessitates collective participation from firms. If firms can create networks of sustainability leaders, they stand to gain reputational benefits unique to members of such networks. In line with this, Brehmer et al. (2018) adopt a boundary-spanning perspective on business models involving sustainable innovation through collaboration across organizational borders. They explore how value creation and appropriation occur across these borders, with their findings indicating that firm participation can yield synergistic benefits. This perspective is echoed by Wassamer and Dussauge (2011), who suggest that networks could generate synergistic advantages among firms. One firm's resources could strengthen another's due to the emergence of unique combinations within the network. For example, assume firm X produces sustainable light bulbs and has a significant market share, and firm Y, belonging to the same CDR investment network, is a startup creating unique ceiling lights. Customers who highly value the CDR activity of X might choose to utilize Y’s fixtures, thus creating a beneficial relationship for Y.

2.4.5 Tensions and Conflicts: What Are the Tensions and Conflicts in Value Creation and How To Manage Them?

The tensions and conflicts addressed within the framework acknowledge the competing interests stemming from divergent economic, environmental, and social goals. Manninen et al. (2024) propose two relevant strategies for managing tensions arising from sustainability activities: the instrumental approach and the trade-off strategy. They assert that the instrumental approach prioritizes sustainability actions that concurrently enhance financial performance. Given the aim of this paper to ascertain whether CDR investments could qualify as such actions, we anticipate that CDR investments implemented in a SVC manner, focusing on risk and reputation benefits, would result in minimal to no conflicts.

The instrumental approach is further facilitated by the adoption of a stakeholder value creation framework, such as the one applied by Freudenreich et al. (2019), which fosters mutual relationships. Here, stakeholders are not merely passive recipients of value but active co-creators, thereby enhancing both financial performance and sustainability outcomes for the company. We posit that aligning CDR investments with the instrumental approach will mitigate conflicts among stakeholders while bolstering the company's financial stability and reputation. Strategic alignment with stakeholders, addressing their interests alongside those of the firm, will reduce conflicts and foster a cooperative environment conducive to sustained competitive advantage.

The trade-off strategy entails decisions that may impact the company's financial health negatively but yield positive environmental outcomes (Manninen et al., 2024). By adopting an integrative approach, as suggested by van Bommel (2018), a company can synchronize its actions to generate holistic value across multiple dimensions. This approach holds particular relevance for investments in CDR methodologies, given the nature of the technologies, which necessitate present investments to adequately scale available CDR credits for the future. We anticipate that despite the short-term financial burdens, these investments will be offset by long-term environmental benefits and future financial gains.

2.4.6 The Tentative Theoretical Framework

In Figure 2.2 below, the reader can observe the tentative framework of CDR investments as a value-creating mechanism. By examining CDR from this perspective, we anticipate that firms can reap the value generated by CDR investments and consequently gain a competitive advantage. However, it is important to recognize that the successful realization of these benefits depends on several factors, including the firm's strategic alignment, stakeholder engagement, and the effectiveness of the CDR technologies employed. Further analysis and empirical evidence are required to validate this framework and its practical implications for businesses.

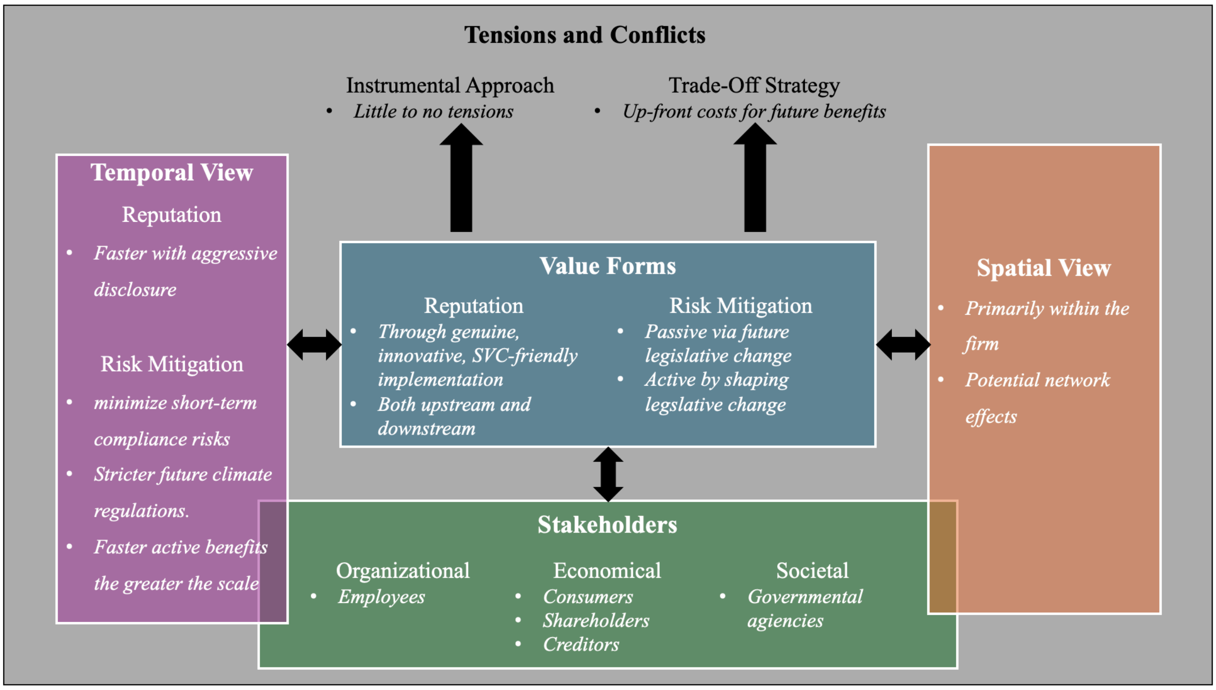

Figure 2.2: CDR in the SVC-framework

Due to the fact that CDR investments are external and not an in-house procedure, there are some implications for SVC. The SVC framework advocates for the total alignment of CSR with the core business, enabling firms to focus on their strengths. The issue here is that CDR investment will not, per se, be a part of the daily operations and therefore difficult to observe from the perspective of the firm. Instead, the complexities of attaining a competitive advantage from novel sustainability solutions force key decision-makers within firms to assess the current environment to make strategic decisions. As mentioned above, owing to the nature of CDR as an emerging industry with various novel technologies, decisions regarding engagement in CDR markets will entail unique perspectives on value creation and appropriation. This will require considerable expertise in the area and strategic alignment. Therefore, involved decision-makers are likely to include sustainability and climate experts as well as top-level management who are directly involved in setting and managing corporate strategy.

2.5 Decision-making and Decision-makers

There is a large body of previous research within the field of social sciences on individual decision-making. Edwards (1954) remarks that decision-making theories have tended to focus on how people make choices among desirable alternatives, centering on the notions of subjective value, or utility, of those alternatives. The basic assumption is that people will act rationally and choose the alternative that maximizes utility.

In the context of a society that is pushing industry to contribute to sustainable development, the question of decision-making becomes complex. Ueda et al. (2009) propose that dilemmas arise between the values of societies and the values of individuals, necessitating a focus on value creation mechanisms in decision-making. They state that a solution to this dilemma implies integrating values towards sustainable value creation for society. Sustainable value, as they define it, is a concept that integrates ecological sustainability with social and economic values. Ultimately, the authors conclude that the problem of sustainability is a decision-making problem due to discrepancies between overall purpose and individual utility or happiness. They argue that finding a solution to this discrepancy will require dynamic interactions between decision-making agents with their own goals and values. This integrated approach to creating value is inherent to Chandler's (2021) SVC model and is covered by Manninen et al.'s (2024) encompassing SVC framework.

Eisenhardt and Zbaracki (1992) explore the dominant paradigms of strategic decision-making through a review of existing theory and key empirical support. In their study, the authors discovered that several case studies support the view of an organization as a political system. From this perspective, strategic decision-making is dictated by powerful individuals who make decisions to get what they want. Consequently, the decision-making process significantly implicates the individual. In the context of an organization, executive or top-level management would assume the role of the 'powerful' and assert their will on others.

Acknowledging that individual decision-makers possess the power to impose their will, scholars affirm the importance of these individuals in facilitating development towards a sustainable future. The importance of decision-makers, such as top-level management at a firm, to the societal transformation towards sustainability is emphasized by Eberz et al. (2023). They state that decision-makers in politics, the economy, and civil society make impactful decisions with the potential to influence many. Importantly, since their decision-making capabilities are far-reaching and high-impact, they argue that these decision-makers need more than average sustainability competencies to achieve global climate goals. As defined by Wiek et al. (2011), sustainability competencies are “complexes of knowledge, skills, and attitudes that enable successful task performance and problem solving with respect to real-world sustainability problems, challenges, and opportunities” (p. 204).

Even though decision-makers in influential positions have the power to make high-impact sustainability decisions, Eberz et al. (2023) draw attention to the fact that they are always embedded in a system. According to Eberz et al., decision-makers tend to work closely with a competent team that provides input on technical knowledge, enabling them to make better-informed decisions. Ueda et al. (2009) classify difficulties in synthesizing environment and purpose according to the completeness of information available on both these elements. The novelty of CDR technologies and discrepancies in human, or agent, intentions regarding its priority as a corporate goal mean that the situation exhibits characteristics requiring co-creative decision-making structures as a solution. In this approach, behavioral solutions of agents are determined by their individual internal structures. Through mutual interactions in a co-creative system, the agents organize their internal structures to create a behavioral solution for an entire system, such as an organization.

This argument resonates with Eberz et al.’s (2023) findings of a tendency for decision-makers to work closely with a competent team to make informed decisions. In the context of corporate sustainability decisions, both the findings of Eberz et al. (2023) and Ueda et al. (2009) indicate a synergy between top management and sustainability managers. Corporate decision-making on the topic of CDR methods would therefore implicate both of these decision-makers.

Ueda et al. (2009) add that decision-makers in economic systems are influenced by rules or institutions that shape the structure of economic incentives. This implies that these decision-makers tend to make decisions aimed at increasing profits. This logic applies to the interaction between top management and sustainability managers. Haessler (2020) finds that previous research indicates managers will choose financial performance over sustainability when the two are at odds. However, in a value-creation system such as Chandler’s SVC model, these are not always at odds. Instead, sustainability becomes conducive to long-term firm performance as the firm shifts focus from profit maximization to profit optimization, creating economic and societal value for various stakeholders.

In line with the Paris Agreement and the goal of meeting the net-zero target, CDR is expected to be regularly factored into the decision-making of companies across various industries (Mannion et al., 2023). Findings from reviewing prior research on the literature of decision-making and decision-makers suggest that decision-making is value-driven, inherently placing significant focus on individual decision-makers. Powerful decision-makers within firms, such as top-level management, tend to possess political power and can assert their will as they wish. The importance of decision-makers possessing sustainability competencies to drive sustainable development, combined with the tendency for top-level management to collaborate with competent teams, highlights the role of sustainability managers. The established importance of these two corporate roles in driving corporate sustainability initiatives, along with the need for higher private-sector engagement in CDR, underscores the necessity of further investigating these individual corporate decision-makers.

3 Methodology

This chapter outlines the research approach, design, and data collection method. It also describes the analytical process applied to the data and discusses the validity, reliability, and analytic generalizability of the methodology. Additionally, the chapter addresses the study's limitations.

3.1 Research Approach

The research approach, as described by Bryman and Bell (2015), explains the connection between theory and empirical evidence and how research achieves this link. This study employs two main research approaches: deductive and inductive (see Figure 3.1). The deductive approach involves developing a hypothesis from an existing theory and then designing a research strategy to test this hypothesis. Conversely, the inductive approach involves observing patterns and subsequently developing theories to explain these patterns through a series of hypotheses. Figure 3.1 illustrates the invertibility of the two approaches; however, the authors emphasize that they are not discrete alternatives and that mixtures of both are common.

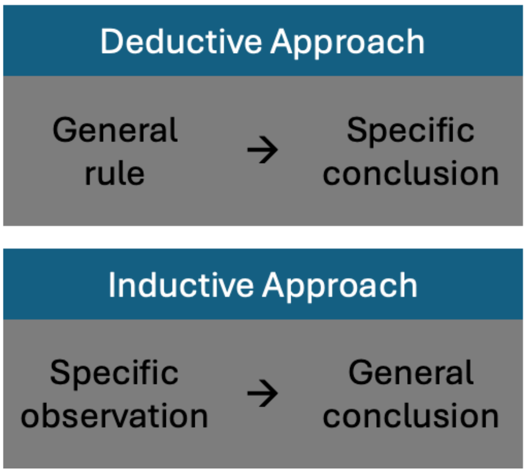

Figure 3.1: Research Approaches (Bryman & Bell, 2015)

On the one hand, the intrinsically inductive approach of qualitative studies was not directly applicable to our research because some of the themes emerging from the thematic analysis were influenced by the pre-existing SVC framework. Consequently, this paper is somewhat limited in its ability to construct novel theory. On the other hand, the pure deduction required for hypothesis testing did not align with our objectives, as we aimed to maintain an explorative stance in our examination of the drivers behind CDR investments. To address these limitations, Dubois and Gadde (2002) suggest the method of systematic combining, which confronts the linear and static processes of deductive and inductive reasoning.

3.1.1 Systematic Combining Process

Dubois and Gadde's (2002) approach to systematic combining is rooted in abductive reasoning, which seeks the simplest and most likely explanation from observations. The main aim is to advance theory development, enabling theories to better reflect the complexities of reality.

Dubois and Gadde's (2002) framework focuses on two main elements: matching, together with direction and redirection. Matching is described as the continuous process of aligning theoretical frameworks with empirical observations. They point out that this process is not static but involves ongoing adjustments, fostering a dynamic interplay between theory and data. The goal, as stated, is to ensure that theoretical constructs are informed by both literature and empirical data. This iterative process, according to the authors, aims to improve the research's relevance and solidity, enhancing its real-world applicability. Further, they describe direction and redirection to involve tactical navigation of the research as new findings surface. This approach acknowledges that the initial path may shift as the research unfolds, emphasizing flexibility and responsiveness over a fixed plan.

The interaction between matching and direction/redirection is pivotal for the versatility and depth of systematic combining. This framework suggests that, in our research, integrating the SVC framework with observed CDR investment motivations could yield unexpected challenges or insights, prompting a theoretical pivot. Such a non-linear approach is invaluable in exploring complex areas like strategy and competition, ensuring openness to evolving themes and discoveries.

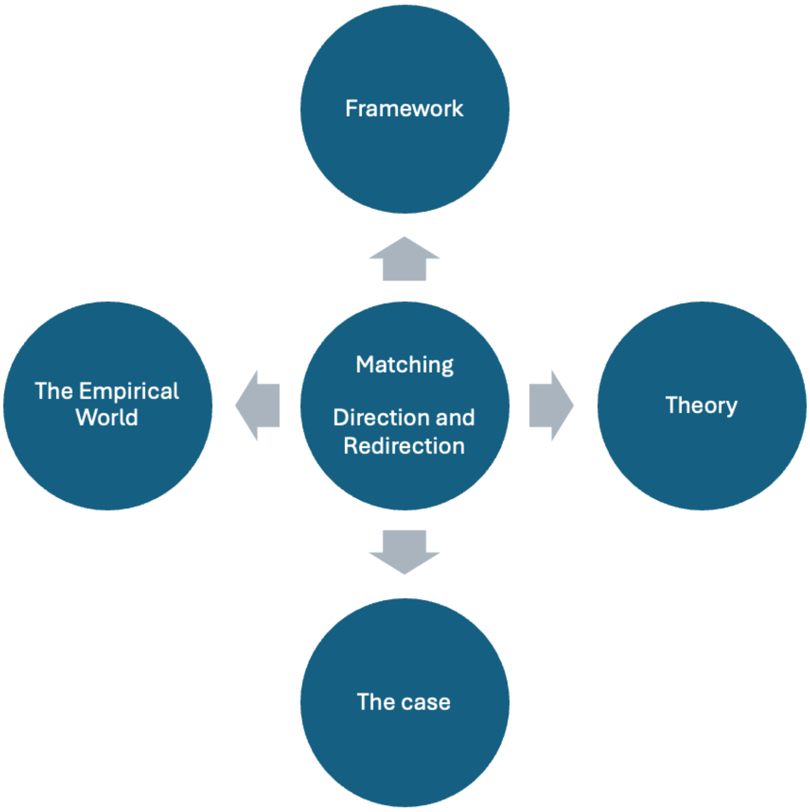

Figure 3.2: The Systematic Combining framework (adapted from Dubois & Gadde, 2002)

3.2 Research Design

We adopted an exploratory qualitative multiple-case study design to address our research question for several reasons. Firstly, both CDR and SVC are novel, contemporary topics with insufficient data available for a quantitative analysis. Secondly, the nature of competitive advantage involves causal ambiguity and is, therefore, not easily quantifiable. This study aimed to examine the interplay between SVC maturity, CDR investments, and the perceived value of participation in the VCM—so called exploratory case study (Yin, 2018). We operate under the fundamental assumption that to derive value from sustainable actions such as CDR investments, a firm must ensure proper alignment with SVC. Accordingly, we analyzed the cases using our tentative SVC framework (see section 2.4.6), adapted from Manninen et al. (2024), which reflects the perspective of decision-makers.

3.2.1 Multiple-Case Study

The case study design is one of the most common in business research (Bryman & Bell, 2015). Bryman and Bell (2015) state that to generate an intensive and detailed examination of cases, a qualitative research approach is beneficial. The selection of cases in this study also followed their suggestion that researchers should anticipate the opportunity to learn. Furthermore, according to Bryman and Bell, the case study approach is suitable for the combined inductive and deductive research approach used in this research paper. Baxter and Jack (2008) argue that a case study approach should be used when the researcher wants to cover contextual conditions due to their perceived importance to the phenomena being studied. Additionally, since the boundaries between the phenomena and the context in which they occur are unclear, Baxter and Jack (2008) contend that the case study approach is a suitable research design.

The multiple-case study design can be seen as an extension of the singular case study design. This research design is suitable for this study as it allows for the observation and analysis of similarities and differences between cases in different contexts, facilitating theoretical reflections (Baxter & Jack, 2008; Bryman & Bell, 2015). Yin (2018) states that multiple-case studies are generally preferred to single-case studies due to their potential to provide substantial analytical benefits. Yin (2018) also supports case study research when “how” and “why” questions are addressed.

Moreover, the multiple-case study is applicable to the scope of this research as it seeks to investigate the perspectives of both decision-makers directly in charge of strategic decisions and those supplementing these decisions with sustainability competencies. This approach provides a more holistic picture of firm engagement and the intricacies of decision-making. In general, Baxter and Jack (2008) consider the evidence produced by a multiple-case study design to be robust and reliable.

In terms of the level of analysis, the research focuses on two distinct but synergistic corporate roles: *top management* and *sustainability managers*. As comprehensively defined in the literature review, top management and sustainability managers represent key decision-makers in sustainability matters. These two cases provide valuable insights into the strategic decisions and sustainability competencies that drive corporate sustainability initiatives.

Qualitative studies face limitations in validating results in terms of statistical significance. Yin (2018) proposes the introduction of rival explanations as a means to address this challenge. He identifies rival explanations as the most significant threat to research, referring to the most plausible alternative explanations for the phenomena observed. This implies that our case study will also include rigorous efforts to establish the validity of any rival factors. The likely rival theory in our case would be the traditional CSR discourse.

An exploratory multiple-case study design was therefore chosen as the most appropriate research design for this study. Considering the novelty and complexity of CDR, SVC, and competitive advantage, this research design is conducive to gaining a deeper understanding of the factors contributing to key decision-makers' perspectives and incentives in corporate sustainability.

3.3 Data Collection Method

For our thesis, the data collection was conducted through semi-structured interviews, allowing adherence to a predefined set of questions while providing the flexibility to explore emergent themes in greater depth. The interview questions were developed based on our comprehensive review of literature pertinent to CDR and SVC, centered around the SVC framework developed by Manninen et al. (2021), as detailed in Appendix A. Additionally, more general questions were developed based on previous research on CSR to gain a general picture of the SVC maturity of each firm as perceived by individuals within each case role. This format is particularly suited to our research objectives, as it accommodates the exploration of complex topics (Dubois & Gadde, 2002) such as strategic sustainability practices and competitive advantages.

Before conducting each interview, we secured the consent of all participants for recording the sessions and using their data. Each participant was formally introduced to our team and provided with a thorough briefing about the study's goals. We also informed them that their identities would be anonymized in the published paper and that any details regarding their personal and company names would be used solely for organizing the thematic analysis. This initial discussion provided a platform for participants to ask any questions, helping to establish a clear understanding and comfort level with the process. This preparatory stage was vital in setting the tone for open and informed participation throughout the interview process.

3.3.1 Purposive Sampling

Although some scholars argue that case studies do not follow a sampling logic (Yin, 2018), we utilized a case selection that resembles purposive sampling. Bryman and Bell (2015) suggest that the vast majority of sampling methods in qualitative research employ some form of purposive sampling. They elaborate that purposive sampling is a non-probability form of sampling where the researcher does not seek to sample participants on a random basis but rather seeks to sample them strategically. This sampling method differentiates itself from a convenience sample as it involves selecting sampling sites, such as organizations and employees, because of their relevance to a social phenomenon.

The research aim of this study, which necessitates a particular interest in the decision-making roles of those who have invested in, are planning to invest in, or have an interest in CDR, therefore entails that a purposive sampling method is most appropriate. Furthermore, this choice of sampling method allows the research to investigate results in the context of varying organizational differences.

3.3.2 Case Identification

Yin (2018) suggests that identifying the case is a two-step process, involving defining and bounding the case. In relation to this study's research question, the case studies focus on management positions within the private sector. The selection of specific cases were dependent on the relevance of each role in the decision-making process for investing in CDR methods. As discussed in the literature review, prior research and empirical evidence suggest that *top management* and *sustainability managers* play significant roles in this process. Within each case, the aim is to explore individuals' views on the centrality of CSR and CDR investments within the tentative SVC framework at their firm. This research aim narrows down the scope of relevant information to be collected from each individual within each case.

3.3.3 Case Bounding and Interviewee Selection

Case bounding refers to defining the immediate topic of the case studies to distinguish them from the context of the case studies (Yin, 2018). Therefore, before establishing criteria for prospective interview participants within each case, the scope of relevant companies had to be defined. Important to this study's choice of companies were criteria based on the companies' engagement with CDR. The companies that were contacted had either made investments in CDR methods or had plans to invest in CDR methods.

Our research into CDR investments prompted our collaboration with Milkywire to attempt to interview some of their existing or recent partners. Milkywire is a B2B platform that offers partnered companies the ability to take responsibility for their footprint with thoroughly vetted climate and nature projects (Milkywire, n.d.). Companies that partner with Milkywire contribute to impact funds—funds that do not yield financial returns—curated by both internal and external climate and nature experts. All of the partnered organizations we selected were investors in the Climate Transformation Fund (CTF), which "focuses on innovative projects that accelerate global net-zero goals" (Milkywire, n.d.). The partners selected had at least some portion of their invested funds placed in the carbon removal pillar. It is important to mention that our outreach to Milkywire partners only yielded an interview with one individual at a partner company.

Next, to increase the likelihood of producing compelling support for our assumptions, cold outreach was conducted to companies listed on CDR.fyi as purchasers of CDR to increase the pool of individuals pertaining to the two cases. The website and data source, CDR.fyi, was launched in 2022 with a mission "to accelerate durable carbon removal worldwide" (CDR.fyi, n.d.). The organization brings transparency and accountability to the durable carbon removal market by providing credible reporting on global purchases from various CDR participants (CDR.fyi, n.d.). All the companies with website information posted under the company specifics were reached out to, apart from larger, renowned companies such as Microsoft and Airbus, as our perceived prospects of receiving a positive reply were very low. Furthermore, no individuals, sports teams, countries, or municipalities were contacted as they were outside the scope of our study. Lastly, individual outreach was done; the researchers asked contacted individuals to introduce relevant interview prospects at companies falling within the defined scope of the level of analysis.

After establishing the reasoning behind the firm selection, criteria were formed to choose appropriate interviewees for each case: top management and sustainability managers. The focus of the study and research on decision-makers (Eberz et al., 2023; Edwards, 1954; Eisenhardt & Zbaracki, 1992; Ueda et al., 2009) prompted the selection of interviewees within top management who exhibited a good overall knowledge of the sustainability initiatives of the firm and any CDR engagement. Furthermore, owing to the sustainability function's direct involvement in the SVC processes at a firm and support from previous research (Eberz et al., 2023 & Ueda et al., 2009) on the importance of sustainability competencies to strategic decision-making in sustainability-related contexts, the choice of individuals with roles as sustainability managers was supported.

The requests for interviews were structured in a manner most likely to lead to a favorable response. Bryman and Bell (2015) suggest a dual approach whereby the researcher first makes a phone call to a prospective participant appropriate for the interview and follows up by sending an introductory letter. To maximize the number of positive responses from prospective participants, this thesis employed an adapted version of the dual approach whereby introductions were made by a credible first point of contact to prospective participants. Then, the researchers in this study contacted the prospective participants individually with a thoroughly crafted email or text message that conveyed the potential value of participation in the study to the strength of the findings.

The table below offers an overview of the interview participants, each identified by a pseudonym to ensure anonymity. Furthermore, information on firm size, position, industry, and the date and time of the interview are given to provide transparency and background information for the reader.

Table 3.1: General Information on Interviewees

General Information					
Interviewee	**Firm Size**	**Position**	**Industry**	**Date**	**Time**
Andersson	50	CEO; co-owner	Construction	May 6, 2024	45 minutes
Bengtsson	30	Owner and founder	Hospitality	May 7, 2024	49 minutes
Classon	40	Sustainability and Compliance Specialist	Home appliance retail	May 8, 2024	36 minutes
Danielsson	250	Director; former CEO	Logistics Services	May 7, 2024	39 minutes
Fransson	4	Partner co-owner	software development and digital design	May 9, 2024	28 minutes
Gustafsson	45000	Executive VP	Education	May 10, 2024	37 minutes
Hermansson	65	Chief Marketing and Sustainability Officer	IT and data	May 13, 2024	27 minutes
Ivarsson	300	Head of Sustainability	Architectecture	May 13, 2024	23 minutes
Jacobssen	100 000	Sustainability programme manager	Telecom	May 14, 2024	41 minutes
Kallman	19 000	Sustainability manager	Telecommunications and IT sector	May 14, 2024	48 minutes

3.3.4 Interview Design

In the following section, the choice of qualitative interview and development of the interview guide is discussed. Furthermore, the rationale for the choice of questions used in the interview guide is examined with references to relevant theories, prior research, and the elements of the adapted SVC framework.

According to Bryman and Bell (2015), there are two dominant approaches to conducting interviews in qualitative research: the unstructured interview and the semi-structured interview. Both approaches involve interviewing the participant, transcribing the interviews, and analyzing the transcripts. The semi-structured interview distinguishes itself from the unstructured interview by the level of specificity of the interview guide. The interview guide in this approach tends to include specific topics to be covered while still allowing the respondent leeway in how to reply. This is ensured by formulating open-ended questions that focus on the interviewee's perception of the topic being discussed without leading the participant. Furthermore, even though the questions and topics in this approach are more specific, this design still allows for flexibility in terms of the order of the questions, the formulation of the questions, or the addition of new questions to further investigate things said by interviewees. Bryman and Bell (2015) further discuss that the choice of a semi-structured interview is most relevant when the researchers have a clear focus, a desire to address specific issues, a clear idea of how the data will be analyzed, more than one researcher carrying out the fieldwork, and when conducting multiple case study research. In this study, the research is clearly focused on how CDR investments within the SVC framework can lead to competitive advantages, with a goal to address the specific elements of the SVC framework in the context of CDR. Furthermore, more than one researcher conducted the interviews, an element inherent to semi-structured interviews. Lastly, the study was conducted on multiple cases, necessitating a degree of structure to ensure cross-case comparability. As a result, as per the characteristics described by Bryman and Bell (2015), the qualitative research design of semi-structured interviews is the most relevant choice to conduct this study.

Overall, the structure of the interview guide was built according to the principles of a standardized open-ended interview, a form of a semi-structured interview, to ensure congruence between the interviews with identical questions formulated to generate open-ended responses (Turner, 2010). The development of the questions for the interview guide (see Appendix A) stemmed from our aim to understand how decision-makers within firms view the role of external CDR investments in relation to SVC and competitive advantage. Therefore, the grounds for each question are supported by relevant literature and research (Cadez et al., 2018; Camarena-Martínez & Wendlandt-Amézaga, 2017; Chandler, 2021; KPMG, 2022; Manninen et al., 2024). The questions were subdivided into four sections: general questions, CSR questions, CDR questions, and CDR investments in the context of the SVC framework questions. This sequence of sections was decided to ease the interviewee into the questions, beginning with easy, 'non-threatening' questions, thereby building rapport before asking more specific questions (Bryman & Bell, 2015; Leech, 2002).

The first part of the interview asks for general information about the interviewee as well as information about the company. This information was gathered for contextual purposes, allowing the researchers to organize and separate the cases. Furthermore, the information about the participant's job title, responsibilities at the company, a company description, and the industry of the company will be used to organize the interviewees in our discussion and analysis. Personal information extracted from the interview, such as the participant's name and company name, was kept confidential. The second part of the interview asks the interviewee about their rationale behind their involvement in CSR. These questions are adapted from an ESG survey conducted by KPMG (2022) and provide a general idea of the SVC maturity of the company in question. This is essential for gathering relevant data since the underlying assumption of the study is that SVC will act as an enabler for CDR investment to contribute to a potential competitive advantage. The third part of the interview asks for general information on the type of interest each company has in CDR, whether a current investor, a planned future investor, or an interested stakeholder.

The questions in the fourth part of the interview guide were specific to the elements of the SVC framework and how the participants perceived CDR investments from the perspectives of value forms, stakeholders, temporal view, spatial view, and tensions and conflicts. The questions under the value forms section were created to gauge the participant's perspective on the rationale behind investing in CDR methods and the value that is created from such investments, as well as the value that could be appropriated by the company from such investments. Next, the questions in the stakeholders section were primarily focused on which stakeholders the participant perceived were involved in putting pressure on the company to invest in CDR and which stakeholders benefited or would benefit from such investments. In the temporal view section, the focus was on the interviewee's perception of potential short-term and long-term gains from CDR investments and the integration of said investments into the company's long-term strategy. Moving forward, questions were asked about the spatial view, focusing on where perceived value from CDR investments is created within a company's value chain and boundaries. Lastly, the interview closes with questions regarding tensions and conflicts to assess whether investments in CDR are perceived to induce positive financial performance or whether investments are made purely for philanthropic purposes. The questions are constructed with the help of external resources and previous studies (Cadez et al., 2018; Camarena-Martínez & Wendlandt-Amézaga, 2017; Chandler, 2021) and guided by first-order concepts and second-order themes from Manninen et al.'s (2024) data-driven figures from their research synthesis. The questions were further ordered according to the perceived significance of each element to the SVC framework in the context of CDR investments.

3.4 Data Analysis

Our analysis was conducted with the aid of artificial intelligence (AI) transcribing tools from KlangAI. KlangAI is a Swedish company that helps organizations and individuals transcribe and create insights from sound, with a focus on security and data protection (Klang.ai, n.d.). Each of the transcriptions was supplemented by an active-listened read-through. This involved feeding the system the interviews and manually managing the transcription in chunks to ensure the accuracy of the program's speech-to-text transcription.

After compiling the data in the form of extensive transcripts from the interviews, the text was manually codified. To derive themes or patterns from the transcripts in the most objective manner possible, the study adhered to coding structures, steps, and considerations suggested by Bryman and Bell (2015). Firstly, coding was done directly after the transcription within a day of the interview to maximize the researchers' depth of understanding of the data being gathered. Moreover, the codes were reviewed and categorized depending on connections drawn by the researcher between codes. Finally, coding was used as it is a widely accepted method of qualitative data analysis in the research community.

Following Miles and Huberman's (1984) suggestions for reducing the complexity of presenting the codes from qualitative analysis, we constructed tables of the emerging themes against interviewees with the codes distributed within (see Chapter 5). Each table was constructed based on our tentative framework (see Chapter 2.4.6), where the emerging themes are organized within those themes from the framework. This creates an accessible view of how both new themes could emerge and how well the tentative framework was aligned.

In our analysis, we aimed to test the theoretically predicted pattern, i.e., CDR investment as explained by the SVC framework, against the empirically observed patterns. According to Yin (2018), the most desirable approach in this case is pattern matching. This technique, he suggests, can strengthen internal validity if the empirical patterns are similar to the theoretical ones. Sinkovics (2018) writes that flexible pattern matching is best used for exploratory research with "a priori specification of a tentative analytical framework or initial template" (p. 474). Sinkovics states that this allows for simultaneous testing and expanding of the tentative framework.

3.5 Validity, Reliability and Analytic Generalization

To judge the quality of our case design, we will utilize Yin's (2018) four tests: construct validity, internal validity, external validity, and reliability. We will also discuss his approach to the analytic generalization of case studies. First, he defines construct validity as the research's ability to effectively measure the theoretical notions studied. Yin suggests that the design should utilize several sources of evidence to strengthen construct validity. By interviewing ten different employees, either top management or sustainability managers, all from different companies representing different industries, we have diversified our data sources and increased construct validity.

Further, internal validity, according to Yin (2018), seeks to determine the research's ability to accurately identify causal relationships between variables. However, Yin notes that this is usually not the primary concern of qualitative studies and is often poorly understood. He suggests that the best tactics to improve internal validity are pattern matching, explanation building, addressing rival explanations, and using logic models, all of which are employed in our data analysis. By using these strategies, we ensure that the causal pathways identified, such as how SVC maturity influences CDR investment outcomes, are not merely correlational but have explanatory power supported by the data. This involves detailed case study narratives that link investment behaviors to specific competitive advantages, thereby strengthening the argument through systematic comparisons across different cases.

Yin (2018) summarizes external validity as the study's ability to "[show] whether and how a case study's findings can be generalized" (p. 78). He emphasizes that the best tactic to improve it, in our study, is a replication logic applied in each case. In other words, utilizing a semi-structured interview approach enables us to enhance the generalizability of the themes derived. Replication across different industries and organizational contexts allows us to propose broader implications for the role of CDR in achieving SVC. This suggests that the patterns observed can be applicable in varied business environments. This is further bolstered by a careful selection of cases that represent not only a variety of sectors but also different stages of SVC implementation and environmental strategy maturity.

Additionally, Yin (2018) introduces the objective of reliability as the replicability of the research design. We strengthened the reliability through the usage of an interview guide and a thorough and transparent selection of cases and methods of data analysis. Although interpretations made by researchers from the transcribed text could vary, by following the steps and considerations outlined by Bryman and Bell (2015), we ensured that we minimized such variability. Documentation of the research process, from the development of the interview guide to the execution and analysis of interviews, facilitated a clear audit trail that other researchers can follow, thereby enhancing the reliability of our study. This approach ensures that any subsequent studies could replicate our methodology and potentially arrive at similar findings, affirming the robustness of our research design.

Finally, Yin (2018) defines analytic generalization as a method used in case study research to extend findings from a specific case to broader theoretical propositions, rather than to a larger population, which is typical of statistical generalization. He explains that this approach involves using theoretical frameworks established at the onset of a case study to interpret and generalize findings conceptually. By aligning empirical insights from the case study with existing or new theoretical concepts, researchers can propose generalizations applicable to similar contexts beyond the original case. Unlike statistical generalization that relies on numeric extrapolations from a sample to a population, analytic generalization allows researchers to draw higher-level conclusions that enhance understanding of the underlying principles or hypotheses.

In our adoption of the SVC framework to fit CDR investments, we are furthering the understanding of how SVC could be interpreted in practice by decision makers. This will help assist future research in utilizing SVC for making business decisions.

3.6 Limitations

This case study is subject to several limitations. First, there is a bias in the interviewees' relation to the firm. For instance, they may avoid disclosing information that makes their organization be perceived as unsustainable. This social desirability bias can lead to over-reporting of favorable behaviors and under-reporting of unfavorable ones. This is particularly relevant in discussions about sustainability practices, where respondents may feel pressure to conform to socially responsible norms.

Furthermore, strategic information is highly valuable for firms, and therefore they may refrain from disclosing the actual mechanisms for investing in CDR. By maintaining high confidentiality and anonymity standards, we hope to mitigate this limitation by encouraging more openness and accuracy in the responses provided by the interviewees.

Additionally, our focus on qualitative data through semi-structured interviews, while rich and deep, may not capture all dimensions of CDR investments and their impact within the SVC framework. Quantitative data could provide different insights, such as the scale of investment and its statistical correlation with financial performance or competitive advantage. The absence of quantitative validation means that our conclusions must be interpreted with caution, as they are based on subjective interpretations of the interview data.

Another limitation is the potential influence of the current socio-economic climate on the responses given. Companies' strategies and the emphasis on sustainability can fluctuate based on regulatory and market pressures present at the time of the interviews. These factors could affect the replicability of the study in different temporal contexts, where economic downturns or changes in consumer sentiment might alter the way firms approach CDR investments.

Lastly, when performing a thematic analysis, there is an issue of subjectivity. There can be fragmentation in the data when the narrative of a discussion is lost. Picking chunks of text out of context can lead the research to be biased in its interpretation to fit their research goals.

4 Empirics

This chapter presents the empirical findings from each case study. We begin by inductively introducing the observations from top management, followed by those from sustainability management. Each section aims to highlight the main emerging themes discussed in the interviews. This presentation is descriptive and does not include any in-depth analysis, which will be covered in the following chapter.

4.1 Top Management

Top management, as shown in Table 4.1 below, includes the CEOs and owners of the firms. They all shared the responsibility of making executive decisions at the highest level of the company. A unique case was Bengtsson, who identified himself solely as the owner and not the CEO. Despite this distinction, he operated a smaller organization and still held an overarching executive position.

Table 4.1: Information on top management interviewees

General Information					
Interviewee	**Firm Size**	**Position**	**Industry**	**Date**	**Time**
Andersson	50	CEO; co-owner	Construction	May 6, 2024	45 minutes
Danielsson	250	Director; former CEO	Logistics Services	May 7, 2024	39 minutes
Gustafsson	45000	Executive VP	Education	May 10, 2024	37 minutes
Bengtsson	30	Owner and founder	Hospitality	May 7, 2024	49 minutes
Fransson	4	Partner co-owner	software development and digital design	May 9, 2024	28 minutes

Table 4.1: Top Management Info

4.1.1 It Is Strategic

The top managers introduced three perspectives on why CDR (or CSR in general) is important. First, by integrating CSR closely with the core business, they anticipated long-term cost savings. They found that cutting emissions led to cost reductions—being more efficient per unit of emission. Consequently, they evaluated how to prioritize long-term savings over short-term profits. One manager also discovered that their unique approach of combining CSR with direct employee involvement effectively saved on tax costs. By encouraging employees to donate their tips to good causes rather than cashing them out, he avoided a 25% tax on the amounts.

Furthermore, some managers utilized CDR investments strategically. These managers generally perceived CSR as a strategic tool rather than philanthropy, finding that doing good is in the best interest of their firms. What they did differently from other managers was offering customers the option to offset their transactions up-front instead of retrospectively investing to reduce their firm's emissions. They found that a wealthy customer segment often preferred to pay to resolve their conscience. Bengtsson compared this to the Catholic letter of indulgence. Andersson viewed CDR in light of its ability to offset a specific amount of CO_2. Compared to other methods, such as planting trees, he believed he could make a business case by showing clients that his products were carbon neutral. Essentially, he could provide customers with a detailed calculation of his business's emissions and demonstrate that he could offset the same amount, effectively proving himself net-zero.

> *It's motivated not necessarily to save the world, but [because] I think that it's good for my business. -Bengtsson*

> *I mean it's in the end we make this kind of business decisions, oftenly because we feel that we will perform better in the marketplace, seldomly is just done from altruistic purposes. -Danielson*

There appeared to be a benefit to being part of a climate collective/network for some of the managers. Bengtsson used their sustainability profile to start a collective of like-minded firms within the industry to collectively attract customers. Fransson, despite being disappointed by the lack of engagement within their sustainability network, mentioned a few new client engagements resulting from it. Overall, there was an indication of some degree of network value in these collectives.

4.1.2 It Improves Our Image to Customers

Every manager agreed on the benefits of sustainability for image, branding, and reputation with customers. There was a clear consensus that sustainability is attractive to customers. However, only a few interviewees—those who observed a wealthy customer segment—saw the potential to generate pricing premiums from this sustainability image. Most argued that sustainability is the reason they are chosen over competitors. In other words, when faced with two equal-cost options, customers tend to choose the sustainable one. However, Gustafsson was uncertain if the firm's customers valued price, quality, or sustainability more, making it difficult to determine if one of these factors is more important than the others.

> *And I mean it's, it's not that we get paid more for being sustainable or having sustainable solutions. It's the reason why you're being selected. -Dannielsson*

In most interviews, the interviewees emphasized their company's sustainability efforts as being ahead of their competitors' or the industry's. Pertaining to this, some attributed their gained customer segment to the lack of competition on the sustainability front.

> *I would argue that, looking at our competitors, we are miles ahead of their attempts. -Gustafsson*

Danielsson even claimed that the perception of being "green" is important, regardless of whether an actual green solution is actually employed. Similarly, Bengtsson found that simply offering CDR to customers is enough to gain the same benefits as if the firm were investing independently in CDR.

> *But it works even if they don't use it. It says something about my thoughts and the way I think regarding the environment. People appreciate that, and that way you get the competitive advantage. -Bengtsson*

4.1.3 Aligns the Business Internally

Every manager stated that they engaged in CDR as a means of satisfying self-interest. They described it as a way to feel good or to signal their values as founders. Gustafsson stated that he felt ethically responsible for the actions taken by his company, and to feel good about their business, he had to take actions against their large emissions. For him, it was a way of justifying their business operations.

I feel an ethical responsibility for our actions. Given that we pollute a lot, these initiatives make me feel better. - Gustafsson

The biggest emphasis from the managers was, however, on employees. All the interviewees noted a significant benefit to corporate culture. For Bengtsson, sustainability certificates were not for customers but to help align the business internally. Gustafsson emphasized that effective internal sustainability disclosure is a productive way to motivate 45,000 employees. However, the perceived benefits are not exclusively internal, as the managers agreed that being a leader in sustainability improved their ability to attract employees.

It's not embedded in our strategy to the extent that it is like one of the legs of a three legged stool. But it is embedded in the sense that it's something that you push in our culture and in how we present ourselves to the world. - Fransson

4.1.4 Regulations

Many brought up the idea of investing into CDR for the entire world or the local community in the long-term. But as Fransson brought up, it is hard to measure and attain any value created. Although, as previously mentioned, top management had a consensus that most of the value gained from CDR investments pertains to internal motivation and the attraction of talent, the driving force behind adoption is not related to external stakeholders. That is, the managers have not observed that they must implement CDR as a means of accessing talent; rather, they did it voluntarily and consequently attracted talent.

There is a consensus that regulatory sustainability compliance is inevitable in the future, but firm size appears to influence how managers perceive it. Smaller firms see that they might gain some experience and a head start by adopting proactive sustainability actions early on. Andersson believes that his firm will be directly targeted by regulations as it becomes easier to measure supply chain emissions and views CDR as an effective tool. Others think that stricter regulations will indirectly affect them through their suppliers, who they predict will require their firms to achieve a certain baseline sustainability level to comply with regulations placed on them. From the perspective of a larger firm, Gustafsson perceives regulations as a force pushing the industry towards sustainability but does not see much strategic value in it. For him, every competitor is under the same scrutiny and requirements, and therefore there is no unique benefit to taking specific sustainability measures to hedge against compliance.

to get permission to build, they must fill in how much carbon footprint there is before they get the permission … and that's a big difference, because if you can measure it, you must measure it. - Andersson

There is an issue of costs, however, relating to CDR investments. At the moment, many managers feel that they might not be able to reach their targets because the prices outweigh the benefits. For large firms, there is concern about not being able to perform as sustainably as they wanted. For smaller firms, there is concern about a first-mover disadvantage. That is, costs might decrease over time, making it cheaper to wait.

4.2 Sustainability Manager

Sustainability managers consist of the individuals in the highest or one of the highest sustainability positions in their respective firms, as seen in Table 4.2 below. They are all indirect decision makers within their firms, working with top management for sustainability decisions.

Table 4.2: Information on sustainability management interviewees

General Information					
Interviewee	Firm Size	Position	Industry	Date	Time
Hermansson	65	Chief Marketing and Sustainability Officer	IT and data	May 13, 2024	27 minutes
Ivarsson	300	Head of Sustainability	Architectecture	May 13, 2024	23 minutes
Classon	40	Sustainability and Compliance Specialist	Home appliance retail	May 8, 2024	36 minutes
Kallman	19 000	Sustainability manager	Telecommunications and IT sector	May 14, 2024	48 minutes
Jacobssen	100 000	Sustainability programme manager	Telecom	May 14, 2024	41 minutes

4.2.1 Unwilling to pay premium

There is a clear consensus from the sustainability managers that customers are reluctant to pay a premium for sustainable options. One interviewee highlighted that although customers may view investments in CDR positively, they do not prioritize them. Another underscored that the decision to invest in CDR methods was entirely driven by internal factors, without any influence from external stakeholders. Ivarson explained that no premium was imposed for these efforts because clients consider CDR a standard practice, thus making it impossible to recoup costs in this manner. The primary focus remains on securing projects rather than capitalizing on sustainability efforts for higher prices. However, Kallman acknowledged that Business-to-Business (B2B) customers are increasingly incorporating sustainability into their purchasing decisions.

> *I'm not sure if end-customers will choose the more expensive, sustainable option. - Classon*

4.2.2 Fulfilling for Employees

The most common benefit mentioned by the sustainability managers was that investing in CSR and CDR initiatives also played a significant role in employee engagement and branding. Classon believed that CDR investments helped with internal communication and employee motivation. Most managers mentioned that these projects were seen as valuable and fulfilling for employees. Jacobsen highlighted the importance of employee branding, stating that successful sustainability efforts and innovation attracted young talent, which was crucial for the company's future.

> *I would say also employee branding because I think if we manage to do this well, we also, if we put a lot of traction to innovation, young talents and people want to work here, it's crucial. - Jacobsen*

4.2.3 License to play

Focusing on CSR is deemed critical for obtaining and maintaining a "license to operate." Kallman perceived CSR as a fundamental requirement without which businesses cannot effectively function. From a long-term perspective, some managers, particularly Hermansson, asserted that investments in CDR are essential for profitability. This assertion is exemplified by Ivarson's explanation that CDR and CSR are necessary due to demands from large corporate developers and publicly funded projects. Most managers agreed that such endeavors mitigate the risk of losing contracts in the future and provide long-term benefits.

> *And I would say CSR is a license to play. It's like a hygiene factor… without...there is no business. - Kallman*

There is however uncertainty about the long-term competitive advantage of CDR and CSR, as they are expected to become mandatory. Most sustainability managers emphasized that these efforts should be viewed as a business necessity rather than just a beneficial addition. Most of the sustainability managers agreed that the absence of CDR and CSR integration would impact multiple aspects of the business. Furthermore, most stressed the alignment of their CSR activities with broader societal values. While some viewed these investments as philanthropic, Jacobsen insisted on integrating sustainability into business operations for societal transformation beyond mere philanthropy.

> *If you do not do it you become less attractive in various aspects. It will be more difficult to get talent to work for you. It will be harder to attract partners to the company. It will be harder to attract customers. It will affect all areas. - Hermansson*

> *You could then say that the approach to manage carbon emissions in the business is part of that responsibility that we feel.But it was also we want to invest in the right things. So yes philanthropic if you want to call it that - Ivarson*

All sustainability managers viewed CSR as fundamental and ingrained in their core business strategy. However, they varied in their degree of integration; Hermansson went as far as to suggest that CSR is not a separate aspect of operations. Conversely, Ivarson and Classon maintained that CSR is integrated into their firms but noted challenges in engaging the office in sustainability topics. Overall, there was a consensus that CSR and sustainability must be treated as business necessities rather than optional supplements.

4.2.4 Costs, Market Conditions, and Decision-Making in CDR Investments

Primarily, most of the managers stated that the market for CDR solutions remains small-scale, with high prices posing a significant barrier. Some, like Jacobsen, emphasized the importance of initiating CDR investments early to drive down costs and enable businesses developing CDR technology to scale up by 2030 and beyond. He also noted that certain carbon projects are considerably more expensive than the standard carbon pricing system in his country, making early investment crucial to achieving long-term cost reductions. Additionally, Kallmans stated that the primary beneficiaries of current CDR investments tend to be the CDR project developers themselves, rather than the investing firms.

> *Yeah, I think the biggest benefit is the programs and the projects getting money from us. You know that is really the biggest beneficiary. - Kallman*

Budgetary concerns were prominent among sustainability managers. Ivarson mentioned that their current budget for CDR is low, attributed to the immature market and unconvincing technology. This cautious approach reflects a broader hesitance to allocate substantial funds to CDR initiatives at this stage. Furthermore, sustainability managers stated that investing in external CDR markets is primarily driven by the high costs associated with developing internal carbon removal technologies, which are far removed from most companies' core business activities. Consulting with external experts was seen as a risk-minimizing strategy to navigate the complex landscape of CDR investments and ensure effective implementation, as well as investing in projects that deliver on their claims.

> *I suppose at the moment. It's [budget] set quite low because we're worried the markets very immature and we're not convinced of some of the technology - Ivarson*

Regarding decision-making, the selection of a CDR approach entailed a collaborative internal effort. Typically, the sustainability team pitches solutions and general ideas to the executive management and the board. Exemplified by one manager, who stated that they explained to top management that lower emissions could theoretically lead to greater efficiency and better financial management for the company. However, all sustainability managers agreed that final decisions on CDR investments rests with the CEO, owner, or the board.

4.2.5 Trustworthy with Greenwashing Risks

The Sustainability managers widely viewed CDR as a trustworthy method for mitigating carbon emissions. Many considered it the only viable, science-backed solution for permanent carbon dioxide removal, making it essential for meeting net-zero targets. Ivarson noted that CDR currently serves as a corporate mechanism to demonstrate compliance and responsibility, reflecting the current market offerings. This indicates a strong belief in CDR's efficacy and its role in achieving sustainability goals.

However, there was a notable reluctance to market sustainability commitments from the sustainability managers due to the risk of greenwashing. They emphasized that stricter regulations on the communication of sustainability activities mean that their firms are more hesitant to publicly promote their initiatives. This reflected a cautious approach to sustainability marketing, aiming to avoid the negative repercussions associated with greenwashing accusations.

> *But we are so afraid of using this in external communication and to select the right words there, so we are hardly even talking about it. Hence that leads to that nobody hardly knows about it and can't give us credit. - Kallman*

Most sustainability managers stated that engaging in networks and climate initiatives provided companies with essential support for certification and scientific backing. They claimed that these networks offered frameworks and knowledge crucial for structuring and advancing sustainability efforts. Kallman viewed their engagement with the SBTi as highly favorable, considering it a valuable stamp of approval. Furthermore, there was a consensus that participating in multiple climate initiatives yielded benefits, such as facilitating learning, providing inspiration, and fostering valuable connections. Jacobsen emphasized the value of these climate initiative groups for gaining insights and building networks, which were instrumental in driving sustainability initiatives forward.

> *But we do see the benefit. And sometimes the benefit is only to learn and get inspiration ...I think that has been truly valuable because you need to create these networks. - Jacobsen*

4.2.6 Regulatory change and external stakeholders

Sustainability managers believed regulatory change played a significant role in CDR investments, although its importance varied by company size. Managers from larger firms, involved in business-to-business transactions, were expected to face more legislative scrutiny. While regulatory changes were deemed to be typically slow, there was a growing awareness of stricter sustainability reporting requirements, such as those from the EU CSRD. The sustainability managers see these stringent requirements will be pushing companies to focus on aggressive and transparent emission reductions, which will be essential for gaining reputational value from carbon credits. Some managers emphasized that being proactive in carbon removal and reduction could mitigate future carbon tax costs and reduce financial risks, aligning with new EU standards and CSRD. They all agreed that organizations needed to plan for carbon removals and nature-based solutions to comply with for example auditing standards, thereby avoiding negative scrutiny.

All sustainability managers also agreed that stakeholder pressure was minimal in driving CDR investments and that decisions for future CDR investments were also not influenced by external stakeholders. Kallman observed that their stakeholders did not prioritize companies investing in CDR methods. However, Jacobsen highlighted that their firm has been proactive in implementing sustainability commitments faster than their customers and peers, thus preemptively avoiding external pressure.

> *I think we were faster than even some of our customers and also peers in this area. So I don't think the pressure was that big because we took it before the pressure could come. - Jacobsen*

> *Zero. Nobody was asking us. It was completely company internal, our board decision to make that. - Kallman*

Additionally, there were mixed views on whether investors and financial institutions played a role in shaping CDR engagement. Some managers believed that banks and investors found significant value in companies engaging in CDR. However, others found that investors perceived CDR positively, but was not yet a decisive factor in their investment decisions. Hermanson stated that there had been no inquiries from investors regarding their companies' engagement with CDR methods.

> *We do not get any questions from investors or anything like that either. - Hermansson*

5 Analysis and Discussion

In this section, we will approach the analysis in two steps. First, we will synthesize across decision-maker cases to establish the themes that emerged from the empirical data. To improve the validity of the study and discover novel themes, this section is inductively driven, allowing observations and codes to define subthemes rather than purely matching. Lastly, the pattern-matching will be driven by contrasting the emerging themes with the tentative framework developed in section 2.4.

5.1 Cross-Case Analysis

We have allowed the tentative framework to create the main themes. Within each theme, we have inductively derived subthemes from the empirical data. The subsequent section explores each of these patterns. Additionally, we distinguish whether a subtheme is more prominent with top management or sustainability management. Each subsection of our cross-case analysis includes a table illustrating the codes that shape the subtheme.

5.1.1 SVC Maturity

In Table 5.1 below, we have summarized the themes that emerged when discussing CSR and how the managers observe it in relation to the firm. The first emerging subtheme is strategic CSR. Here, managers discuss CSR as a part of their toolset. For them, it is not necessarily driven by ethical and moral forces; instead, it has been observed to bring value to the firm, placing them in a better situation. The next emerging theme is that CSR is a requirement. These discussions relate to the fact that as a firm grows, CSR will become inevitable due to either regulations or the impact larger firms have on society as a whole. Finally, there is a philanthropic CSR subtheme which, in contrast to strategic CSR, concerns discussions where there is no broader insight into how CSR can produce value for the firm but is done simply on a virtue-ethical basis—one does it because the environment counts on it.

Table 5.1: SVC Maturity Codes and Themes

		SVC Maturity		
	Interviewee	Strategic CSR	Required CSR	Philantropic CSR
Top Management	Andersson	CSR as a competitive advantage; Making money by being sustainable is his goal;		
	Danielsson	CSR is core to the business	CSR went from want to have to need to have	
	Gustafsson	In the past three years we've integrated CSR well into our core business strategy but we have more to do; We are miles ahead of our competitors in regards to CSR; CSR is a more prominent part of the core business the past 3 years	Without taking responsibility for our immense emissions through CSR engagements we would not be in the strong position we are in and would not be able to hire the level of talent we currently do	
	Bengtsson	Believes there is a competitive advantage from sustainability; Certificates help internally; Avoid taxes by investing into CSR activity; CDR investments is done not to save the world, but rather to improve busines align goals and business model		
	Fransson		CSR is inevitable as a firm grows in size	CSR makes firms more ethical but not necessarily more profitable unless done at the heart of things; CSR is not part of the core business model, but is used to shape culture and comunication.
Sustainability management	Hermansson	CSR is an integrated part of business operations; CSR is fundamental and integrated in the core business strategy		CSR is inevitable and necessary as it is part of global social challenges.
	Jacobsen		CSR creates resilliance from outside forces	CSR is partially integrated but not fully strategic; Actively trying to promote sustainability within all aspects of the firm, but does not have full insight
	Ivarsson	Sustainability is integrated into the core business strategy, but not visible to the extent that [anonymous] would like	CSR gives a company a license to operate	
	Classon	We started with Sustainable CR to focus more on environmental sustainability in order to help us integrate it into our business; CSR investments should not be through philanthropic activities		Integration into business is necessary to make the transformation we need in society
	Kallman	A lot of data analysis involved with embedding sustainable ethical attitude to running the business and to identify most effective pathway for emission neutralization; Hoping to invest in more hand on projects rather than pay-get certificate and you are done		Business responsibilities include effort externally, i.e. contributions to charities & organizations

Top management appears to place less emphasis on the philanthropic aspect of CSR and a greater focus on strategy. While there is some mention of required CSR among these managers, it mainly relates to growth in firm size. Firm size is often discussed in relation to regulatory requirements and the 'license to operate.' Sustainability managers, on the other hand, also have a strong focus on strategic CSR perspectives. However, they observe less required CSR and are more philanthropic in their discussions. They tend to view their CSR activities as related to broader societal morals and necessary for a 'save the world' aspect, rather than from a purely business perspective.

5.1.2 Value Forms

From our cross-case synthesis, we can observe five emerging value forms as visualized in Table 5.2. First, some firms find value in CDR's measurability and quality. These firms, which tend to have a quantitative goal in line with net-zero, utilize CDR investments to neutralize their residual emissions. In contrast to carbon offsetting, many firms choose CDR due to its qualitative advantage in de facto removing CO_2 from the atmosphere with a credibly measured quantity.

Furthermore, reputation was the most mentioned value form among the firms. CDR investments help attain this by—reflecting on its perceived quality—"showing that you are doing the right thing." One firm noted that you can only gain a good reputation if you communicate in a trustworthy manner. Another pointed out that sustainability branding is beneficial but not sufficient by itself and requires integration into the broader firm profile. By being up to date with the latest technology, which CDR entails, firms emit a trustworthy signal that contributes to the overall brand profile.

The next emerging value form was motivation. Within motivation, two main benefits appeared. First, CDR investments contribute to a better business culture where employees feel proud to go to work, knowing they are contributing to something better. The other motivational aspect was innovation. Some firms use CDR as an internal carbon tax, which forces different teams within the firm to focus on improving the value created per unit of emission. This innovation could then contribute to greater overall value creation.

Two less mentioned value forms are access to markets and broader experience. In the first case, some interviewees stated that having adequate sustainability practices is essential to access key markets, such as governmental organizations. In the second case, some firms viewed CDR investments as contributing to their overall experience with sustainability practices. One interviewee expressed concern about greenwashing and emphasized the importance of trustworthiness in sustainability disclosure, hence driving experience as a key value. They also mentioned that investing today would hedge against future costs arising from new legislation. In other words, the more experience a firm has with investing in CDR (or sustainability in general), the better it will be at complying with emerging legislative frameworks, thus avoiding costs that other firms might incur.

Table 5.2: Value Forms Codes and Themes

		Value Form				
	Interviewee	Measurability and quality	Reputation	Motivation	Market Acess	Experience
Top Management	Andersson	Benefits of CDR investments are due to its easy quantifiability				
	Danielsson		Have to have CDR investments to offer to clients and to show you are meeting scope targets	CDR investments are done to perform better in the marketplace, rarely for altruistic purposes		
	Gustafsson		Without taking responsibility for our immense emissions through CSR engagements we would not be in the strong position we are in and would not be able to hire the level of talent we currently do; We have a big communications department publicising these investments but in order to improve our reputation, which I am convinced it would, we need to integrate with our 45 000 employees.	Amount invested changes depending on the years performance where a bad year would cause us to reach our goals slower; There is more to do regarding integrating CSR with our employees		
	Bengtsson		Certificates help internally align goals and business model; CDR sends a message of the values of the founders that is more than just empty words.	Intrinsically motivate employees via CSR; Does sustainability to keep employees	Finance industry is demanding sustainability disclosure and other key markets might do as well in the future	Anticipates future mandatory environment disclosure
	Fransson	CDR allow them to continuously remove their total released amount of CO2; CDR is a more effective climate mitigation strategy than other means	CDR attract talented employees that impact profit	CDR improves the corporate culture	CDR improve the sustainable policies such that the firm can pitch to certain clients	CDR will allow to prepare for future legislative change and mitigate later costs
Sustainability management	Hermansson	CDR is the only science-backed solution for permanent carbon dioxide removal; CDR is essential to reach net-zero	CSR is important to being an attractive employer and attracting downstream customers	CDR investments are central to the companies goals and mission; CDR investments are necessary to find new innovative solutions		
	Jacobsen	CDR creates more trust than other sustainability actions	Believe there is value to communicate externally to customers if done in a trustworthy manner	CDR investements are primarly for internal communication to motivate employees; Internal carbon tax as a motivator		The more sustainability experienced the firm gets, the more value they can derive from sustainability CDR will be important for future legislative changes, either directly on the firm or through other firms
	Ivarsson		Stricter regulation on communication of sustainability activity means that companies are more reluctant to communicate their initiatives; There is potential PR value in CDR investments but difficult to notice if the firm takes a hit if they stop			There is a stronger focus on absolute emission reductions among Telcos over purchasing carbon credits
	Classon	CDR helps show what the real cost of carbon is; CDR doesn't account for all externalities but it is the closest externality we see; The main benefit will be in the supply chain where data is hard to get and these neutralisation efforts are an easier way to verify reduction	It's more about winning projects through these solutions and credibility statements than the margin of green products; Don't want to say we will do too much if we can't claim it from a marketing perspective due to EU green claims; Crucial for employee branding and getting young talents to want to work here			Reputational, customer relationship benefits to be reaped when commonly understood that we are doing the right thing, and when we reacch momentum and mass of investment
	Kallman	Just starting to understand CDR but measuring footprint since 2019; Invested in carbon offsets to begin due to lack of access to anything else	CDR is a corporate mechanism to prove you are doing the right thing; We see reputational benefits because in order to win large-scale work we are required to declare our approach	Understanding there is a cost benefit of lower emission since it implies being more efficient with our money; Business responsibilities include effort internally, i.e. social value, skills development, work experience prorgrams; Strategize to win work that people feel has a bigger purpose	Publicly funded projects require report on carbon emissions and removals	

Regarding the distribution of value forms, the cases have similar ideas. No case completely avoided discussing any single value form, but there is a slightly different emphasis. Reputation is the primary focus in both cases, with sustainability managers expressing a greater concern for greenwashing than top management. Sustainability managers place greater emphasis on the measurability and quality of CDR investments in relation to achieving net-zero targets. Conversely, top management places more emphasis on the motivational factor from CDR and sustainability in general. The value placed on market access does not differ significantly, as neither case prioritizes it highly. Somewhat relating to the greenwashing aspect, it is important to come off as genuine, and sustainability managers reap more benefit from the sustainability experience gained by investing in CDR.

5.1.3 Stakeholder

We observed seven themes around stakeholders in Table 5.3. First, employees are mentioned by almost every decision-maker as the number one stakeholder. This pertains to the reputation that attracts talent and the motivation of current employees.

Secondly, customers are also mentioned as major stakeholders. Having a reputation for being sustainable is deemed beneficial, as sustainability is demanded by many customers. However, in only a few instances was a pricing premium attainable; generally, customers do not pay extra for green products. Most firms perceive that customers prioritize low costs, but when faced with two options at the same price, the more sustainable one will always be chosen. There is a possibility of a pricing premium when the firm works with wealthy clientele. However, in these cases, the premiums are usually offset by the increased costs of sustainability implementation. Thus, in each case, it's more about gaining market share and serving customer segments effectively.

A third theme regards governmental institutions. Regulations were mentioned as a key driver of sustainability by many individuals within each case. Notably, individuals from larger firms did not perceive any major advantage in preparing for legislation, whereas those from smaller firms did to a greater extent. Governmental organizations also value sustainability and often require firms to achieve a certain baseline level of sustainability before accepting any business with them.

Several interviewed individuals brought up broader society as a stakeholder. Many felt that their firm had a responsibility to do the right thing for all of humanity, relating back to the motivational value form. However, very few felt external pressure to conform to specific sustainability standards. The firms that did feel such pressure were usually larger firms with global operations.

Suppliers are mentioned by many of the interviewees. A few believe financial institutions matter, whereas others do not. Common to both groups is that none mentioned any tangible benefits from investing in CDR, such as upfront better credit scores or loan terms. Neither are these individuals experiencing that suppliers prioritize their firm as a customer due to their sustainability/CDR investments. However, a fairly commonly mentioned stakeholder that benefits from these investments are the CDR producers themselves. Many interviewees say they are investing in CDR to further develop the technology.

Table 5.3: Stakeholder Codes and Themes

		Stakeholder				
	Interviewee	Employees	Customers	Government/Legislation	Suppliers	Society
Top Management	Andersson	The business leader wants to be perceived as sustainable; CDR sends a message of the values of the founders that is more than just empty words.	Transition to greener options is driven by market and government regulations; Perceived high cost of environmentally friendly options	Transition to greener options is driven by market and government regulations		Perceived high cost of environmentally friendly options; Motivation for environmental responsibility driven by family future
	Danielsson	CDR investments help with attracting and retaining employees; Owner decision to push to set a certain agenda	In order to appeal to clients and improve competitiveness you need to show that you are environmentally friendly; They are not paid more due to their investments, but its the reason they get selected	Legislative pressure to increase for footprint reporting	CDR investments are not a factor in financing	CDR investments can be largely attributed to holistic stakeholder pressure; All citizens of the world will benefit the most from CDR engagement
	Gustafsson	I feel an ethical responsibility due to how much emissions we release and it makes me feel better knowing of our initiatives; These initiatives make me feel proud	I'm not convinced that our CDR investments will help us get more clients over competitors; We of course get a few more clients because of our initiatives but I think it comes down to our superior product		It absolutely doesn't matter to our partners & suppliers	I think since we are a large multinational company with operations, clients and employees in over 100 countries it makes sense for our CDR investments to be done on an international basis.
	Bengtsson	Intrinsically motivate employees via CSR; Owner is sustainably oriented; Environmental certificates means something for employees not customers.	Believes there is a sustainability customer segment; Customers don't care much about; CDR doesn't allow for premiums to be charged because people expect you to do it certificates; Customers value serving the local community		Finance industry is demanding sustainability disclosure and other key markets might do as well in the future	CDR investments are done not to save the world, but rather to improve business
	Fransson	CDR attract talented employees that impact profit; CDR creates values for employees				CDR benefits the world but its hard to gain those benefits.
Sustainability management	Hermansson	CDR investments are central to the companies goals and mission	Customers prefer CDR investing companies, but would not economically support the initiatives		CDR investments benefit CDR technology developers	CDR benefits the climate, its people, and the CDR technology developers.
	Jacobsen	A big majority of employees care about sustainability; CDR investements are primarly for internal communication to motivate employees	Downstream customers do not pay more for sustainability; Some demand from B2B customers	CDR will be important for future because other firms will demand it	CDR contributes to value primarily at the downstream, not upstream where there are more important things to focus on; The finance industry find a lot of value in sustainability	CSR creates resilliance from outside forces; No response from media; The world benefits from CDR; Envrionmental value is of high importance
	Ivarsson	Crucial for employee branding and getting young talents to want to work here	B2B customers factor sustainability into their purchasing decisions; Downstream customers do not account for sustainability or environmental impact when making purchases	Legal compliance does not provide a company with advantage value	Investors perceive CDR investments positively, but do not factor it into their decisions; There is no value in investing in the VCM from the perspective of external ratings or investor queries	Benefits from engagement in the VCM extends beyond supporting social issues to; External stakeholders did not affect the decision to invest in CDR methods supporting nature and biodiversity; Stakeholders do not give preference to companies investing in CDR methods
	Classon	Crucial for employee branding and getting young talents to want to work here	Customers are primary beneficiaries if we can get CDR to a product level that includes removals; External pressure from customers did not play a big role in investment plan; We probably could sell those products for a bit higher price; It's more about winning projects through these solutions and credibility statements than the margin of green products		Can also be positive for the investors if they know you are removing within the value chain	Due to how much greenhouse we are emitting we want to provide security for society that we are committed to do this; CDR investments will help drive action and give perspective to people of actually cost of emissions for society
	Kallman	Does sustainability to keep employees	Investing in CDR because they can't win work without it; CDR doesn't allow for premiums to be charged because people expect you to do it	Publicly funded projects require report on carbon emissions and removals		Broad ranging approach to sustainability & managing carbon emissions stems from a feeling of responsibility

There do not appear to be significant discrepancies between the two cases. Within the employee stakeholder group, top management tends to mention CDR investments as a pursuit of self-interest, whereas sustainability managers focus on all employees within a firm. Furthermore, top management places less emphasis on society as a stakeholder, often due to the difficulty in appropriating value.

5.1.4 Temporal view

In the temporal view, we have three emerging themes. First, there is an emphasis on future legislation from managers from smaller firms and a more immediate focus from larger ones. This relates to the fact that most individuals at large firms do not perceive significant benefits from preparing for legislation. They anticipate big changes that require preparation but see it as basic compliance—an impending necessity rather than a preparation that could provide an advantage. This is why they do not express the experiential benefits in value forms. Interviewees at smaller firms, on the other hand, perceive that any major legislative changes will not impact them in the near future, but rather in the medium- to long-term.

Furthermore, both cases express that their reputation is improved immediately. This concerns both internal employees and the attraction of talent and customers. Lastly, several interviewees express that, in the long term, there are financial benefits to sustainability in general. This connects a temporal perspective of motivation: being more effective in producing more with lesser emissions is strategic and will ultimately lead to financial gains.

Table 5.4: Temporal Codes and Themes

		Temporal View		
	Interviewee	Future legislation	Present image	Future financial benefits
Top Management	Andersson			
	Danielsson	CSRD & regulation coming up will make it even more important	Organizations must consistently prioritize greener solutions to garner reputational benefits that are essential for remaining competitive in the future market.	Will have to compensate for residual emissions because of targets to come and CO2 emission cost increases; Buying offsets is a necessary step, as rising costs will eventually make it too expensive not to adopt emission-free solutions, pushing towards net-zero emissions.; Not critical to business operations today but imperative for future
	Gustafsson			
	Bengtsson	Anticipates future mandatory environment disclosure	Benefits today and increasing over time from sustainability	Do not observe financial benefits from CDR investments at the moment, but believe so long-term
	Fransson	CDR will allow to prepare for future legislative change and mitigate later costs	Attraction and retention of talent is short-term gainable	
Sustainability management	Hermansson	CDR might give less of a competitive advantage in the long-term as it becomes mandatory	There is short-term value from engaging in networks of like minded companies	CDR investments are fundamental in the long-term for being a profitable company, but will not matter to customers; CDR investments today could lead to a competitive advantage in the long-term since their won't be sufficient volumes for everyone to purchase
	Jacobsen	CDR will be important for future because other firms will demand it; They perceive legislative change as very slow seg process.	Instantaneous value through communication	
	Ivarsson	Stricter sustainability reporting requirements are coming into force		Short-term gains are scaling the CDR market; needed
	Classon	Seeing future standardisation played a small role in investment plan; Lower short term gains because its hard to foresee the policy landscape	Current reputational risk is not that high but will be in few years	Need to take the cost today due to how much we have polluted today but also in order to help business scale to what we need for 2030 and beyond; Long term gain is reducing the risk of not winning contracts; Customers are pushing the agenda so not investing or having a strategy for CDR will be seen as not good in 2 to 7 years
	Kallman		Short term gains of CDR investments is more credible reputation	

The only significant difference between the two cases lies in the emphasis placed by sustainability managers on the importance of investing in CDR technologies today to facilitate its scalability for future needs - a point not raised by top management. Both expect some regulatory changes in the future and are equally aware of the reputational benefits in the present. Finally, they agree on the long-term financial benefits of sustainability practices implemented today.

5.1.5 Spatial View

Regarding the spatial view, there are three findings that stretch beyond value within the company. First, part of a firm's sustainability actions are attributed to participation and commitments via certain collaborative networks. Within these networks, there is an expressed benefit of having a reputational guarantee; as more people join the network, CDR will gain more traction among the general public. Some also mentioned a knowledge exchange within the network, where members help each other with sustainability practices. It is worth noting that few firms have experienced significant benefits yet, but many remain optimistic about the network's future development. The final finding is the theme of firms investing in CDR to develop the technologies both in terms of innovation and scale.

Table 5.5: Spatial Codes and Themes

		Spatial View	
	Interviewee	Proximity environment	Networks
Top Management	Andersson	There is increased awareness of sustainability in the industry	
	Danielsson	Industry trend is increasing towards offering clients offsets with product	
	Gustafsson		We do not engage in climate groups, we do all our investments alone and partner directly with players in the sector of interest
	Bengtsson	CDR investments are done to affect the near environment and to gain competitive advantage; Invests into the local community by filling social needs	Formed a sustainability group with similar hotels
	Fransson		Might gain acess to like-minded clients but it is hard to measure; Sustainability network values has not been as great as anticipated, more soft
Sustainability management	Hermansson		There is short-term value from engaging in networks of like minded companies
	Jacobsen	CSR creates a better business environment	Network values is that it proves that the firm is sustainable; Ntework values is that it assist with operational aspects of sustainability; Greater value from CDR as more people use it and it gets more traction
	Ivarsson		
	Classon		
	Kallman		Engaged in climate groups lead to more tangible benefits than CDR investments on their own

Top management appears to care more about the immediate environment than sustainability management, which finds it important to improve their industry as a whole. Additionally, top management is more skeptical towards networks, whereas sustainability managers are optimistic about the potential benefits of being a member or party to them.

5.1.6 Conflicts and Tensions

In our analysis, three themes emerged, highlighting tensions between the cost implications of CDR investments and the economic well-being of the firm, the reliability of CDR as a technology, and the dynamics of the decision-making process.

The tension between CDR investments and economic growth is particularly pronounced in small, resource-limited companies, which often perceive such investments as more relevant for larger, financially stable companies. There was also a consensus among interviewees that high quality CDR technologies, such as direct air capture, are too costly. Some firms adopted unique strategies to address this conflict; for example, offering customers the option to offset their own purchases to avoid utilizing the firm's capital while still benefiting from the associated reputational gains. Others opted for investment strategies based on a percentage of their monthly or yearly profits.

The reliability of CDR technology is the main tension, primarily attributed to CDR technology not being fully developed yet. Some displayed doubts about whether the amount paid for CDR services translates into actual carbon capture. Additionally, the time required to capture significant volumes of CO_2 is a point of contention, with some fearing potential first-mover disadvantages or the emergence of a free-rider problem due to inaccurate disclosure of CDR activity by firms. Proposed solutions often revolve around joining or establishing trustworthy networks to ensure the integrity of CDR transactions. Sustainability managers emphasize the importance of investing in CDR technologies now to help scale the CDR market for a sustainable future. Despite the associated costs, early investments can drive innovation and create conditions conducive to widespread adoption, thus facilitating long-term environmental impact and long-term firm prosperity.

In firms engaged in or considering investment in CDR technologies, the decision-making process is typically collaborative, involving top management and the head of the sustainability team or the team in its eternity. For example, Hermansson noted the involvement from the CSMO, CEO and CFO to some extent; Classon stated that the decision to invest was collective; Fransson highlighted the participation of top management and other internal stakeholders. Although most firms involve multiple internal stakeholders in decision-making, Kallman indicated a more centralized approach, with the sustainability team leading the planning process and seeking approval from top management and the board for CDR purchases. Furthermore, as noted in the stakeholder section, both top and sustainability management tend to perceive upcoming sustainability law and regulations as an important factor in aligning their sustainability work with perceived changes in the legal environment. They do not view these impending regulatory requirements as an external pressure driving decision making, but rather as significant factors considered during discussions on CDR investments.

Table 5.6: Tension Codes and Themes

		Tensions & Conflicts		
	Interviewee	Costs	Inclusion of decision making	Critique of effectiveness
Top Management	Andersson	Challenges of implementing CSR in a small, resource-limited company; CSR is for richer companies	Lack of employee education on CSR	Challenges of conservative construction industry
	Danielsson	Risk for backlash in economic environment if europeans perceive emission demands & costs to be higher than for Chinese and indian exporters.; We want to shape a sustainable tomorrow but you have to generate business	Owner decision to push to set a certain agenda	CDR investments are built and integrity and trust which is getting destroyed by some organisations fake reporting; If everybody does it, its not really a strong competitive advantage
	Gustafsson	CDR investments obviously have to do with profitability and margins, given our profitability its a no brainer	In 2021 the owners and board decided that we are aiming to be carbon neutral from our inception; Immediate leadership advocated for CDR investments to the owners and board	
	Bengtsson	Sustainability costs money and therefore increases prices; You cannot focus blindly on sustainability, you need to earn money too		
	Fransson			
Sustainability management	Hermansson		The plans to invest in CDR involves the CSMO, CEO and CFO.	Completely reducing embodied CO2 emissions from energy suppliers value chain are difficult; • Risk from CDR investments are contingent on selection of CDR partners and legal regulations, but are minor
	Jacobsen	Too much CSR would damage firm survival	CDR-investment is collectively decided in the organization	It is difficult to know if sustainability is the differentiating factor in the brand.
	Ivarsson		Relying on external CDR expertise is preferable; The corporate group sustainability team have control over the budget disbursement; The decision to invest in CDR was approved by top management and the board.	The CDR tech is not fully developed and costly; There is potential PR value in CDR investments but difficult to notice if the firm takes a hit if they stop
	Classon			
	Kallman	Would invest more if they were convinced what's on offer is appropriate for their business; Low budget for CDR investments because market is very immature	Financial decisions regarding reducing carbon emissions are made at a board level; Sustainability team communicates with board about impact of carbon emissions and how to reduce them	Emissions are not removed instantly therefore need to be tied into a removal portfolio; Carbon removals will mature in approximately 20 years; Struggled to engage office in any of this topic; The wider CSR strategy brings internal value, CDR does not; since it's not sufficiently understood

Top management typically expresses strong concerns regarding the costs associated with CDR investments. In contrast, sustainability management is primarily concerned about the lack of maturity in CDR technology. They perceive CDR as not yet fully developed in terms of effectiveness. Additionally, while top management often view investment decisions as driven by their own interests and ambitions, sustainability leadership tends to adopt a more inclusive approach.

5.2 Pattern Matching

In this section, we analyze the findings from our interviews and the themes that were identified, comparing them with the theoretical patterns and empirical evidence discussed in the literature review. Furthermore, we discuss the alignment of our findings within the context of our tentative framework to validate or challenge the preliminary theoretical model.

5.2.1 Value forms

We had anticipated two overarching value forms in our tentative model: reputational benefits and risk benefits. The reputational benefits were predicted to generate favorable attraction of customers and suppliers of funding, resources, and competency (employees) if CDR was implemented in a genuine, innovative way. The risk benefits were based on both passive and active components. The passive component suggested that firms are passively awaiting regulatory changes and that by having a proactive compliance strategy, they can better anticipate and handle legislative disruptions. The active component proposed that through proactive engagement, firms may also influence legislative change if their efforts are impactful enough.

In line with our initial prediction, reputation emerged as a major value form from the themes. However, its impact on attraction was slightly different than anticipated. First, the findings showed that CDR investments helped attract customers. These customers, however, were generally not willing to pay a premium. Bengtsson was one of the few who had a truly innovative implementation of CDR investments and had found a customer segment willing to pay extra for green products. Thus, while there was some indication that innovative implementation can generate pricing premiums, the general observation was that it primarily helped in capturing market share. It is also worth mentioning that customers often prioritize costs over sustainability.

Furthermore, we observed no explicit experiences of attracting funding due to CDR investments or other sustainability actions. Lastly, the attraction of competency, as mentioned in the tentative framework, was a major value emerging from reputation. However, there might have been an underestimation of the importance of competency within the tentative framework, as will be further discussed in the next emerging value form.

Motivation was a fundamental value form for many firms. By solely focusing on the attraction of competency, our tentative framework missed the aspect of curating such talent. Curation occurred in two ways: by giving a sense of purpose or by inducing innovative thinking. The sense of purpose relates to employees feeling that they are doing something meaningful, which could contribute to lower employee churn. The other aspect is that CDR investments foster innovation by, for instance, implementing an internal carbon tax, which forces departments to be more effective with their emissions if they want to achieve good performance.

Another emerging value form that our tentative framework missed was the ‘ease of use’ stemming from the measurability and quality of CDR. The RBV basis in our tentative framework did not anticipate this as a source of competitive advantage, deeming it imitable. However, the interviewees who highlighted this value generally had ambitious net-zero goals, both in terms of time horizon and current stage. For them, CDR investments were crucial to maintaining these goals, and simply imitating that part would likely not generate the same traction for competitors with external or internal stakeholders. Essentially, it would not be perceived as genuine. The value of CDR investments, in this regard, is that they are described as more trustworthy and effective compared to other carbon offsetting methods. Hence, CDR investments enhance the reputational and motivational effects more than other means of CO_2 sustainability.

The last theme that emerged was experiential value forms. Interviewees, to varying extents, viewed CDR investments as part of a broader sustainability experience. The experiences gained helped firms improve how they work with sustainability and incorporate it into the business both strategically and compliance-wise. Thus, although our tentative framework anticipated risk benefits from CDR investments, few firms placed significant focus on that aspect. It is more seen as a necessity than a strategic endeavor.

Smaller firms were expecting that they could avoid regulatory issues in the future by investing today, whereas larger ones felt that they already had strong sustainability regulation practices in place. Thus, we could infer that an active effect may not exist, and perhaps a passive effect is dependent on firm size.

5.2.2 Stakeholders

In our tentative model, we had outlined three main stakeholder groups: organizational, economic, and societal. We had identified that CDR investments would help intrinsically motivate employees and attract employees who value sustainability, which in turn would result in greater innovativeness for the firm. In line with this initial assumption, our findings indicated that the reputational benefits of CDR investments attract employees and motivate existing ones. However, we did not anticipate that employees would be emphasized as the most important stakeholder to the extent it was by both cases. Additionally, the value appropriated by the firm in the form of greater innovativeness from such employees was not mentioned.

When it comes to economic stakeholders, we identified three groups: consumers, shareholders, and creditors. Our initial predictions regarding consumers were that they would be willing to pay a premium for green products and that they would demand ESG reporting. The themes that emerged from our findings largely aligned with these predictions. Consumers were identified as major stakeholders who demanded a reputation for sustainability. However, very few cases saw pricing premiums as attainable. Most interviewees perceived CDR investments as a way to acquire market share when consumers are faced with a decision between products of similar cost. The exception to this theme was wealthy customers, for whom low cost is not prioritized.

Our initial predictions suggested that shareholders would appreciate the added value from CDR investments due to higher ESG standards, and that creditors would attribute increased value to firms with CDR investments. These stakeholders were widely mentioned and materialized in the inductive sub-theme of financial institutions and investors. However, some interviewees mentioned that financial institutions matter, whereas others indicated they do not.

Finally, we predicted that the most obvious stakeholder would be society as a whole but that it would be unstrategic to have that as a focus. Our findings aligned with this prediction; a theme emerged where firms claimed they felt they had to do what was best for humanity, but also felt no external pressure to conform to sustainability standards. This contradicts our second prediction, which proposed a proactive approach to activist groups to mitigate reputational and legal risks associated with societal stakeholders.

However, we suggest a strategy focusing on governmental agencies, where firms could create enough value for governments to change legislation. This strategy partially manifested in our findings, where regulations and future legislation were mentioned as a driving force for sustainability by many interviewees. Larger firms did not perceive the same advantage in preparing for legislation, partly due to their proactive engagements. Additionally, we found that governmental organizations valued sustainability and could require firms to meet certain sustainability thresholds.

Additionally, suppliers were a theme that was brought up by the firms, but larger firms did not experience that their CDR investments were a factor for the suppliers. However, the CDR suppliers were often mentioned, and it was noted that they invest in CDR today to further the technology and help it reach the scale it needs for the future.

5.2.3 Temporal View

In the temporal view, the level of disclosure would correlate with the size of reputational benefits—a premise suggesting that increased visibility of actions would lead to greater attraction. However, none of the interviewees indicated a direct relationship between the magnitude of reputational gains and the extent of disclosure. Instead, the prevailing sentiment was that engaging in sustainability initiatives yields immediate improvements in reputation.

We also anticipated that proactively planning sustainability efforts in anticipation of future markets and legislation would result in superior risk mitigation. However, our findings yielded mixed results. Individuals at large firms did not perceive significant benefits from preparatory measures for legislation, viewing it as a basic compliance requirement in the face of anticipated substantial changes. Conversely, interviewees at smaller firms believed that major legislative changes would have a delayed impact, necessitating some preparation. Regarding CDR markets, as mentioned in the stakeholder section, sustainability managers emphasized the urgency of investing in CDR technologies to scale them to meet future demands, both for emission offsetting and environmental reasons. This was congruent with our prediction.

Furthermore, our tentative framework assumed that the enactment of legislation would be contingent upon a firm's level of sustainability proactivity and the firm's anticipation of regulatory changes. However, as discussed in the section on value forms, the degree of proactivity did not have a discernible effect on policymakers. Overall, smaller firms faced the dilemma of timing their investments to avoid first-mover disadvantages while accruing sufficient experience.

5.2.4 Spatial View

Our initial expectations of the spatial view were that due to the insufficient amount of high-quality and reliable carbon credits, it is essential that companies invest today in CDR companies to grow the market. Additionally, we predicted managers to state that they can reap reputational benefits from being involved in sustainability networks, and that collaboration across organizational borders can lead to synergistic benefits between firms. Our findings produced three main themes.

Firstly, aligning with our prediction, participation in collaborative networks leads to reputational guarantee. It was also mentioned by managers that these networks are a factor in firms' sustainability actions. Secondly, some managers, especially sustainability managers, expressed benefits of knowledge exchange from being involved in these networks. This somewhat aligns with our prediction of synergistic benefits, but we expected more tangible synergistic benefits as opposed to knowledge transfer. The final finding, congruent with our prediction, is that sustainability managers almost universally mentioned investing in CDR today to help develop the technology in terms of innovation but also scale.

5.2.5 Tensions and Conflicts

In our tentative framework, we identified two strategies for handling tensions: the instrumental approach and the trade-off strategy. We hypothesized that sustainability actions, such as investments in CDR implemented with a focus on risk and reputation benefits in alignment with the SVC framework, would result in minimal conflicts. However, the findings suggest ongoing conflicts, particularly concerning cost implications and the economic sustainability of these investments, particularly evident in smaller, resource-limited companies. Some firms perceive the high costs associated with advanced CDR technologies like direct air capture as prohibitive, contradicting our prediction of minimal conflicts. While some companies have devised creative solutions to mitigate these costs, such as allowing customers to offset purchases, this does not eliminate the underlying tension but merely shifts the financial burden. This adaptation shows an attempt to reconcile financial viability with sustainability commitments, but it falls short of fully aligning with our prediction of conflict-free implementation.

We also anticipated that a collaborative decision-making environment involving multiple stakeholders would facilitate sustained competitive advantage. While this was observed in some larger firms, where decision processes included diverse internal stakeholders, it was not universally applicable. In smaller firms, decision-making tended to be more centralized within sustainability teams, suggesting that the collaborative decision-making process is not as widespread as predicted, particularly in smaller or resource-constrained firms. However, all firms tend to involve societal stakeholder, government, in decision-making, viewing impending regulatory requirements as a significant factor to consider during discussions on CDR investments.

In the trade-off strategy, we anticipated that decisions prioritizing environmental benefits, even at potentially high short-term financial costs, would be crucial for achieving long-term sustainability goals. The findings validate the acknowledgment of these challenges, as many firms emphasize the significant barriers posed by the cost, unreliability, and developmental immaturity of CDR technologies. Concerns are raised regarding the efficacy of these technologies, the time required for significant CO2 capture, and the risks of being early movers in a market where the technology's long-term value remains uncertain. While some firms stress the importance of early CDR investments to scale the market, actual practice reveals hesitancy due to these unresolved issues, indicating a more complex reality than initially predicted.

These findings suggest that while the tentative framework's predictions could offer guidance to firms, the actual implementation and resulting benefits are not as straightforward or conflict-free as anticipated. This discrepancy calls for a reassessment of the realism of our predictions, considering the economic diversity of firms and the developmental stages of CDR technologies.

6 Discussion and Conclusion

This final chapter will first remind the reader of the aims and objectives of the paper. Then, we will present the key findings of the cross-case analysis. Further, we will conclude how pattern matching resulted and present a reviewed framework. Finally, there will be a discussion of limitations and future research areas.

6.1 Research Aims and Objectives

The aim of this study was to enhance our understanding of how decision-makers perceive external Carbon Dioxide Removal (CDR) investment concerning competitive advantage and sustainable value creation. This was approached by first formulating the basis of competitive advantage through the Resource-Based View (RBV), where an argument was presented that defined competitive advantage through relatively greater value creation. To address the issue of appropriating such value, it was examined from the perspective of Sustainable Value Creation (SVC). Although SVC theoretically provided a plausible solution, a poor understanding of its practical implementation was discovered. Consequently, a synthesized framework of SVC, based on Maninnen et al. (2024), was developed as a tool for decision-makers for assessing CDR investments' contribution to competitive advantage. The literature review also explored the role of decision-makers in strategy and sustainability. To gather empirical data, ten interviews forming two cases were conducted, involving top management and sustainability management. The analysis involved cross-case analysis and pattern matching against the tentative framework.

6.2 Key Findings

In general, there are two overarching findings regarding how CDR could contribute to competitive advantage: employees and customers. Firstly, both top management and sustainability managers emphasize employee attraction, retention, and motivation. There is a growing awareness of corporate sustainability among talented workers and human capital who prioritize companies with mature sustainability practices. Employees are observed to prioritize an organization with sound sustainability practices over those with weaker commitments, potentially allowing the sustainable firm to access superior expertise at the same cost. This effect also extends to retaining professionals, as they can "feel proud" going to work for such an organization. The motivational aspect lies in the firm's pursuit of sustainability targets. To achieve these goals, the company must excel to procure sufficient capital for CDR investments. This dynamic suggests that certain employees are motivated to excel, recognizing their company's significance in environmental preservation. Finally, integrating CDR measures can function as an internal tax, encouraging the firm to enhance its emission efficiency. This prompts departments and teams to strive for effectiveness in emission reduction to mitigate the impact of internal levies, ultimately fostering innovation.

The second key finding is that CDR investments are strategic from the perspective of customers. Both top management and sustainability managers recognize the importance of presenting themselves as sustainable to customers. There is, however, a general consensus that sustainability reputation is not a source of pricing premiums, but rather a source of gaining market share. That is, customers are generally unwilling to pay extra for sustainability, but when products are priced equally, sustainability often becomes the deciding factor in their purchasing decisions. However, it is important to note that there is variability in this observation. One manager was confident that he could receive a premium, while the others did not feel confident that sustainability was a stronger determining factor than product quality.

There is a noticeable difference in the perception of CSR between the two cases. Top management often views CSR as a strategic tool with some inherent requirements, while sustainability managers tend to see it slightly more as philanthropic or ethical and required. Despite this, both perspectives incorporate elements of strategic, requirement, and philanthropic CSR. Two distinct broader goals appear to emerge with CDR. Top management often emphasizes its impact on the organization's reputation with employees and customers, while sustainability managers focus more on how CDR can effectively achieve net-zero emissions. Since top management generally concentrates on the overall organizational strategy, it is possible they tend to delegate the responsibilities of required and philanthropic CSR to the sustainability managers.

Such a division could influence different time perspectives. Both top management and sustainability management raise concerns about the immaturity of the CDR market. Top management tends to view CDR as a beacon signaling that the firm is at the forefront of sustainability—that they truly care. Sustainability management, however, regarding the potential of CDR investment, considers the long-term development of the market. They often discuss the possibilities of advancing the technology enough to better achieve their sustainability targets. Sustainability managers are also more optimistic towards the possibilities of networks. They anticipate that once they have a well-established CDR strategy, they can collaborate with similar organizations to drive knowledge exchange and enhance reputation.

6.3 Re-Equipped Framework

Drawing from the key findings, a more refined theoretical framework has been developed. The results validate several constructs of the initial tentative framework, though some modifications are necessary. Firstly, the findings affirm the benefits of reputation, although with a greater emphasis on employee attraction and customer preferences, less so on pricing premiums. Secondly, the data supports that CDR contributes to improving motivation for employees both improving retention and their innovativeness. Thirdly, the market access, albeit less emphasized, emerges from CDR investments too. Lastly, the research indicates that the experience is an important value derived from the investments, as managers can better learn to adapt to future compliance and their overall sustainability effort.

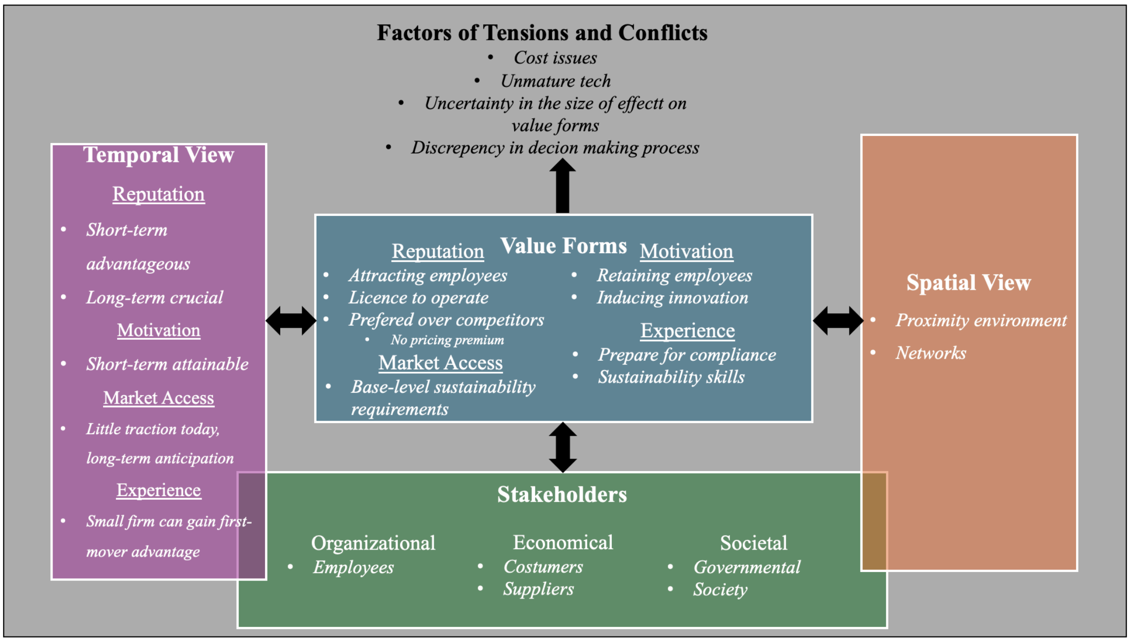

Figure 6.4: Updated CDR in the SVC framework

6.4 Limitations and Future Research

During the research process, a notable limitation emerged: the frequent interchange between overall CSR and CDR investments during the interviews. It became apparent from the data collection that managers often discussed CDR within the broader context of CSR. They generally referred to CDR as a means to enhance CSR and then described the impacts and motivations behind their CSR initiatives. This limitation could reduce the validity of the study, as we did not compare other sustainability methods, making it difficult to accurately attribute the specific impact of CDR on overall CSR performance. Future research should further determine the impact CDR investments have on the total CSR performance to ascertain its relative value.

Another limitation relates to the scope of the interviews. Although we aimed to cover a broad range of topics to discover as much as possible, this resulted in superficial discussions about the mechanisms of competitive advantage. Additionally, the interrelations between the areas in the SVC framework by Manninen et al. (2024) were very high. Consequently, it was difficult to allocate codes to just one domain, leading to a less clear picture of the value-creating perspectives of CDR. This suggests that future research should focus on one value form and explore that aspect in greater depth. Based on our findings, we propose further investigation into the attraction, retention, and motivational force from sustainability, as these appear to be the greatest value-creating processes resulting from CDR investments.

Furthermore, we suggest that future research focuses on CDR-investing firms as cases and interviews three or more individuals within each to deduce a representative firm-level perspective. By triangulating answers from management positions that are directly involved in the sustainability decision-making process and inherently part of the value-creation process from sustainability initiatives, a more holistic understanding of firm-level decisions on sustainability-related endeavors could be formulated.

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Appendix A

Interview Guide

Question category	Question	Source
General Questions		
Information about interviewee	**Q1**: Name **Q2**: Job title **Q3**: Responsibilities at company **Q4**: Total employment duration	
Information about company	**Q1**: Company name **Q2**: Company description **Q2a**: What does your company do in a sentence or two? **Q3**: Industry **Q4**: Number of employees	
SVC Maturity	**Q1**: Do you believe that focusing on CSR makes a business better? (Adapted from KPMG, 2022) **Q1a**: If so… how? In what ways do you believe that CSR makes business better? **Q2**: How embedded is CSR in your core business strategy? (Adapted from KPMG, 2022) **Q2a**: Does your team actively participate in CSR strategy?	KPMG (2022)
CDR General	**Q1**: Has your company invested in CDR methods or made plans to do so in the future.	
Specific Questions		
Value Sources	**Q1**: Why do you invest or plan to invest in CDR methods? **Q2**: Do you believe that investing in CDR provides your company with value? If so.. **Q3**: What types of value do you believe or witness are created at your company by investing in CDR methods?	Manninen et al. (2024)

	Q3a: To the best of your knowledge, do investments in CDR methods produce more than one type of value? **Q3b**: Do you think that your reputation has improved or has the potential to improve from CDR investments? If so, why? **Q3c**: Do you think that there are potential risk reduction benefits from investing in CDR? If so, why?	
Stakeholder	**Q1**: To what extent was the decision to invest in CDR an outcome of stakeholder pressures? **Q2:** What stakeholders were involved in the decision to invest in or plan for investments in CDR methods? (multiplicity of stakeholders) **Q2a:** Please indicate to what extent your organization has been exposed to individual stakeholder pressures from different stakeholder groups such as "organizational, economic, and societal" with regards to CDR methods directly or indirectly (Adapted from Cadez, Czerny & Letmathe, 2018; Chandler, 2021) **Q2b**: What internal stakeholders were most involved in the decision? **Q3**: What stakeholders benefit the most from your CDR engagement? **Q3a**:What type of benefit, or value, do these stakeholders areceive? **Q4**:To what extent are your CDR investments rationale aligned with your identified stakeholder wants and needs?	Cadez, Czerny & Letmathe (2018) Chandler (2021) Manninen et al. (2024)
Temporal View	**Q1**: Do you see any short-term gains from CDR? **Q2**: Do you see any long-term gains from CDR? **Q3**: Are CDR investments part of your long-term strategy? **Q3a**: If so, please describe in what ways your CDR investments are part of your long-term strategy.	Manninen et al. (2024)
Spatial View	**Q1**: To what extent are investments in CDR methods related to the mission and goals of your company?	Manninen et al. (2024)

	(adapted from Camarena-Martínez & Wendlandt-Amézaga, 2017) **Q2**: Where within our value-chain do you believe that value from CDR investments is created? **Q3**: What is the value in investing in an externally developed CDR project, in an external market, rather than developing your own? **Q4**: Is your company a signatory, committed to or in any other way a part of any collective climate initiative or group? **Q4a**: Have you experienced any value from these networks? **Q5**: Considering the stakeholders previously discussed, where within your organization's boundaries is value created?	Camarena-Martínez & Wendlandt-Amézaga (2017)
Tensions and Conflicts	**Q1**: How is the budget for the CDR investment decided? **Follow-up prompts**: sustainability, marketing, philanthropy etc.; where is the budget? **Q2**: Do you think investments in CDR methods can boost financial performance?	Manninen et al. (2024)

AI statement

Since AI is used as frequently as googling, it is difficult to provide every single prompt used. We have instead described the general process, given some general prompts and some actual prompts used to give nuance. When it comes to generating text, we have solely used it for grammar, structure and clarity. The following prompts have been given when we feed it a paragraph to improve its style:

With minimal alteration to the content of the paragraph, check for grammar and clarity. Make sure it fits an academic setting, but do not change the style of language/words chosen unless deemed necessary. If you see too much repetition of words in this paragraph (or with previously fed paragraphs in this conversation), please find suitable synonyms for those words as well. Below is a list of phrases that are suitable to use for a [specific thesis section] *[Attached are the Instructions and phrases provided from ASKS canvas]*

AI has also been used in literature research for two main purposes. First of all, it has been used to find relevant articles. It is worth mentioning that it has not been trusted in its response. If an article was provided, we read it ourselves before deciding to use it in any way or shape. We have utilized SciSpace in this process. SciSpace gives insights on the number of citations, if the article is peer reviewed and if the publishing journal is generally of high quality. Thus providing a nuanced picture with some parameters to consider.

The other purpose has been as a tutor. When passing difficult sections or unknown domains, it has been used to either test our interpretation or to summarize theories. For instance:

What does Peteraf, M. A. & Barney, J. B. (2003) mean in Unraveling the Resource-Based Tangle, Managerial and Decision Economics, [e-journal] vol. 24, no. 4, pp.309–323 when they say that [part of paper]
What do they mean in their article when they say the following below? How is it possible that creating value is sufficient over the appropriability regime of that value?

— *[part of paper]*
Please help me explain why alignment of business and society interest are important from the text below *—* *[part of text]*
In Hart's article he argues that biophysical resources have innate constraints which makes the traditional RBV model inadequate. What does he mean with that? My interpretation of Hart's articel is that he simply shows that "look, sustainable behavior fits within RBV". Hence, he is by himself showing that there is no need for an NRBV since the N perfectly fits within the existing RBV *So what, concretely, is Hart's contribution? From the traditional RBV perspective, competitive advantage is simply the relative ability to create more economic value. Said economic value consider all stakeholders and is separated from the appropriation of the value. Hence, the traditional RBV would for instance suggest Pollution Prevention. Thus i am uncertain Hart is contributing with anything.*
Is it true that Dyllick and Hockerts (2002) suggest that by identifying actions that simultaneously fulfill each dimension, sustainability is not at the cost of profit.
[commenting something the GPT said] Please elaborate on this
Do you agree that reducing causal ambiguity (in a RBV perspective) of how a certain resource creates value in a business model would contribute to understanding how it can give competitive advantage?
Using the information below, could you help me explain the concept of "multiplicity of value creation sources", "multiplicity of perceived values", "nature of value"

Below are two of the sections suggested for my introduction to my thesis project and some explanation to what they should contain. Could you help me explain what the difference is between the two.

Aim and Objectives:

The aim is about what your overall intention is in the project. It signals where you aspire to be by the end. The objectives are the specific steps you will take to achieve your aim. This is where you make the project tangible by saying how you are going to go about it.

Purpose of the study:

This element outlines the relevance of the study. How will this study further the field of research in your area? Research question/s or hypotheses may follow.