



UNIVERSITY OF GOTHENBURG
SCHOOL OF BUSINESS, ECONOMICS AND LAW

Climate-Related Disclosures in Financial Statements

*A Study on the Connection with Front-End Disclosures and
the Role of Institutional Investors*

By
Malin Adolfsson & Sanna Andersson

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Supervisor: Niuosha Samani

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Graduate School, School of Business, Economics and Law, University of Gothenburg, Sweden

Abstract

This study examines the impact of climate-related disclosures in the front-end of the annual report and institutional ownership on climate disclosures in the financial statements. Using a sample of Swedish companies listed on Nasdaq Stockholm across the large-, mid- and small-cap segments for the years 2023 and 2024, we find that climate-related disclosures in the front-end have a positive association with the probability of providing climate information in the financial statements. Specifically, firms that have a larger degree of climate-related disclosures in the front-end of their annual reports are more likely to integrate this information into their financial statements. We also find partial evidence that institutional ownership is negatively associated with climate disclosures in the financial statements. While prior research often positions institutional investors as drivers of improved climate disclosures, our findings provide some evidence that firms with a higher proportion of institutional ownership may exhibit lower levels of climate disclosure and transparency. The findings of this study contribute to the limited academic literature on the connection between climate disclosures in the front- and back-end of annual reports, as well as the role of institutional owners in influencing climate-related disclosures in the financial statements. This study also provides practical implications for regulators and policymakers by offering timely insights into the integration of climate disclosures during a period of significant and ongoing regulatory change.

Keywords: Climate disclosures; Financial statement; Institutional investors; CSRD.

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Malin Adolfsson

Malin Adolfsson

Sanna Andersson

Sanna Andersson

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1. Introduction

1.1 Background

There is a growing focus and ongoing debate within the accounting domain concerning the disclosure of climate-related matters in financial statements. The world is facing an intensifying climate crisis, which is not only considered dangerous for the planet but also poses a threat to the financial system and overall economic stability (Lundqvist et al., 2024; Ilhan et al., 2023). Consequently, various stakeholders increasingly demand transparent, reliable, and comparable sustainability reporting. One aspect of sustainability that has received significant attention is climate change and the actions taken to mitigate its effects (Arnell et al., 2023). While climate-related disclosures have significantly increased in standalone sustainability reports and non-financial sections of annual reports, they remain absent where it potentially matters most: in the financial statements, the main regulated document in accounting (Müller et al., 2024). As a consequence, the concept of connectivity has emerged as a key focus within the accounting profession, where attention is increasingly directed toward bridging this informational gap to enhance the consistency and decision-usefulness of corporate reporting (EFRAG, 2024).

Connectivity refers to the alignment between sustainability-related information presented in the front-end¹ of annual reports, or separate sustainability reports, and its consistent reflection in financial statements (Lundqvist et al., 2024). This concept covers various aspects, including how climate-related factors affect the valuation of different items in the balance sheet and related notes. It also involves ensuring that internal controls, processes and data quality related to sustainability reporting must meet the same standard as financial reporting (Karlsson & Samevik, 2024). Strengthening connectivity between the front- and back-end² of annual reports can yield several benefits, including enhancing the qualitative characteristics³ of the information in annual reports, thereby improving its decision-usefulness (EFRAG, 2024). For example, connectivity increases faithful representation⁴ by fostering collaboration between financial and sustainability reporting teams, leading to more consistent assumptions

¹ The front-end refers to all sections of the annual reports, except for the financial statements.

² The back-end refers to the financial statements in the annual report. See more detailed description in section 4.2.

³ IASB's conceptual framework identifies qualitative characteristics that make financial information useful. These characteristics are divided among fundamental and enhancing qualitative characteristics. For the information to be useful, it must meet the fundamental qualitative characteristics of *relevance* and *faithful representation*. The usefulness of the information is further enhanced by the enhancing qualitative characteristics of *comparability*, *timeliness*, *verifiability* and *understandability* (IFRS Foundation, 2018).

⁴ The conceptual framework defines *faithful representation* as "complete, neutral and free from error" (IFRS Foundation, 2018, p. A26).

across the different parts of the annual report and clearer links between front-end disclosures and their financial effects. This alignment improves the consistency of information and mitigates the risk of greenwashing, which occurs when firms either intentionally or unintentionally exaggerate their sustainability performance (ESMA, 2023; EFRAG, 2024). Additionally, by linking sustainability efforts to their financial effects, connectivity strengthens the relevance⁵ of information by providing a more complete story of the company's strategy, overall business aim and value creation. More specifically, one technique to improve the connections within annual reports is to use cross-referencing, where sustainability information is linked to, rather than duplicated in, financial statements by referencing back to a specific page or section. In this way, connectivity helps to avoid duplication and mitigates the risk of information overload (EFRAG, 2024), which has been highlighted as a concern in discussions on both connectivity and broader accounting literature (e.g., Stocks & Harrell, 1995; Hartmann & Weißenberger, 2024).

Within the concept of connectivity, one area that has received particular attention is the reporting of climate-related information in financial reports (Lundqvist et al., 2024). This area is considered critical in improving the reporting system and is currently on the agendas of various policymakers (Müller et al., 2024). Globally, but primarily in Europe, standard setters and enforcement authorities have called for improvement and launched several projects to enhance the integration of climate-related matters into financial statements. For example, the European Securities and Markets Authority (ESMA) has included climate-related risk in financial statements as an enforcement priority from 2021 to 2023 (ESMA, 2021; 2022; 2023). Projects have also been initiated by both the International Accounting Standards Board (IASB) and the European Financial Reporting Advisory Group (EFRAG) with the aim of strengthening the connectivity of climate-related disclosures in financial reports, with EFRAG also incorporating it into its future research agenda (IFRS Foundation, 2024a; EFRAG, 2024). In parallel with these initiatives, significant regulatory developments have occurred through the introduction of new mandatory sustainability frameworks, such as the Corporate Sustainability Reporting Directive (CSRD), adopted in 2022, and the International Sustainability Standards Board (ISSB) standards, released in 2023. These frameworks aim to improve sustainability disclosures, including climate-related matters in financial statements, and are also expected to reduce the connectivity gap across different sections of annual reports (Chartrand & Lord, 2025).

⁵ The conceptual framework defines financial information as *relevant* if it can make a difference in decisions taken by users. The information can make a difference if it has a confirmatory value, predictive value or both (IFRS Foundation, 2018).

The importance of improving climate disclosures in financial statements is emphasized not only by regulatory bodies but also by investors. As primary users of financial reporting (IFRS Foundation, 2018), investors are showing growing interest in climate-related information for their decision-making, with particular attention to how such information is reflected within the financial context (Garg et al., 2019; IFRS Foundation, 2023a). According to the current IFRS Accounting Standards, companies are required to include climate-related matters in their financial statements if these are expected to have a material⁶ impact on investors. However, current disclosures fail to meet expectations, leading investors to increasingly demand enhanced quantitative and qualitative information on climate-related risks and their impact on the valuation of assets and liabilities disclosures in the financial statements (IFRS Foundation, 2023a). A deeper understanding of these risks is considered crucial for investors to make informed decisions and develop effective investment strategies (Garg et al., 2019). One type of investor that has been reported to play a crucial role in driving and demanding improved climate disclosures is institutional owners (Cohen et al., 2023; Ilhan et al., 2023; Song & Xian, 2024). Institutional owners view climate-related risk as a significant portfolio risk and use their governance power to actively engage with companies and push them to prioritize improved climate disclosures (Garg et al., 2019; Ilhan et al., 2023).

1.2 Problem Discussion and Purpose

Despite growing pressure from regulators and investors for enhanced climate disclosures in financial statements, a persistent disconnect exists between climate-related information presented in the front- and back-end of annual reports (EFRAG, 2024; IFRS Foundation, 2024a). Although many firms discuss climate-related targets, risks and strategies in the front-end, their financial implications largely remain absent in the financial statements. This disconnect and the generally low level of disclosures in the back-end primarily stems from a lack of explicit disclosure requirements in current standards, along with the complexity associated with these disclosures (IFRS Foundation, 2023a). Providing climate-related disclosures involves a high degree of uncertainty as it relies on managerial judgement and forward-looking assumptions (EFRAG, 2024; IFRS Foundation, 2024a). As a result, there is significant variation in how firms disclose climate-related risks within their financial statements, with regulators indicating that the overall level of these disclosures remains both

⁶ Material in this context refers to financial materiality which the conceptual framework defines as an entity-specific aspect of relevance. More specifically, information is considered to be material “if omitting, misstating or obscuring it could reasonably be expected to influence decisions that the primary users of general purpose financial reports make on the basis of those reports, which provide financial information about a specific reporting entity” (IFRS Foundation, 2018, p.A26).

low and insufficient to meet the expectations of investors and regulators (EFRAG, 2024). Ultimately, the low level of disclosures weakens the objective of financial reporting to provide decision-useful information to primary users.

However, improving climate-related disclosures in the financial statements is not necessarily straightforward, as it also involves costs and other trade-offs. Introducing additional disclosure requirements may impose significant administrative burdens on firms, requiring both financial and human resources (European Commission, 2025). Moreover, companies may also be resistant to improving disclosures, as greater transparency could reveal sensitive information that competitors might exploit, potentially reducing the firm's competitiveness. Other concerns include the risk of information overload, as firms may respond to the rushed demands with standardized and boilerplate language rather than qualitative disclosures, obscuring material information and diminishing the overall usefulness of the disclosures (Anderson, 2021). These concerns are reflected in the European Commission's Omnibus proposal, which seeks to simplify and postpone the implementation of the CSRD for waves two and three (European Commission, 2025). The proposal is intended to reduce unnecessary burden and administrative costs, thereby making CSRD implementation more manageable and feasible for affected firms. This regulatory relief, combined with the growing demand for improved climate disclosures, highlights the complex dimension of balancing stakeholder demands, regulatory ambitions, and the practical challenges of implementation.

The connection between climate disclosures in the front-end and the financial statements is not only a regulatory concern but also highlighted as a critical issue in academic research, as it is argued to shape both current and future disclosure regimes (Chua et al., 2024). Despite this, academic research exploring this connection remains scarce, particularly when it comes to climate disclosures within the financial statements (Müller et al., 2024). This is likely because regulators and other stakeholders have only recently given this area significant attention. Nevertheless, the existing academic studies have observed a similar disconnect as noted by regulators, where climate-related risks are primarily discussed in the front-end without a consistent integration in the back-end (Garg et al., 2019; Agrawal et al., 2025; Cordobés-Madueno et al., 2024; Müller et al., 2024). Similar results have also been reported in studies conducted by organizations and practitioners, although they also highlight a gradual increase in the number of firms incorporating climate-related disclosures in their financial statements (Baboukardos et al., 2021a; Baboukardos et al., 2021b; Lundqvist et al.,

2023; Lundqvist et al., 2024). Despite this overall upward trend, there is broad agreement that the current level remains insufficient. This research area is still relatively unexplored and is expected to continue shaping future studies on disclosure practices, further highlighting the relevance and timeliness of this study.

The role of institutional investors has also been highlighted in academic research. Although they are often identified as key stakeholders demanding improved climate disclosures, there is no clear consensus on the effect they have on the level of these disclosures. While some studies suggest that institutional investors encourage and positively affect climate-related disclosures (Cohen et al., 2023; Ilhan et al., 2023; Song & Xian, 2024), others argue that they may discourage such transparency to protect their own interests, particularly when they hold a significant ownership share that gives them access to private information (Liao et al., 2015; Juhmani, 2013; Enninful-Adu et al., 2007). In addition, there is limited academic research specifically exploring the effect of institutional investors on climate disclosures within financial statements (Müller et al., 2024). The divergent results, combined with the limited research, raise questions about the actual role of institutional investors in shaping climate-related disclosures in financial reporting.

Consequently, this study is motivated by the practical problem of insufficient climate-related disclosures in financial statements, together with the limited academic research exploring both the relationship between the two ends of the annual report and the influence of institutional investors on the level of disclosure. Therefore, there is a need to investigate the current state of climate-related financial disclosures. The aim of this study is to examine if and how climate-related disclosures in the financial statements are associated with climate disclosures presented in the front-end, and to assess whether institutional ownership influences the level of these disclosures in the financial statements. To investigate this, Sweden offers an interesting case to study as it is often recognized as one of the leaders in sustainability. For instance, Sweden currently ranks second in achieving the United Nations Sustainable Development Goals (Sachs et al., 2024) and has consistently been ranked among the top three countries since 2019 (Sachs et al., 2019; 2020; 2021; 2022; 2023). Despite this strong reputation, there are indications that Sweden exhibits a notably weak connection between front- and back-end climate disclosures (e.g., Lundqvist et al., 2024). This may raise concerns regarding whether the sustainability commitments and associated climate actions are fully reflected in their financial reporting. Following this, the study focuses on Swedish

firms listed on Nasdaq Stockholm across the small-, mid- and large-cap segments for the years 2023 and 2024. This selection offers timely insights into the most recent trends in climate-related disclosures during a period with significant regulatory developments and increasing sustainability expectations.

The contribution of our study is twofold. First, our results contribute to the scarce literature on the association between climate disclosures in the front-end and those presented within the financial statements (e.g., Müller et al., 2024; Agrawal et al., 2025). By conducting this study, we contribute to the ongoing academic discussion by providing new empirical insights from a Swedish context on how climate-related financial disclosures are associated with front-end reporting. Second, it contributes to the relatively unexplored academic discussion on the role of institutional investors in influencing climate disclosures in financial statements (e.g., Müller et al., 2024). Given the existing conflicting results about their actual impact, this study offers new empirical evidence on their influence. Lastly, it offers practical implications to regulators and policymakers who are currently demanding improved climate disclosures in financial statements (e.g. seen through ESMA's enforcement priorities, IASB's initiated projects and EFRAG's future research agenda). By examining climate disclosures in financial statements, regulators can be informed about the current status and level of climate integration, which ultimately can guide future initiatives. With the recent introduction of new regulatory frameworks (e.g. CSRD and ISSB standards), this study also contributes with timely insights into the preparatory phase, offering early indications of how and if companies are starting to adapt their disclosure practices.

2. Regulatory Background

2.1 Historical Development of Sustainability Reporting

The historical development of sustainability reporting has been driven by both mandatory and voluntary frameworks and initiatives, although recent developments have mainly been mandatory. While financial reporting has been regulated for more than a century, the regulation of sustainability reporting is relatively new (Karlsson & Samevik, 2024). However, during the last decade, it has started to intensify with various regulatory bodies, independent organizations, and industry-led organizations that have established different standards and guidelines to improve the quality and comparability of sustainability-related financial information. The reasoning behind these initiatives is to enhance transparency and ensure that the information provided is decision-useful for various stakeholders (Karlsson & Samevik, 2024; EFRAG, 2024; Chartrand & Lord, 2025). This section provides an overview of key developments in this area within Europe that are currently affecting and will affect both Sweden and the European market.

In 2014, the European Commission introduced the Non-Financial Reporting Directive (NFRD) (Directive 2014/95/EU). This directive aimed to enhance the disclosure of non-financial information in annual reports, thereby improving transparency and ensuring greater comparability across the European Union's member states (European Commission, 2014; Hahnkamper-Vandenbulcke, 2021). The directive applied to large public corporations with more than 500 employees and required them to report on environmental and social issues, including anti-corruption, bribery, human rights, and employee-related matters (European Commission, 2014). However, Sweden expanded the scope by demanding firms with more than 250 employees to apply the regulation, which was implemented into the Swedish Annual Report Act (ÅRL), and effective from January 1, 2017 (Sveriges Riksbank, 2021). Nevertheless, the directive received much criticism around Europe after its implementation due to its limited scope, lack of explicit disclosure requirements and absence of standardized reporting frameworks, which has resulted in significant flexibility and inconsistencies in reporting practices (Hahnkamper-Vandenbulcke, 2021).

In response, the European Parliament and the Council of the European Union adopted the CSRD (Directive 2022/2464) in 2022 (European Union, 2023). The CSRD will replace the previously mentioned NFRD and require all European Union (EU) member states, including Sweden, to adopt it into national law (Finansinspektionen, 2024). The new directive aims to

enhance and standardize sustainability reporting, helping investors to more effectively assess financial opportunities and risks associated with sustainability-related issues. This will be achieved by, for example, extending the scope of mandatory sustainability reporting, imposing stricter disclosure requirements, and mandating external auditing on sustainability reporting. Additionally, companies that are subject to CSRD need to report according to the European Sustainability Reporting Standards (ESRS) to ensure consistency and comparability (Bokföringsnämnden, 2024). The CSRD will be phased in through different implementation waves. The first wave includes large listed companies with over 500 employees, which will report under the new directive starting in January 2024 and publish their reports in 2025 (European Union, 2023). This directive was incorporated into the ÅRL, but the Swedish government postponed the national implementation and instead implemented it with effect from July 1, 2024. As a result, large Swedish listed companies that follow the calendar year as their financial year will be required to report under the CSRD in 2025 and publish their reports in 2026 (Bolagsverket, 2025; Lundvall & Söderlund, 2024a). In addition, the European Commission has also adopted the Omnibus proposals, which aim to simplify the sustainability reporting requirements and reduce the administrative burden (European Commission, 2025). Among these is the "stop-the-clock" proposal, which has been accepted and will postpone the implementation of CSRD by two years for waves two and three. This means that other large companies (wave 2) will be obligated to report according to CSRD for 2027 instead of 2025 and listed small and medium sized enterprises (SME:s) (wave 3) for 2028 instead of 2026. These changes must also be incorporated into national laws, and while discussions have begun in Sweden, it remains unclear how they will ultimately affect Swedish companies (Hammarström et al., 2025).

Alongside the widely noted transition from NFRD to CSRD, various influential voluntary initiatives, standards and frameworks have been established to enhance sustainability reporting and related disclosures. These frameworks play a crucial role in the development of sustainability reporting and are closely tied to the development of connectivity in the annual reports (Chartrand & Lord, 2025). Several of these voluntary frameworks, such as the Task Force on Climate-related Financial Disclosures (TCFD) and Global Reporting Initiative (GRI), have served as a foundation for the upcoming mandatory CSRD and ESRS, which underscores their pivotal role in shaping sustainability reporting (FAR, n.d.; EFRAG, 2022a). See Table 1 for more information on these and other important initiatives in the development of sustainability reporting and climate-related disclosures.

Table 1: Voluntary frameworks for sustainability reporting

Framework	Year	Description
Global Reporting Initiative (GRI)	2016	The Global Reporting Initiative (GRI) transitioned its guidelines into its first set of voluntary sustainability reporting standards in 2016, which aim to guide companies in communicating their impact on people, environment and the economy (GRI, n.d.a; GRI, n.d.b). As one of the most widely adopted frameworks, the GRI Standards have significantly influenced the ESRS (FAR, n.d.). The framework consists of three modules: universal standards, GRI sector standards and GRI topic standards (GRI, n.d.b). The universal standards apply to all organizations and guide how to comply with the standard by clarifying key concepts, principles and disclosure requirements. The sector standards guide more sector-specific implications, while the topic standards focus on a particular topic and its corresponding disclosures. For instance, GRI 302: Energy and GRI 305: Emissions are two specific topic standards that relate to climate change. These cover energy consumption and how organizations should measure and disclose greenhouse gas (GHG) emissions. Currently, there is an ongoing project to develop new standards related to climate change, including updates of GRI 302 and 305. The aim of the project is to better align with the latest developments and internationally agreed best practices (GSSB, 2023).
Task Force on Climate-related Financial Disclosures (TCFD)	2017	The Financial Stability Board (FSB) established the Task Force on Climate-related Financial Disclosures (TCFD) to recommend how companies should disclose risks related to climate change. The recommendations are structured around four themes: governance, strategy, risk management, and metrics and targets. In October 2023, the TCFD was deemed to have fulfilled its mandate and was dissolved. On the advice of the TCFD, the IFRS Foundation took over monitoring these climate-related disclosures (TCFD, n.d). Despite its abandonment, the TCFD has been a foundation for the upcoming CSRD and ESRS E1 (EFRAG, 2022a; FAR, n.d.).
Sustainability Accounting Standards Board's (SASB) Standards	2018	The Sustainability Accounting Standards Board (SASB) released its standards in 2018, which are industry-specific and cover 77 industries. They outline the most common and financially material sustainability-related issues for investors in these industries. However, in 2022 the SASB organization was integrated into the IFRS Foundation and ISSB assumed responsibility for maintaining and evolving the SASB standards. These standards have been widely adopted globally and serve as a foundational framework for the ISSB's first two IFRS Sustainability Disclosure Standards (IFRS S1 and IFRS S2) (IFRS Foundation, n.d.a)
Science Based Target initiative (SBTi)	2021	The Science-Based Targets initiative (SBTi) developed the first corporate net-zero standard in 2021, aligning corporate emissions targets with the Paris Agreement's 1.5°C goal (SBTi, 2022). The framework outlines the necessary criteria, recommendations and guidelines for setting science-based emissions reduction targets (SBTi, n.d.). Despite being voluntary, over 6,000 companies have adopted SBTi targets (SBTi, 2024). SBTi also validates corporate net-zero targets, ensuring the quality and credibility of these climate commitments. Additionally, SBTi is developing the first global standard for science-based net-zero targets specifically for the financial sector (SBTi, 2022).
Taskforce on Nature-related Financial Disclosures (TNFD)	2023	The Taskforce on Nature-related Financial Disclosures (TNFD) released its first recommendation in 2023 to guide companies in identifying, assessing, and disclosing their nature-related dependencies, impacts, risks, and opportunities. The TNFD builds on TCFD and has a similar structure with the same four themes: governance, strategy, risk management, and metrics and targets (TNFD, 2023). Reporting in accordance with TNFD can facilitate compliance with the CSRD, particularly ESRS E4, which concerns biodiversity and ecosystems (FAR, n.d.; EFRAG & TNFD, 2024). This initiative has received endorsements from G7, G20 and other leaders, emphasizing its significance in shaping nature-related financial disclosures (TNFD, n.d.).

Note: This table outlines some significant initiatives, frameworks and standards that have contributed to the development of climate and sustainability reporting.

2.2 Development of the Connectivity Discourse

Alongside regulatory developments in sustainability reporting, discussions have intensified around ensuring a strong connection between sustainability-related disclosures and the information presented in financial reports. The International Integrated Reporting Council (IIRC) was one of the first organizations to emphasize the importance of connectivity across various sources of corporate information through its Integrated Reporting Framework, first published in 2013 (Chua et al., 2024; IIRC, 2013). However, this discussion has gained further momentum in recent years through various large-scale initiatives within the accounting profession. ESMA, the EU-level supervisory authority, incorporated climate-related matters in financial statements into its enforcement priorities in 2021 and has upheld this focus for three consecutive years (ESMA, 2021; 2022; 2023). While it is not a formal priority for 2024, it is still included as a general consideration where ESMA continues to highlight its relevance (ESMA, 2024). ESMA emphasizes that climate-related risks should be given the same level of importance in financial statements as in sustainability reports. Furthermore, if a company concludes that climate risks have no impact on its financial statements, ESMA requires this conclusion to be explicitly disclosed. ESMA has also urged national supervisory bodies within the EU to prioritize connectivity and climate-related risks in financial statements. The Council for Swedish Financial Reporting Supervision has adopted this recommendation and is actively prioritizing the issue (Lundqvist et al., 2024).

The IFRS Foundation has also reinforced the importance of connectivity by announcing the formation of the Integrated Reporting and Connectivity Council (IRCC) in 2022. This advisory group was established to provide guidance on integrating reporting requirements from the IASB and ISSB and to offer guidance on connectivity issues (IFRS Foundation, 2022). Additionally, in 2023, the IASB launched the *Climate-related and Other Uncertainties in the Financial Statements* (IFRS Foundation, 2024a) project to enhance the communication of climate-related disclosures in financial reports. As part of this initiative, the IASB has released educational materials and, most recently, published eight illustrative examples demonstrating how companies can apply IFRS accounting standards to report climate-related information in financial statements (Lundqvist et al., 2024). The illustrative examples cover areas such as materiality judgments, disclosure of key assumptions, and the treatment of issues such as asset impairment, provisions, and fair value measurement. One example is the disclosure of assumptions related to IAS 36 *Impairment*, which illustrates how a company can disclose assumptions like future emission allowance costs when measuring its cash flow

projections (IFRS Foundation, 2024a). EFRAG has also taken steps to improve connectivity between financial reporting and sustainability reporting as part of its proactive research plan. In line with this effort, EFRAG published the paper *Connectivity Considerations and Boundaries of Different Annual Report Sections* in 2024, outlining the conceptual foundations and practical steps to enhance connectivity (EFRAG, 2024; Ecovis, 2024).

2.3 Climate-Related Disclosure Requirements

Before the adoption of the CSRD, companies covered by the NFRD were mandated to report non-financial information. However, the requirements in NFRD were general and did not require them to adhere to a specific standard dedicated to climate-related disclosures. Likewise, the IASB has not issued a dedicated standard for climate-related reporting, nor does it explicitly address climate-related matters in its existing accounting standards (Lundqvist et al., 2024; IFRS Foundation, 2023c). Similarly, the ÅRL did not prescribe a specific framework for Swedish companies (FAR, n.d). Instead, the IASB encourages firms to apply existing IFRS financial reporting standards to incorporate climate-related risks into their financial statements. When preparing financial statements under IFRS, firms should assess whether investors could reasonably expect emerging risks, such as climate-related risks, to impact reported amounts and disclosures. They should also evaluate whether the effects of these risks on key assumptions, significant adjustments, and estimates used in preparing the financial statements are material and, therefore, require disclosure. As guidance, the IASB first published educational material in November 2020, which has since been updated, outlining how IFRS standards may require firms to disclose the effects of climate-related issues (IFRS Foundation, 2023c).

In IAS 1 *Presentation of Financial Statements*, there is an overarching requirement to disclose the source of uncertainty in estimates. More specifically, IAS 1.122 requires companies to disclose judgments made by management that have the most significant impact on the amounts recognized in the financial statements. For instance, a company operating in a climate-sensitive industry may perform an impairment test on an asset and conclude that no impairment loss is necessary. In such instances, the company is still obligated to disclose the judgments made. Similarly, IAS 1.125 requires firms to disclose information about assumptions made regarding future events and other sources of estimation uncertainty, particularly when these assumptions pose a significant risk of leading to material adjustments in the carrying amounts of assets and liabilities within the next financial year. This means that

disclosure of assumptions concerning climate-related issues may be necessary, particularly when these issues create uncertainties that influence assumptions used in developing estimates, such as forecasting future cash flows for asset impairment testing. Besides IAS 1, the educational material references nine other IFRS standards that may also require specific climate-related disclosures. Among them are IAS 16 *Property, Plant, and Equipment* and IAS 36 *Impairment of Assets*, which require specific climate disclosures regarding decisions made when determining the useful life of assets and the significant assumptions made during annual impairment testing (IFRS Foundation, 2023c).

With the introduction of CSRD, both Sweden and other EU countries must follow specific sustainability and climate-related standards through ESRS. The ESRS consists of 12 standards, including two cross-cutting standards (ESRS 1-2) and ten topical standards related to ESG. The topical standards cover five standards on environmental topics (ESRS E1-E5), four on social topics (ESRS S1-S4), and one standard on governance (ESRS G1) (KPMG, n.d.; Finansinspektionen, 2023). The most impactful standard beyond the general requirements is ESRS E1, which holds a special position within the ESRS as it is expected to be relevant for nearly all companies (Karlsson & Samevik, 2024; Lundvall & Söderlund, 2024b). ESRS E1 is related to climate change and outlines disclosure requirements covering mitigation, adaptation, and energy matters. These disclosure requirements are structured across four key areas. First, companies should disclose *governance* aspects and how sustainability-related performance is integrated into incentive schemes. In terms of *strategy*, companies must also disclose information about their transition plans for mitigating climate change to ensure that their business model is compatible with the shift toward a sustainable economy. The third section, which covers *impact, risks, and opportunities*, requires companies to describe the process used to identify and assess material climate-related impacts, risks, and opportunities, with a particular emphasis on greenhouse gas emissions. Lastly, the *metrics and targets* section mandates that companies disclose their climate-related goals, providing insight into how these targets support climate change mitigation and adaptation strategies. As part of this, companies must specify whether they have set greenhouse gas emission targets and report emissions across three scopes: direct emissions from their operations (Scope 1), indirect emissions from purchased energy (Scope 2), and other indirect emissions across the value chain (Scope 3) (EY, 2024; EFRAG, 2023).

In addition to ESRS, the ISSB has released two global IFRS Sustainability Disclosure standards. The standards were released in 2023 and consist of IFRS S1 *General Requirements for Disclosure of Sustainability-related Financial Information* and IFRS S2 *Climate-related Disclosures* (IFRS Foundation, n.d.b). The aim of this framework is to develop a comprehensive and high-quality global baseline of sustainability disclosures, ensuring that information is comparable and consistent across capital markets (IFRS Foundation, 2023b). The standards will be effective for annual reporting periods beginning on or after January 1, 2024 (Chan, 2023). A mandatory application of the standards will depend on each jurisdiction's regulatory or endorsement processes, and many countries outside the EU are expected to incorporate it into national legislation. Although EU member states subject to the CSRD are not required to adopt the ISSB standards, they may still face pressure from stakeholders to align with them on a voluntary basis (FAR, n.d.).

The ESRS has been developed alongside the ISSB standards through a close collaboration between ISSB, the European Commission services and EFRAG (EFRAG & IFRS Foundation, 2024). The objective of this cooperation was to achieve a high level of alignment between the frameworks, with particular emphasis on climate-related reporting. As a result, the climate-related disclosures in both standards have become highly similar. Nearly all disclosure requirements outlined in IFRS S2 *Climate-Related Disclosures* are also incorporated in ESRS. However, reporting solely in accordance with ISSB standards does not fully satisfy the ESRS requirements, as the ESRS framework is broader in scope (FAR, n.d.; EFRAG & IFRS Foundation, 2024). One key distinction between the two sets of standards is their approach to materiality. The ISSB adopts a financial materiality perspective where information is considered material if its misstatement or omission can influence investors' decisions⁷. In contrast, the ESRS adopts a double materiality approach, in which a sustainability matter is considered material if it meets the criteria for financial materiality, impact materiality, or both. Impact materiality extends beyond financial aspects, referring to information about how an organization's activities affect people or the environment (EFRAG & IFRS Foundation, 2024). Thus, while ISSB focuses solely on an investor perspective, ESRS addresses a wider set of stakeholders (Karlsson & Samevik, 2024).

⁷ The ISSB's definition of financial materiality aligns with that used in the IFRS Accounting standards. For the full definition, see page 3, footnote 4.

3. Literature Review and Hypothesis Development

3.1 Connection Between the Front- and Back-End

In line with the recent increase in regulatory focus on climate disclosures in financial statements, this area has also gained growing attention in academic research. However, as this is a relatively new area of research, there is still a limited number of academic papers investigating the connection between climate disclosures across different sections of annual reports (Müller et al., 2024; Agrawal et al., 2025). Despite the growing pressure from regulators and stakeholders to strengthen this connection, previous studies reveal that climate risks are predominantly discussed in the front-end, without a consistent integration in the financial statements (Garg et al., 2019; Baboukardos et al., 2021b; You & Simnett, 2022; Finanstilsynet, 2023; Davidson, 2024; Müller et al., 2024). This may raise questions about why firms choose to include or limit climate-related disclosures in their financial statements.

A firm's decision to disclose climate-related matters in financial statements may be explained by the signaling theory, which posits that firms choose to disclose to signal a certain performance and reduce uncertainty. By providing climate-related disclosures, firms can build trust, attract investors and differentiate themselves through a good sustainability reputation (Ching & Gerab, 2017; Paananen et al., 2021). This aligns with Galeotti et al. (2022) and Bui et al. (2020), who emphasize that companies exhibiting good environmental performance tend to disclose additional verifiable information to investors that is difficult to replicate for non-environmentally responsible firms. Additionally, presenting climate-related information in financial statements is considered more reliable than disclosing it solely in the front-end or separate reports, as financial statements are subject to stricter regulation and scrutiny (Müller et al., 2024). Conversely, the proprietary cost theory suggests that firms strategically weigh the costs and benefits of disclosures and may choose to limit climate-related information in financial statements if the proprietary costs outweigh the advantages (Barth et al., 2017). These costs can include the risk of litigation, reduced competitiveness as competitors gain informational advantages, and market reactions that may negatively affect the firm's valuation and reputation (Verrecchia, 1990; Dye, 1985; Paananen et al., 2021). Environmental liabilities have been identified as particularly proprietary as they tend to be subject to regulatory scrutiny and subsequent public and political attention when not complying (Li et al., 1997; Paananen et al., 2021). Hence, while signaling theory highlights reasons for firms to provide more climate disclosures, the proprietary cost theory offers an explanation of why firms may choose to limit such disclosures in practice.

The tension between these perspectives can be observed in the existing academic research, as they have found varying extents of climate-related disclosures in the front- and back-end of annual reports at the global, EU and national levels. First, Agrawal et al. (2025) analyzed annual reports from 2017 to 2022 for 80 large listed firms operating in five climate-sensitive industries in Canada, Australia, the UK, and the EU. Their findings show an increasing trend, with climate-related disclosures in the front-end rising from 94% to 100%, while those in the back-end lag behind and remain absent for 30% of the companies in 2022. Similar patterns were observed by Müller et al. (2024), who examined 595 firms listed on STOXX Europe 600 between 2018 and 2022. Their study indicates a substantial increase in the mention of climate-related words in the financial statements from 15% to 70%. Nonetheless, they highlight concerns from both regulators and stakeholders regarding the lack of consistent and transparent reporting of climate-related matters in the financial statements. Their findings also show that industries with higher exposure to climate change, such as oil and gas, energy, agriculture, and steel and cement, tend to provide more climate-related disclosures in their financial statements. This is consistent with Aggarwal et al. (2022), who also highlight that firms in more climate-sensitive industries tend to provide more climate disclosures in their financial statements. By examining 88 firms listed on the Amsterdam Stock Exchange, they revealed that climate-related risks were entirely absent from the financial statements of 60% of the firms. Another national study that highlighted the inadequacy of climate disclosures in financial statements is Borghei et al. (2024), who examined firms listed on the UK's FTSE 100 between 2016 and 2020. Although they noted a gradual increase in the share of firms disclosing climate-related matters in the financial statements, which rose from 0% in 2016 to 25% in 2020, they emphasized that the current level was still inadequate.

Studies conducted by organizations and practitioners have also reported similar low levels of financial climate disclosures and inconsistencies of what is disclosed in the front-end compared to the back-end. For instance, Baboukardos et al. (2021a) analyzed climate change disclosures in the 2019 annual reports, using a sample of the 60 largest polluters in the extractive industries globally. They concluded that the front- and back-end were disconnected, with the front-end containing significantly more disclosures regarding climate change-related risks. In their follow-up study of the 2020 annual reports, covering 56 of the original 60 companies, they observed an overall increase in these disclosures (Baboukardos et al., 2021b). Despite this, the gap between the two ends widened compared to 2019, since the proportion of firms providing climate change disclosures in the front-end increased from 39%

to 50%, while those in the back-end only increased from 24% to 27%. Similarly, reports from the Carbon Tracker Initiative, released in 2021, 2022 and 2024, reveal persistent inconsistencies in climate disclosures between financial statements and other sections of the reports (Davidson & Schuwerk, 2021; 2022; Davidson, 2024). Their 2021 report found that 75% of 107 firms had inconsistencies in their 2020 annual reports. By 2022, the sample grew to 134 firms worldwide, all of which exhibited some level of inconsistency. The latest report in 2024 found that none of the 140 analyzed firms provided fully consistent disclosures of climate-related matters in their 2022 annual reports. This pattern is also reflected at a European level, where Mazars (2024) found that one-third of 94 firms listed CAC 40, the SBF 120, the EUROSTOXX 50 or the EUROSTOXX 600 did not mention climate-related risks or opportunities in their 2022 reports.

Comparable trends have also been documented at the national level, where Lundqvist et al. (2023), for example, found that only 16.8% of the 101 firms listed on the Nasdaq Stockholm large-cap segment mentioned climate in the back-end of their 2022 annual reports. In their follow-up study, they expanded the analysis and included both the front- and back-end of the 2023 annual reports (Lundqvist et al., 2024). They emphasize that the connection is weak, as nearly all of the 95 firms listed on the Nasdaq Stockholm large-cap segment mention climate-related information in the front-end, whereas only 33% include it in the back-end. The industry-level analysis included in their 2024 report also reveals that firms within raw materials, industrials, consumer goods, and communication services have the highest occurrence of climate-related words. Additionally, Finanstilsynet (2023) conducted a thematic analysis of the climate-related information in the 2021 annual reports of 11 companies listed on Oslo Børs. These companies were selected because their climate-related matters were considered material. Despite this, the study revealed that several firms provided climate-related information in the front-end to an extent that suggested a financial impact, yet such information was entirely absent from the financial statements. Overall, despite some studies observing an increasing trend in disclosure level, both the researchers and practitioners agree that climate-related disclosures in financial statements remain limited and that there is a disconnect between the two ends, highlighting the need for further action.

While many of the studies above examine the extent of climate-related disclosures in the front- and back-end of annual reports, the majority do not explicitly test the relationship between them. However, since these studies address both parts, it is reasonable to expect a

relationship between the two. One study that directly tested this relationship is Baboukardos et al. (2021b), which found a positive correlation. This indicates that firms providing more disclosures in the front-end are also more likely to disclose in the back-end. This is further supported by Müller et al. (2024), who emphasized that firms discussing climate-related matters in the front-end are more inclined to integrate their financial impact in the financial statements. Stakeholders often perceive such disclosures as “hard” facts and therefore more credible (Müller et al., 2024), which aligns with signaling theory. However, it should still be highlighted that the positive correlation may be driven by duplicate information rather than genuine integration, but this alone does not diminish the relevance of this relationship. Instead, it could reflect early-stage efforts in responding to growing regulatory and stakeholder pressure. Regardless, many of the studies reveal a persistent gap between the two ends, with firms increasingly reporting climate-related matters in the front-end, while the counterpart in the financial statements remains limited. Given the increasing demand for alignment and empirical evidence supporting a positive relationship between disclosures in the front- and back-end, the first hypothesis is:

H₁: The extent of climate-related information in the front-end is positively associated with providing climate disclosures in the financial statements.

3.2 Institutional Investors and Climate Disclosures

Investors are widely regarded as the primary users of financial statements, with institutional investors standing out as dominant owners who have a strong influence on corporate boards (Chen et al., 2024). Previous research has outlined institutional investors as one of the strongest financial mechanisms for limiting firms' climate risk exposures (Ilhan et al., 2023; Stroebel and Wungler, 2021). Through this pressure, institutional investors have also been shown to play a crucial role in driving and demanding improved climate-related disclosures (Cohen et al., 2023; Song & Xian, 2024). This emphasis stems from institutional owners recognizing climate-related risks as a significant source of portfolio risk, leading them to incorporate climate criteria into their investment strategies and apply their governance pressure to steer portfolio companies toward improved climate disclosures (Garg et al., 2019; Bose et al., 2023). Consequently, institutional investors actively engage with portfolio firms to enhance their climate disclosures and environmental performance (Ilhan et al., 2023). This active role can be explained by corporate governance frameworks, particularly agency theory and information asymmetry aspects (Chen et al., 2024; Song & Xian, 2024). Corporate

governance literature suggests that institutional investors are an effective monitoring mechanism that may encourage portfolio firms to enhance climate risk disclosures to reduce information asymmetry and agency costs, while also gaining legitimacy. Accordingly, active influence from institutional investors helps to deter opportunistic behavior from managers, such as greenwashing, and can therefore improve climate disclosures (Chen et al., 2024).

Yet, despite evidence that institutional investors drive and demand climate-related disclosures, existing studies have not reached a definitive conclusion or consensus on their overall role in climate risk disclosures (Bose et al., 2023; Chen et al., 2024). For example, Cotter and Najah (2012) found that institutional investors improve the disclosure of climate risk in investee firms among the largest 500 firms in the FTSE Global Index. Similarly, Flammer et al. (2021) demonstrated that shareholder activism initiatives by institutional investors positively impact the extent of climate risk disclosures. Cohen et al. (2023) further support this finding, showing that institutional investors' demand for climate risk-related information leads to improved corporate disclosures. These studies align with agency theory and highlight the role of institutional investors as effective monitors in reducing agency costs and thereby information asymmetry between managers and shareholders. Conversely, Liao et al. (2015) found a negative association between institutional ownership and climate risk disclosure in the UK, suggesting that institutional owners may discourage such disclosures. Similarly, Chen et al. (2024) reported a negative relationship between greenhouse gas emissions disclosures and institutional investors in a sample of S&P 500 companies. Meanwhile, studies by Stanny and Ely (2008) on U.S. firms and Günther et al. (2017) in an international context found no significant impact of institutional ownership on carbon disclosures. The negative findings reflect a behavior that increases the agency problem, where institutional investors limit climate disclosures to protect their own interests at the expense of other stakeholders. Juhmani (2013) and Enninful-Adu et al. (2007) argue that when institutional investors hold a significant ownership stake, they gain access to internal information directly from the management that is not available to other stakeholders. Withholding this information is aligned with the entrenchment hypothesis, which suggests that managers (agents), or in this case large institutional investors, seek to entrench their positions and preserve private benefits, rather than acting in the collective interest of other stakeholders (principals) (Duong et al., 2024). Consequently, institutional investors may discourage the disclosure of climate-related information if it reveals vulnerabilities that could negatively impact the firm's performance, competitiveness or reputation, ultimately exposing

investors' private benefits. This entrenchment diminishes overall transparency and increases the information asymmetry between institutional investors and minority shareholders.

Focusing more specifically on climate-related risks in financial statements, studies indicate that institutional investors are increasingly concerned about the financial impact of climate risks. As a result, they not only demand general climate disclosures but also push for climate disclosures within financial statements. For example, a survey by Krueger et al. (2020) reveals growing concerns among institutional investors regarding the financial implications of climate risks on their portfolio firms, particularly regarding regulatory risks and transition risks associated with the shift toward more environmentally sustainable operations. Similarly, Lundqvist et al. (2024) highlight that institutional investors, along with regulatory authorities, are demanding greater transparency on climate-related issues within financial statements.

Aligned with the generally limited research on climate-related disclosures in financial statements (Müller et al., 2024), the role of institutional owners in this context remains relatively unexplored. However, one existing study examining this is a working paper by Müller et al. (2024), which found no significant relationship between the share of institutional ownership and climate-related disclosures in the financial statements of the STOXX Europe 600. This was tested using a broader measure of climate-related unigrams and bigrams, including words like CO₂ and emission. The authors find the result inconsistent with their predictions that disclosing climate-related risk in financial statements would yield benefits in the capital market, including reduced information asymmetry. The study also finds that institutional owners may prefer climate disclosure outside financial statements, such as in the front-end or standalone sustainability reports, rather than within financial statements. This result suggests that investors may view climate-related risks as more informative and decision-useful when disclosed outside financial statements, potentially due to the greater comprehensiveness and familiarity of such disclosures. Furthermore, these findings underscore the growing relevance of impact materiality, highlighting that investors are not only concerned with the financial impacts of climate-related risk but also with the firm's impact on the environment and broader society. Given the inconclusive findings on the impact of institutional ownership on climate risk disclosure in general, and the limited research specifically exploring this relationship in financial statements, a non-directional hypothesis is formulated:

H₂: Institutional investors are associated with climate disclosures in financial statements.

4. Methodology

4.1 Sample Selection

To test the hypotheses, this study employs panel data covering the fiscal years 2023 and 2024, which were collected through Capital IQ and a textual analysis of annual reports using NVivo. This timeframe was chosen because it includes the latest annual reports available and enables an analysis of recent trends in climate-related disclosures within financial statements. Although CSRD and its accompanying ESRS are not yet fully enforced during this period, it represents a transitional period in which companies are expected to begin aligning their disclosures with the upcoming regulations. This enables an analysis of how Swedish publicly listed firms are proactively adapting their reporting practices. Fiechter et al. (2022) also emphasize the importance of analyzing such preparatory periods leading up to regulatory changes. Their study found that companies within the scope of Directive 2014/95 began adjusting their behavior to align with the directive even before it came into force. Hence, examining this period can provide valuable insights into the preparatory phase, which in turn can enable a better understanding of how Swedish publicly listed firms act and react to changing disclosure requirements. Additionally, studying this sample can serve as a foundation for follow-up research once these regulations have been fully implemented.

The initial sample consists of all active Swedish companies listed on Nasdaq Stockholm in 2024 across the large-, mid- and small-cap segments, yielding a total of 360 unique companies. Subsequently, the sample was reduced as not all companies fulfilled the inclusion criteria. First, all dual-listed companies were excluded, as they may be subject to additional regulations besides IFRS, which could potentially influence the result and reduce comparability. Second, firms that were not listed on Nasdaq Stockholm both years, either due to an IPO or listing transitions from other markets in 2024, were excluded. Furthermore, 13 companies (26 observations) were removed due to missing data either in Capital IQ or the unavailability of their annual reports. Given that companies publish their annual reports at different times throughout the year, an additional inclusion criterion was applied for 2024. Annual reports released after April 30, 2025, were not included, resulting in 3 companies (6 observations) being excluded for 2024. This deadline aligns with the requirement in Chapter 16, Section 4 of the Swedish Securities Market Act (2007:528), which obligates Swedish companies whose securities are traded on a regulated market, such as Nasdaq Stockholm, to publish their annual report no later than 4 months after the end of the financial year. Given that most of the companies in the sample have the calendar year as their financial year, the

majority of the companies are expected to publish their annual reports for 2024 within this timeframe. The 3 eliminated companies for 2024 were also removed for 2023 to create a balanced panel data with identical firms over the two years. Using balanced panel data enhances the reliability and consistency of the analysis by reducing estimation biases from sample variation over time. Based on these criteria, the final sample consists of 315 unique companies, yielding a total of 630 firm-year observations.

This study uses two different samples to test the hypotheses. When testing H2, an additional inclusion criterion was applied, where all firms categorized as Financials in Capital IQ were excluded. The reason for their exclusion is that financial firms, such as Kinnevik and EQT, are potential institutional investors. Their inclusion could thus distort the results of H2, which aims to isolate the effect of institutional ownership on climate disclosures in the back-end. This resulted in a final sample for H2 comprising 286 firms and 572 firm-year observations. See the complete list of excluded firms per criterion, for both samples, in Appendix 1.

Table 2: Sample selection

Criteria	No. of Obs. Full Sample (H1)	No. of Obs. Sample (H2)
Initial sample	720	720
Eliminations		
Dual Listed	-30	-30
Not listed both years (Nasdaq, 2024)	-28	-28
Missing data	-26	-26
Published after 30 April 2025	-6	-6
Financial firms		-58
Final Sample	630	572

Note: This table presents the sample selection process and the number of firm-year observations included in the final sample for each hypothesis. See Appendix 1 for all excluded firms per criterion.

4.2 Variable Selection

To create the variables based on text analysis, each firm's annual report was retrieved from its website. The English version was preferred, with the Swedish version only used if no English version was available. Following the approach used by Lundqvist et al. (2024), the most recently published annual report as of the end of April 2025 was included in the 2024 sample for firms with broken fiscal years. Each annual report was then manually divided into two separate PDF files, one containing the front-end and one containing the financial statements. The sections included in the financial statements align with IAS 1 *Presentation of Financial Statements*, which defines that a complete set of financial statements contains statement of financial position, statement of profit and loss and other comprehensive income, statement of changes in equity, statement of cash flow and notes (IFRS Foundation, 2024b). The

statements and notes for both the group and the parent company were included in the financial statements section. The front-end was defined as all other sections, excluding the financial statements, aligning with the definition used by Baboukardos et al. (2021a). These PDF files were then imported into NVivo to construct the search-based variables.

NVivo is a qualitative analysis software widely used in textual analysis within academic research (Overland et al., 2023; Bisman & Crofts, 2010; Kolk et al., 2008). To extract information from the divided PDF files, we used the “explore” and “text search” functions in NVivo. The predefined search terms (see sections 4.2.1 and 4.2.2, followed by the complete search list in Appendix 2) were entered using the boolean operator “OR” to count the occurrence of all search terms included in the files. We selected the “narrow context” setting, which allows NVivo to retrieve a limited portion of text surrounding each identified keyword. Additionally, we activated the “with stemmed words” option, which ensures that the software captures both exact matches and variations with the same word stem (e.g., “climate goal” and “climate goals”). After running the query, NVivo generates two key outputs: *References*, indicating the number of keyword occurrences, and *Coverage*, representing the proportion of the search query relative to the entire content of the file. In addition to the “narrow context” setting, we also tested the “broad context” option, which captures the entire paragraph surrounding each keyword rather than a limited segment. However, this setting often included irrelevant content, which risked inflating the coverage variable and reducing the accuracy in measuring the coverage of climate-related content in the files. The above mentioned settings were applied for all variables that were generated through text analysis in NVivo.

4.2.1 Dependent Variables

This study uses two dependent variables to test the hypotheses. The main dependent variable is *ClimateFS*, which is created by counting how often the word climate, through a selection of climate-specific words, appears in the financial statements using NVivo. If any of these words are found in the financial statement section, *ClimateFS* is set to 1. Because the word climate can be used in a variety of contexts, such as working climate and business climate, it was not sufficient to search for this term alone. To more accurately capture the intended environmental aspect of climate, we employed the concept of unigrams and bigrams, which is a common technique applied in textual analysis (e.g. Müller et al., 2024; Sautner et al., 2023). We first searched for the term "climate" (or “klimat” for Swedish reports) across the financial statements using NVivo, allowing us to examine the context in which the word appeared.

Based on this contextual analysis, we then manually identified and compiled a more targeted list of climate terms relevant to the environmental dimension. Given that the majority of the annual reports were retrieved in English, we manually reviewed 50 randomly selected documents, while the Swedish reports, constituting a smaller fraction, were all manually reviewed. This targeted list was further enhanced by including terms from the "Defined Terms" section of ESRS E1 (EFRAG, 2022b) to ensure a broader and more comprehensive coverage of climate terminology. The complete search lists of climate-specific words used to construct the variable *ClimateFS* in English and Swedish are provided in Appendix 2.

The alternative dependent variable, *ClimateBroadFS*, is used in the additional analysis to measure a broader set of climate-related terms in the financial statements. While the primary focus of this study remains on climate-specific disclosures as measured by *ClimateFS*, including a broader variable complements the main results and enhances the robustness of the analysis. To construct *ClimateBroadFS*, the original list of search terms was expanded to include not only climate-specific words but also broader environmental terminology. Both the broader approach and the selection of additional terms were inspired by the study conducted by Lundqvist et al. (2024) and complemented by relevant terms found in the contextual analysis. The added terms included variants of "environment", "emission", "ESG", "GHG", "carbon", "CO2", "global warming", "pollution" and "net zero". Given the general nature of the term environment, a similar methodological approach as previously described was applied, where the context of each occurrence of "environment" and the related term "environmental" was extracted from NVivo and manually reviewed to ensure its relevance to the study. The contextual analysis for the new words revealed a similar issue as with climate, where environment covered non-environmental aspects, such as the working environment (see examples of both excluded and included hits in Appendix 3). As a result, this list was also manually refined (see the complete list of the search terms in Appendix 2). During this process, we also considered including the term sustainability, as done by Lundqvist et al. (2024). However, we ultimately decided to exclude it due to its broad nature, as it encompasses a wide range of topics beyond environmental issues. When tested, the term also frequently appeared in irrelevant contexts, such as financial sustainability and sustainable growth rate, and was also commonly found in headers and tables of contents appearing repeatedly on nearly every page of the reports (see examples in Appendix 3). Hence, including sustainability in the automated process using NVivo would have inflated the measure without reflecting meaningful sustainability-related information.

4.2.2 Independent Variables

The independent variables in the regression models are derived from the hypotheses development. The first hypothesis tests whether climate-related information in the front-end of annual reports is associated with disclosures in the financial statements. To assess this, the dependent variables described in 4.2.1 are complemented by the main independent variable, *ClimateFE_Cov*, and an alternative measure, *ClimateFE_Ref*. *ClimateFE_Cov* is generated from the *Coverage* output from NVivo, which measures the relative share of the content in the front-end that contains climate-related words. In contrast, *ClimateFE_Ref* is derived from NVivo's *Reference* output and captures the occurrence of the search terms, following an approach similar to that used by Lundqvist et al. (2024). *ClimateFE_Cov* is selected as the primary measure because it provides a more accurate proxy for the extent of climate-related discussion by accounting for both the frequency and the length of the text, thereby creating a more standardized measure that is not biased by report length. Nevertheless, the inclusion of both variables is valuable, as they capture complementary aspects of climate-related information. The same search list was used for both variables and was developed based on similar search terms as applied to construct the dependent variables. However, some additions were made by including additional words such as "physical risk", "transition plan" and "transition risk". The inclusion aligns with Lundqvist et al. (2024) and is motivated by the front-end containing other terminology than the back-end, where such words frequently appear in the front-end to describe forward-looking strategies and risk.

The second hypothesis relates to institutional ownership, which is measured as the proportion of institutional ownership in each firm, based on data from Capital IQ. The database also classifies private equity firms and venture capital firms as institutional owners, and these are therefore included in the *InstOwn* variable as well.

4.2.3 Control Variables

This study also incorporates a set of control variables to account for potential firm-specific factors that may be associated with climate-related disclosures. The selection of control variables is inspired by Bose et al. (2023) and Paananen et al. (2021) and is expected to help isolate the effects of the dependent variables. First, market value (*MV_In*) and market capitalization categories (*NasdaqList*) are used as proxies for firm size. Additionally, we control for the effects of profitability measured through return on assets (*ROA*), leverage indicated by the debt-to-asset ratio (*Lev*), the firms' growth opportunities as measured by the

book-to-market ratio (*BtM*), and age defined as the number of years since registration (*Age_In*). Besides the variables inspired by previous research, we have also included the variables *ESRS* and *ESRSE1* as proxies for ambition and early alignment with the upcoming enforcement of ESRS. They are divided into two separate variables because firms referring to ESRS indicate alignment with broader sustainability reporting, while ESRS E1 is more limited and focuses specifically on climate-related disclosures. The data for all control variables, with the exception of *NasdaqList*, *ESRS* and *ESRSE1*, were obtained from Capital IQ. The categorization for *NasdaqList* was retrieved from the official Nasdaq website (Nasdaq, n.d.), while *ESRS* and *ESRSE1* were generated by conducting keyword searches on the respective terms within NVivo. Table 3 summarizes all variables and their definitions.

Table 3: Variable definitions

Variables	Description
<i>Dependent Variables</i>	
ClimateFS	A dummy variable that is assigned the value of “1” if any of the selected climate-specific words are mentioned in the financial statements, and “0” otherwise. Used to measure if the company is providing specific climate disclosures in the financial statement. [NVivo]
ClimateBroadFS	A dummy variable that is assigned the value of “1” if any of the broader climate-related words are mentioned in the financial statements, and “0” otherwise. Used to measure if the company is providing broader climate-related disclosures in the financial statement. [NVivo]
<i>Independent Variables</i>	
ClimateFE_Cov	A continuous variable representing the share of the total content in the front-end that contains any of the selected climate-related words. Used to quantify the extent of climate-related disclosures in the front-end of the annual report. [NVivo]
ClimateFE_Ref_In	A continuous variable that captures the number of times any of the selected climate-related words are mentioned in the front-end of the annual report. [NVivo]
InstOwn	A continuous variable that is assigned a value between 0 and 100% depending on the share of institutional owners on the corporate board. [Capital IQ]
<i>Control Variables</i>	
MV_In	The natural logarithm of market value. Used as a proxy for firm size. [Capital IQ]
ROA	Return on assets (Net income/Total assets). Used as a proxy for profitability. [Capital IQ]
Lev	Measured through debt-to-asset ratio (Total liabilities)/Total assets. Used as a proxy for leverage. [Capital IQ, manually calculated]
BtM	Book-to-market ratio: Common equity/market value. Used as a proxy for firm growth. [Capital IQ, manually calculated]
Age_In	The natural logarithm of the number of years since the company’s establishment, as recorded in the Capital IQ. [Capital IQ, manually calculated]
NasdaqList	A categorical variable indicating the market capitalization category of the company, either small-cap, mid-cap, or large-cap. [Nasdaq, n.d.]
ESRS	A dummy variable that is assigned the value “1” if the company refers to ESRS in their annual report, and otherwise “0”. [NVivo]
ESRSE1	A dummy variable that is assigned the value “1” if the company refers to ESRS E1 in their annual report, and otherwise “0” [NVivo]

Note: This table provides the definitions for all variables. For the variables constructed in NVivo, see the complete lists of search terms in Appendix 2.

4.3 Probability Model

To test the hypotheses, we regress the dependent variables for climate-related disclosures in the financial statements on the relevant independent variable while controlling for other factors that may affect the disclosures in the financial statements. Given that both dependent variables are binary, logit models are suitable to estimate the probability of climate-related disclosures. We investigate these associations by using the following logit models:

$$P(FS_{it}=1) = \Lambda(\beta_0 + \beta_1 FE_{it} + \beta_2 Size_{it} + \beta_3 ROA_{it} + \beta_4 Lev_{it} + \beta_5 BtM_{it} + \beta_6 ESRS_{it} + \beta_7 ESRSE1_{it} + \beta_8 Age_ln_{it} + e_{it}) \quad (1)$$

$$P(FS_{it}=1) = \Lambda(\beta_0 + \beta_1 InstOwn_{it} + \beta_2 MV_ln_{it} + \beta_3 ROA_{it} + \beta_4 Lev_{it} + \beta_5 BtM_{it} + \beta_6 ESRS_{it} + \beta_7 ESRSE1_{it} + \beta_8 Age_ln_{it} + e_{it}) \quad (2)$$

Where i refers to the firm, t to time and Λ represents the logit function.

In the first logit model testing H1, FS corresponds to *ClimateFS* in the main model and *ClimateBroadFS* in the alternative model. Similarly, FE refers to *ClimateFE_Cov* in the main model, while *ClimateFE_Ref_In* serves as an alternative measure. $Size$ is proxied using either *MV_In* or *NasdaqList*, where the former is included in the main model and the latter in an alternative model. In the second logit model testing H2, FS is again represented by either the main dependent variable *ClimateFS* or *ClimateBroadFS*. FE is replaced by the main independent variable of interest for H2, *InstOwn*, which captures the proportion of institutional ownership. Both models also control for profitability (ROA), leverage (debt-to-asset ratio), firm growth (book-to-market ratio), age and whether the firms refer to ESRS or ESRS E1 in their annual reports. See Table 3 for detailed variable definitions.

4.4 Robustness and Model Validity

To ensure the robustness and reliability of the model, several methodological considerations have been addressed. One important concern is the potential for reverse causality, which occurs when the direction of a relationship between variables is the opposite of what is assumed. For instance, rather than the independent variable influencing the dependent variable, the dependent variable may instead influence the independent variable. This problem can lead to incorrect conclusions about the true relationship between the variables. For the first hypothesis, reverse causality is not considered a significant issue, as it aims to investigate whether there is an association between the extent of climate-related information in the front-end and the disclosures in the financial statements. This hypothesis is formulated

to assess association rather than establish causality claims. The second hypothesis explores the relationship between institutional ownership and climate-related disclosures in financial statements, implying that it does explore a directional effect. Despite this, reverse causality is not considered a major concern as it is less likely that climate-related disclosures in the financial statements influence the ownership structure. Consequently, the risk of reverse causality is limited for both hypotheses.

Another important consideration is the issue of endogeneity. Endogeneity occurs when an independent variable is correlated with the error term, leading to biased estimates. This is a common problem in accounting research, particularly when examining corporate governance factors (Roberts & Whited, 2013). While it is possible to address problems with endogeneity, it is especially complex to implement such methods in non-linear models like logit with binary dependent variables compared to linear models (Avery, 2005). One way to try to reduce the problem of endogeneity is by applying a fixed effects logit model⁸. The results show that the main independent variables of interest, *ClimateFE_Cov* and *InstOwn*, remain statistically significant. Although these findings strengthen the robustness of the findings in this study and address endogeneity to some extent, they do not eliminate all problems. Consequently, the results should be interpreted with caution.

Additionally, several decisions have been made to enhance the models' validity and ensure their robustness. Firstly, we ran the logit models with robust standard errors to account for potential heteroskedasticity and provide more reliable coefficient estimates. In addition to running the above fixed effect model, we also controlled for industry and year fixed effects in all logit models in the results section, to account for unobserved heterogeneity across different time and sector periods. Controlling for industry fixed effects slightly reduced the number of observations, as some industries exhibit no within-group variation. To further test the robustness of our results, we complemented the main models with additional models using alternative proxies (see sections 6.1.1 and 6.2.1). This approach allows us to assess whether our findings are consistent across different proxies or are sensitive to specific variable choices. Using alternative proxies is also motivated by the fact that there is no well-established measure of connectivity. In relation to H1, we therefore simplify the relationship by examining the presence of climate-related disclosures in the financial statements and comparing them with the extent of climate information presented in the

⁸ This refers to the use of the `xtlogit` command in Stata.

front-end. This is tested using two different measures for both the front and the back-end. Although these measures do not explicitly measure connectivity, their association can provide initial indications of alignment between the two sections of the annual report. This approach also aligns with previous studies in the field that have explored connectivity (Lundqvist et al., 2023; 2024; Müller et al., 2024; Agrawal et al., 2025). For H2, we apply the same alternative proxies used for the financial statements in H1.

Moreover, an important validity note is that the results and discussion section includes some interpretations based on relationships that are statistically significant at the 10% level. While the conventional standard is to analyze and interpret only those variables with statistically significant relationships at the 5% level or below, we have chosen to extend this threshold due to the relatively small sample size in this study. The small sample limits the statistical power of the results and using a 10% significance level allows us to capture potentially meaningful relationships that might otherwise be overlooked. While this approach can help to provide valuable insights, it also introduces a higher risk of Type I error, where the null hypothesis is incorrectly rejected. Although a 10% significance threshold is still commonly accepted (Brooks, 2019), we advise that these findings should be interpreted with caution.

4.4.1 Data Cleaning

To ensure high data quality and robustness, the sample was carefully reviewed and cleaned prior to analysis. Table 4 presents the summary statistics for the original, unprocessed variables. Starting with *Mktcap*, there is a significant difference between the mean (29,500) and the median (4,709), indicating a right-skewed distribution. This is further supported by the skewness value of 5.489, which indicates a strong positive skew. Similar patterns are observed for *ClimateFE_Ref* and *Age*, which also show large gaps between mean and median, as well as high positive skewness values. Based on these distributional traits, the variables *Mktcap*, *ClimateFE_Ref* and *Age* were transformed into their natural logarithms to reduce skewness and enhance model fit. Although *ROA* also shows strong skewness of -3.67, it contains negative values, which makes log transformation inappropriate.

Several variables also exhibit extreme outliers, which can distort the mean and reduce the statistical accuracy. For instance, *ROA* exhibits a large gap between its 1st percentile (-62.3%) and minimum value (-128.2%), indicating extreme values. The high kurtosis value of 24.473 further indicates a leptokurtic distribution, characterized by its heavy tails and a

high peak, which implies a higher presence of extreme values compared to a normal distribution. Similar characteristics are found in other variables, with strong deviations and high kurtosis values in *Lev* and *BtM*, and more moderate levels for *ClimateFE_Cov* and *InstOwn*. In response to the presence of outliers, all five variables were winsorized on the 1st and 99th percentiles. Winsorizing continuous variables is an accepted method in research, as demonstrated by studies such as Paananen et al. (2021) and Dhaliwal et al. (2014). Following this data cleaning process, all subsequent tables in this report are presented with winsorized and transformed variables. A new version of the summary statistics is presented in Table 6.

Table 4: Summary statistics before data cleaning

Criteria	N	Mean	Median	SD	Min	Max	1st Perc.	99th Perc.	Skew.	Kurt.
ClimateFS	630	0.227	0.000	0.419	0	1	0	1	1.304	2.699
ClimateBroadFS	630	0.411	0.000	0.492	0	1	0	1	0.361	1.131
ClimateFE_Cov	630	0.014	0.013	0.011	0	0.046	0	0.041	0.592	2.596
ClimateFE_Ref	630	113.944	78.500	117.875	0	715	0	516	1.703	6.566
InstOwn	630	0.461	0.467	0.227	0.007	0.969	0.019	0.922	0.004	2.150
Mktcap	630	29500.296	4709.499	76782.759	40.985	808050.250	89.122	337674.720	5.489	43.186
ROA	630	0.007	0.032	0.152	-1.282	0.740	-0.623	0.197	-3.670	24.473
Lev	630	0.508	0.524	0.239	0.001	2.252	0.002	1.055	0.706	8.044
BtM	630	0.771	0.588	0.701	-2.676	4.817	-0.085	2.925	1.535	8.551
Age	630	58.160	37.000	52.52	2	415	5	213	2.305	11.966
ESRS	630	0.519	1.000	0.500	0	1	0	1	-0.076	1.006
ESRSE1	630	0.122	0.000	0.328	0	1	0	1	2.307	6.321

Note: This table presents the summary statistics for all variables before data cleaning and transformations. See Table 3 for variable definitions. * $p < 0.05$

4.4.2 Multicollinearity

The Pearson correlation matrix is used to detect multicollinearity, where a coefficient above 0.5 may warrant attention. The correlation matrix in Table 5 shows the pairwise correlations between the transformed variables used in the main analysis. There is only one statistically significant pairwise correlation that slightly exceeds the limit, which is between *MV_In* and *ClimateFE_Cov* (0.501). Although some other correlations approach the threshold, no others exceed it, indicating that multicollinearity does not seem to be a major issue.

Table 5: Pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) ClimateFS	1.000									
(2) ClimateFE_Cov	0.283*	1.000								
(3) InstOwn	0.072	0.229*	1.000							
(4) Mktcap	0.353*	0.501*	0.358*	1.000						
(5) ROA	0.083*	0.303*	0.174*	0.455*	1.000					
(6) Lev	0.091*	0.178*	0.056	0.053	-0.011	1.000				
(7) BtM	-0.087*	0.009	-0.224*	-0.310*	-0.039	-0.062	1.000			
(8) Age	0.246*	0.372*	0.148*	0.427*	0.249*	0.123*	-0.112*	1.000		
(9) ESRS	0.112*	0.411*	0.213*	0.389*	0.241*	0.158*	-0.019	0.163*	1.000	
(10) ESRSE1	0.029	0.325*	0.105*	0.216*	0.104*	0.074	-0.038	0.018	0.359*	1.000

Note: This table presents the correlations for the variables in the main models. See Table 3 for variable definitions. * $p < 0.05$

In addition to the pairwise correlation presented in Table 5, a correlation matrix was also created for all variables, including the proxies used as robustness checks. As displayed in Appendix 4, there are high and significant correlations between several of the proxies, which is anticipated as they are intended to measure similar aspects. For instance, both proxies for climate-related disclosures in the financial statements, *ClimateFS* and *ClimateBroadFS*, are highly correlated and statistically significant (p-value<0.05). Similarly, *ClimateFE_Cov* and *ClimateFE_Ref* show strong correlations, which is positive given that they both aim to capture the extent to which companies discuss climate-related information in the front-end.

Given that the correlation between *MV_In* and *ClimateFE_Cov* exceeds the limit, the pairwise correlation matrix is complemented with the variance inflation factor (VIF) to further assess potential issues with multicollinearity. As displayed in Appendix 4, none of the VIF values exceeds the most commonly used threshold of 10 (O'Brien, 2007). The average VIF value is 1.4 for the main model testing H1 and 1.3 for the main model testing H2. Additionally, the highest observed VIF value across both models is 2.02 for *MV_In*, which is still well below the threshold. According to the VIF values, multicollinearity does not seem to be a major issue. Based on the VIF values and market value being an essential and commonly used control variable in studies examining climate disclosure, *MV_In* was retained in the main models despite its relatively high pairwise correlation.

5. Descriptive Statistics

In accordance with Müller et al. (2024) and Breuer and deHaan (2023), we take a more explanatory approach aimed at explaining the underlying patterns in the data. Given that climate-related disclosures in financial statements constitute a relatively new phenomenon, this approach enables us to provide insights that can inform future research. Starting with Table 6, it presents the summary statistics for all variables after winsorization and logarithmic transformation. The mean values of 0.227 and 0.411 for the dummy variables *ClimateFS* and *ClimateBroadFS* indicate that 22.7% of the firms include climate-specific disclosures, while 41.1% include disclosures related to broader climate aspects in their financial statements. As expected, the broader search list of climate words appears more in the financial statements than the more specific terms. The coverage of climate-related words in the front-end of the annual reports shows a mean of 1.4%, indicating that, on average, 1.4% of the content in this part of the annual report pertains to climate-related aspects. The standard error is relatively low at 1%, suggesting limited variation across firms. Furthermore, the variable *InstOwn* shows a mean of 0.461, suggesting that institutional investors, on average, account for 46.1% of the total ownership in the sampled firms. The ESRS framework is mentioned by 51.9% of firms, compared to only 12.2% for the more specific climate-focused standard ESRS E1.

Table 6: Summary statistics

	N	Mean	Median	SD	Min	Max
ClimateFS	630	0.227	0.000	0.419	0	1
ClimateBroadFS	630	0.411	0.000	0.492	0	1
ClimateFE_Cov	630	0.014	0.013	0.010	0	0.041
ClimateFE_Ref_In	630	4.053	4.376	1.436	0	6.574
InstOwn	630	0.461	0.467	0.226	0.019	0.922
MV_In	630	8.495	8.457	1.984	3.713	13.602
ROA	630	0.009	0.032	0.130	-0.623	0.197
Lev	630	0.504	0.524	0.222	0.002	1.055
BtM	630	0.766	0.588	0.638	-0.085	2.925
Age_In	630	3.714	3.611	0.856	0.693	6.028
ESRS	630	0.519	1.000	0.500	0	1
ESRSE1	630	0.122	0.000	0.328	0	1

Note: This table presents the summary statistics for all variables. See Table 3 for variable definitions.

Table 7 presents the summary statistics by year. One notable trend is the growing focus on climate in annual reports, reflected in the increased use of both specific and broader climate-related terminology, as well as the growing adoption of ESRS and ESRS E1. Starting with *ClimateFS* and *ClimateBroadFS*, the proportion of firms including specific and broader climate-related terms in their financial statements increased from 21% to 24.4% and from 39.7% to 42.5%, respectively. This reflects a modest increase in the number of firms incorporating both climate information into their financial statements. A similar trend was

also observed by Lundqvist et al. (2023; 2024), who found that 16.8% of the sample mentioned climate in the financial statements in the 2022 annual reports, which increased to 33% in the 2023 annual reports. This upward trend is also evident in *ClimateFE_Cov*, where the average share of climate-related words in the front-end of annual reports rose from 1.3% in 2023 to 1.5% in 2024. Additionally, we investigated the share of firms that did not mention any of the selected climate-related terms in the front-end, corresponding to a coverage of 0%. This test showed that 9 of 315 (2.85%) firms each year did not provide such information, indicating that 97.15% of the firms included some climate information in the front-end.

More notable changes are seen in the *ESRS* and *ESRSEI* variables. Mentions of ESRS rose from 39.7% in 2023 to 64.1% in 2024, a 61.46% increase, while the mention of the climate-specific ESRS E1 standard grew sharply from 4.8% to 39.8%, representing a remarkable 729% increase. These large increases suggest that the sample companies are preparing for the upcoming implementation of the CSRD and its accompanying ESRS by proactively aligning their reporting and referencing these in their annual reports.

Table 7: Summary statistics per year

	N	2023				2024			
		Mean	SD	Min	Max	Mean	SD	Min	Max
ClimateFS	315	0.21	0.408	0	1	0.244	0.430	0	1
ClimateBroadFS	315	0.397	0.490	0	1	0.425	0.495	0	1
ClimateFE_Cov	315	0.013	0.010	0	0.041	0.015	0.011	0	0.041
ClimateFE_Ref_In	315	102.603	100.387	0	516	123.108	124.295	0	516
InstOwn	315	0.471	0.231	0.019	0.922	0.451	0.221	0.019	0.922
ESRS	315	0.397	0.490	0	1	0.641	0.480	0	1
ESRSEI	315	0.048	0.213	0	1	0.197	0.398	0	1

Note: This table presents the summary statistics per year for selected variables. See Table 3 for variable definitions.

Table 8 shows a relatively well-balanced distribution between the market capitalization categories, where large-cap accounts for 33.02% of the sample, corresponding to 208 observations and 104 unique firms. The mid-cap segment accounts for 36.51%, whereas the small-cap segment represents 30.48% of the sample. In the sample containing observations from both years, companies in the large-cap segment have the highest mean values for both *ClimateFS* (41.3%) and *ClimateFE_Cov* (2%), indicating that these firms, on average, disclose more climate-specific terms in their financial statements and provide a larger share of climate-related information in the front-end of annual reports. In comparison, an average of 14.8% of the companies in the mid-cap segment and 12% in the small-cap segment use climate-specific terms in their financial statements. Their average coverage of climate-related information in the front-end is 1.4% and 0.8%, respectively. From 2023 to 2024, the average values for both *ClimateFS*, *ClimateBroadFS* and *ClimateFE_Cov* have increased for all

segments, except *ClimateBroadFS* for the large-cap segment and *ClimateFE_Cov* for the small-cap segment, which remained at the same levels for both years. This suggests an overall growing trend in climate-related disclosures in both sections of the annual reports across all market capitalization categories, although the large-cap segment remains at the forefront. This is consistent with the large-cap segment being the first group to be subject to the CSRD, which imposes stricter disclosure requirements for climate-related information.

Table 8: Market capitalization category statistics

Industry	No. of Obs.	Percent	ClimateFS	ClimateBoardFS	ClimateFE_Cov
<u>Both years</u>					
Large Cap	208	33.02	0.413	0.654	0.020
Mid Cap	230	36.51	0.148	0.365	0.014
Small Cap	192	30.48	0.120	0.203	0.008
Total	630	100.00	0.227	0.411	0.014
<u>2023</u>					
Large Cap	104	33.02	0.385	0.654	0.019
Mid Cap	115	36.51	0.139	0.339	0.014
Small Cap	96	30.48	0.104	0.188	0.008
Total	315	100.00	0.210	0.397	0.013
<u>2024</u>					
Large Cap	104	33.02	0.442	0.654	0.022
Mid Cap	115	36.51	0.157	0.391	0.015
Small Cap	96	30.48	0.135	0.219	0.008
Total	315	100.00	0.244	0.425	0.015

Note: This table shows the distribution of observations by market capitalization for 2023, 2024 and both years combined, along with category-level means for *ClimateFS*, *ClimateBroadFS* & *ClimateFE_Cov*. See Table 3 for variable definitions.

A comparison of the 2023 results in this study with those reported by Lundqvist et al. (2024) shows that they found a higher percentage of firms mentioning climate in financial statements than in this study, 33% compared to 21%. This discrepancy may be explained by the different samples, where their sample consists of 95 firms listed on the Nasdaq Stockholm large-cap segment, whereas our sample consists of 315 firms across the small, mid and large-cap segments. When examining only the large-cap firms in our sample, 38.5% provide climate-specific disclosures in the financial statements, which is similar to the 33% observed by Lundqvist et al. (2024). The small variation may be due to methodological differences, where our automated process may have introduced a minor error or captured additional content not identified in their manual review. Lundqvist et al. (2024) also expanded their search terms to include “climate”, “sustainability”, “emissions”, “environment”, and “ESG”, and found that 65.26% mention at least one of these words. This is comparable to our *ClimateBroadFS*, which uses similar but more detailed search words. In our full sample, 39.7% mentioned at least one of these terms, which is lower than Lundqvist et al. (2024). Beyond the sample differences, this may be due to our decision to remove “sustainability”

from the measure, as this was noisy and would have inflated the results in the automated search process. For the large-cap sample, the share mentioning at least one of the specified words increases to 65.4%, which is just slightly higher than for Lundqvist et al. (2024).

Table 9 displays the industry distribution in the sample, along with the mean values for *ClimateFS*, *ClimateBroadFS* and *ClimateFE_Cov*. The sample consists of 10 industries, with Industrials holding the largest share at 27.94%, corresponding to 176 observations and 88 unique firms. Companies in the Materials (39.3%) and Industrials (33.5%) industries have the highest mean values for *ClimateFS*, meaning that they tend to mention climate-specific words more frequently in their financial statements on average. This aligns with Lundqvist et al. (2024), who found that firms in Raw Materials and Industrials are among the top industries with the highest occurrence of climate-specific words in the financial statements. Moreover, the three industries with the highest average for *ClimateBroadFS*, Consumer Staples (83.3%), Materials (71.4%) and Industrials (57.4%), are also consistent with Lundqvist et al. (2024), who found that the same industries have the highest frequency of mentioning broader climate-related terms. A potential explanation for these industries exhibiting the highest average values may be offered by Müller et al. (2024), who observed that firms in industries with high emissions and exposure to climate change, such as steel and cement, tend to provide more climate disclosures. This aligns well with the categorization used in this study, as the steel and cement industry referenced by Müller et al. (2024) is typically captured under the Materials sector. Similar to *ClimateFS*, the Materials industry also exhibits the highest average value for *ClimateFE_Cov*. Its mean value indicates that on average, 2.5% of the content in the front-end of the annual report includes climate-related terms.

Table 9: Industry statistics

Industry	No. of Obs.	Percent	ClimateFS	ClimateBoardFS	ClimateFE_Cov
Communication Services	30	4.76	0.133	0.333	0.011
Consumer Discretionary	64	10.16	0.219	0.438	0.016
Consumer Staples	12	1.90	0.250	0.833	0.023
Energy	2	0.32	0	0.500	0.007
Financials	58	9.21	0.276	0.345	0.010
Health Care	108	17.14	0.157	0.204	0.006
Industrials	176	27.94	0.335	0.574	0.018
Information Technology	80	12.70	0.125	0.275	0.012
Materials	28	4.44	0.393	0.714	0.025
Real Estate	68	10.79	0.132	0.324	0.017
Utilities	4	0.63	0	0.750	0.018
Total	630	100.00	0.227	0.411	0.014

Note: This table shows the distribution of observations per industry, along with the industry-level means for *ClimateFS*, *ClimateBroadFS* & *ClimateFE_Cov*. See Table 3 for variable definitions.

6. Results

6.1 Results Hypothesis 1

We test the first hypothesis by estimating a logit model for the dependent variable *ClimateFS* using the independent variable *ClimateFE_Cov* and control variables in the main model. The results are presented in Table 10, where the main model shows that *ClimateFS* has a positive and statistically significant association (p-value<0.01) with *ClimateFE_Cov*. The coefficient using marginal effects is 5.501, meaning that a one percentage point increase in the coverage of climate-related terms in the front-end of the annual report is associated with a 5.501 percentage point increase in the probability that a firm provides climate-related disclosures in its financial statements. This result therefore provides support for H1.

Turning to the control variables, we find that the financial indicators *MV_In* and *Lev* are statistically significant (p-value<0.01 and p-value<0.05, respectively) and positively associated with *ClimateFS*. This suggests that larger firms and firms with higher leverage have a higher probability of including climate disclosures in their financial statements. In contrast, *ROA* has a negative statistical association (p-value<0.10), indicating that more profitable firms are less likely to include climate disclosures in their financial statements. Moreover, we find that *ESRSEI* is statistically significant in its association with *ClimateFS*, while *ESRS* is not. Interestingly, the association with *ESRSEI* is negative, suggesting that firms referring to ESRS E1 are less likely to include climate-related disclosures in their financial statements. This negative association may reflect a possible substitution effect, where firms disclosing climate information under ESRS E1 perceive less need to replicate such disclosures in their financial statements. The lack of significance for *ESRS* may be due to its broader scope, in contrast to *ESRSEI*, which is more narrowly focused on climate issues and therefore more directly aligned with *ClimateFS*.

Table 10: Test of H1 - Association between front- and back-end climate disclosures

ClimateFS	Main Model H1	
	ME	z-value
ClimateFE_Cov	5.501***	2.97
MV_In	0.072***	6.59
ROA	-0.298*	-1.76
Lev	0.154**	2.20
BtM	0.044	1.41
Age_In	-0.001	-0.02
ESRS	-0.048	-1.39
ESRSE1	-0.103**	-2.19
Year fixed effects	Yes	
Industry fixed effects	Yes	
Pseudo R-squared	0.185	
N	624	

Note: This table presents the results from the logit regression for the main model testing H1. The model includes firm and year fixed effects. The marginal effects (ME) are based on Average Partial Effects (APE) and the z-values are based on robust standard errors. See Table 3 for variable definitions. *** p<0.01, ** p<0.05, * p<0.1

6.1.1 Alternative Measures Hypothesis 1

In this section, we assess the robustness of our main model by conducting additional analyses using alternative proxies for selected variables. This allows us to test whether the results are sensitive to specific variable choices or remain consistent across different estimations.

Table 11 presents two robustness checks using alternative proxies for the independent variable, *ClimateFE_Cov*, and the control variable *MV_In* used in the main model. In model 1, *ClimateFE_Cov* is replaced with *ClimateFE_Ref*, and the result remains largely consistent with the main model. *ClimateFE_Ref* remains statistically significant (p-value<0.01) and positively associated with *ClimateFS*, suggesting that the relationship with climate-related disclosures in the financial statements is robust even when climate-related information in the front-end is measured by word count rather than coverage. Regarding the control variables, *MV_In*, *ROA*, and *ESRSE1* remain statistically significant (p-value<0.05) while *Lev* loses its statistical significance. Another interesting observation is that the pseudo R-squared of model 1 improves slightly to 0.188 from 0.185 in the main model. Although the improvement is modest, it indicates that model 1 explains the variation in *ClimateFS* more effectively and offers a relatively better model fit. However, *ClimateFE_Cov* is considered a better proxy than *ClimateFE_Ref* as it provides a more faithful representation of the extent of climate-related information in the front-end, which is the factor the variable aims to capture. Therefore, the slightly improved fit for model 1 is not considered a major concern.

Model 2 uses another proxy for firm size by replacing *MV_ln* with the categorical variable *NasdaqList*. As shown in Table 11, the results for this model continue to support the finding that firm size is statistically associated with the likelihood of disclosing climate-related information in the financial statements. However, the findings reveal notable differences across listing categories. Using large-cap as the reference category, the model shows a statistically significant negative association for both mid-cap (p-value<0.01) and small-cap (p-value<0.05) firms. Specifically, firms listed on the mid-cap segment are 20.4 percentage points less likely to disclose climate-related information compared to large-cap firms, while the probability is 22.0 percentage points lower for small-cap firms. In other words, firms listed on the large-cap segment are more likely to include climate-related disclosures in their financial statements. These findings suggest that the Nasdaq listing category serves as a meaningful predictor of climate disclosure behavior, thereby reinforcing the view that larger firms are more inclined to provide such disclosures. This is also consistent with the fact that large-cap companies are the first to fall under the new CSRD regulation and are therefore expected to begin aligning their reporting practices earlier than other segments. In addition, the model continues to show that *ClimateFE_Cov*, *Lev*, and *ESRSE1* are statistically associated with *ClimateFS* (p-value<0.01, p-value<0.05 and p-value<0.1, respectively).

Table 11: Alternative test 1 of H1 - Association between front- and back-end climate disclosures

ClimateFS	Model 1: ClimateFE_Ref		Model 2: NasdaqList	
	ME	z-value	ME	z-value
ClimateFE_Ref_ln	0.062***	3.09		
ClimateFE_Cov			6.803***	3.65
MV_ln	0.063***	5.31		
ROA	-0.376**	-2.27	-0.091	-0.54
Lev	0.107	1.46	0.147**	2.10
BtM	0.035	1.10	0.003	0.10
Age_ln	0.000	0.02	0.018	0.77
ESRS	-0.059	-1.62	-0.033	-0.90
ESRSE1	-0.094**	-2.10	-0.085*	-1.72
Year fixed effects	Yes		Yes	
Industry fixed effects	Yes		Yes	
Nasdaq List: base Large Cap				
Mid Cap			-0.204***	-4.06
Small Cap			-0.220***	-3.44
Pseudo R-squared	0.188		0.158	
N	624		624	

Note: This table presents the results from the logit regressions using alternative measures for testing H1. Model 1 replaces the main independent variable *ClimateFE_Cov* with *ClimateFE_Ref*, while model 2 uses *NasdaqList* as an alternative measure for firm size. The models include firm and year fixed effects. The marginal effects (ME) are based on Average Partial Effects (APE) and the z-values are based on robust standard errors. See Table 3 for variable definitions. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

The final robustness test for H1 replaces the main dependent variable, *ClimateFS*, with the alternative variable *ClimateBroadFS*. The results are presented in Table 12 and show that *ClimateFE_Cov* continues to remain positively associated and statistically significant. Notably, its marginal effect in this model is highest across all the models at 7.468. This suggests that there is a slightly stronger association between *ClimateBroadFS* and *ClimateFE_Cov* than between *ClimateFS* and *ClimateFE_Cov*. Overall, this robustness test further strengthens the main conclusion that there is a meaningful association between climate-related information in the front-end of annual reports and corresponding disclosures in the financial statements. In addition, it demonstrates that the relationship is not limited to specific climate words but also extends to a wider range of climate topics.

Table 12: Alternative test 2 of H1 - Association between front- and back-end climate disclosures

ClimateBroadFS	Model 3: ClimateBroadFS	
	ME	z-value
ClimateFE_Cov	7.468***	3.44
MV_In	0.056***	4.45
ROA	-0.216	-1.17
Lev	0.018	0.23
BtM	-0.039	-1.13
Age_In	0.055**	2.38
ESRS	0.028	0.72
ESRSE1	-0.052	-0.90
Year fixed effects	Yes	
Industry fixed effects	Yes	
Pseudo R-squared	0.213	
N	630	

Note: This table presents the results from the logit regression for model 3, where H1 is tested using *ClimateBroadFS* as an alternative measure for the dependent variable *ClimateFS*. The model includes firm and year fixed effects. The marginal effects (ME) are based on Average Partial Effects (APE) and the z-values are based on robust standard errors. See Table 3 for variable definitions. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Overall, the consistency across all models highlights the robustness of the main findings. Models 1 and 2 support the initial results, demonstrating that climate-related information presented in the front-end of annual reports is positively associated with climate disclosures in the financial statements. Model 3 further extends this relationship by showing that the association also holds for broader climate disclosures in the financial statements. These additional analyses continue to support H1.

6.2 Results Hypothesis 2

The second hypothesis is tested by estimating a logit model for the dependent variable *ClimateFS* using the independent variable *InstOwn* and the specified control variables. The result for the main model is presented in Table 13 and shows that there is a negative and statistically significant relationship (p-value<0.01) between *InstOwn* and *ClimateFS*. The marginal effect indicates that firms with a one percentage point higher proportion of institutional ownership are 0.22 percentage points less likely to provide climate disclosures in the financial statements. This provides support for H2 that there is an association between institutional investors and climate disclosures. Extending beyond the formulated hypothesis, the results also suggest that a higher share of institutional ownership is associated with a lower level of climate disclosures in the financial statements. In addition, there are three control variables exhibiting a statistically significant association: *MV_ln* (p-value<0.01), *ROA* (p-value<0.1) and *ESRSE1* (p-value<0.1). *Mv_ln* has a positive association with *ClimateFS*, whereas *ROA* and *ESRSE1* have negative associations.

Table 13: Test of H2 - Association between institutional ownership and back-end climate disclosures

ClimateFS	Main Model H2	
	ME	z-value
InstOwn	-0.224***	-2.62
MV_ln	0.091***	8.78
ROA	-0.266*	-1.70
Lev	0.117	1.45
BtM	0.037	1.17
Age_ln	0.005	0.21
ESRS	-0.015	-0.44
ESRSE1	-0.080*	-1.68
Year fixed effects	Yes	
Industry fixed effects	Yes	
Pseudo R-squared	0.186	
N	566	

Note: This table presents the results from the logit regression for the main model testing H2. The model includes firm and year fixed effects. The marginal effects (ME) are based on Average Partial Effects (APE) and the z-values are based on robust standard errors. See Table 3 for variable definitions. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

6.2.1 Alternative Measures Hypothesis 2

To test whether the association holds across different proxies for climate disclosures in the financial statements, we re-estimate the model testing H2 using *ClimateBroadFS* as an alternative measure for the dependent variable *ClimateFS*. In contrast to the results in the main model, the results presented in Table 14 show that *InstOwn* is not statistically significant. In other words, the share of institutional ownership is shown to be unrelated to broader climate disclosures. Consequently, this suggests that the previously observed significant association between specific climate terms and institutional ownership does not extend when a wider set of climate terminology is applied. Furthermore, the only control variables exhibiting positive statistically significant associations with *ClimateBroadFS* are *MV_In* (p-value<0.01) and *Age_In* (p-value<0.01).

Table 14: Alternative test of H2 - Association between institutional ownership and back-end climate disclosures

ClimateBroadFS	Model 4: ClimateBroadFS	
	ME	z-value
InstOwn	-0.084	-0.95
MV_In	0.074***	5.47
ROA	-0.175	-0.94
Lev	-0.010	-0.10
BtM	-0.032	-0.91
Age_In	0.065***	2.61
ESRS	0.059	1.41
ESRSE1	-0.017	-0.28
Year fixed effects	Yes	
Industry fixed effects	Yes	
Pseudo R-squared	0.201	
N	572	

Note: This table presents the results from the logit regression for model 4, where H2 is tested using *ClimateBroadFS* as an alternative measure for the dependent variable *ClimateFS*. The model includes firm and year fixed effects. The marginal effects (ME) are based on Average Partial Effects (APE) and the z-values are based on robust standard errors. See Table 3 for variable definitions. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Overall, the results of both models provide partial support for H2, which suggests an association between institutional investors and climate disclosures in financial statements. While the main model supports H2 and shows a negative and statistically significant relationship between *InstOwn* and *ClimateFS*, this does not hold for model 4 when *ClimateBroadFS* is used as an alternative and broader measure of climate disclosures in the financial statements. Given that the results are not consistent across model specifications, the findings may be sensitive to specific variable choices. This limits the robustness of the results, indicating that they should be interpreted with caution.

7. Discussion

7.1 Hypothesis 1

The first hypothesis of this study is: *The extent of climate-related information in the front-end is positively associated with providing climate disclosures in the financial statements.* The main model findings, as presented in Table 10, indicate a positive and statistically significant association between climate disclosures in the financial statements (*ClimateFS*) and the climate-related coverage in the front-end of the annual report (*ClimateFE_Cov*). These results provide support for H1, suggesting that firms that disclose more climate-related information in the front section of their reports are indeed more likely to include climate disclosures in the financial statements. The robustness checks reveal that this association extends beyond climate-specific disclosures and also holds for broader climate disclosures in the financial statements (Model 3).

The results of this study are consistent with previous research. As discussed in the literature section, several studies have examined the extent of disclosures in the front- and back-end of annual reports, but few have directly tested the relationship between the two parts. Notably, Baboukardos et al. (2021b) and Müller et al. (2024) are two studies that specifically explore this connection, both finding a positive relationship. They concluded that firms presenting climate-related information in the front-end are more likely to discuss their financial impact in the financial statements. This alignment with the previous research strengthens the robustness and support for H1.

The observed positive association between front- and back-end climate disclosures suggests that firms with a greater emphasis on climate-related information in the front-end are more inclined to acknowledge the financial consequences of these issues in their financial statements. A key interpretation of this finding is that when firms extensively discuss climate-related risks, opportunities, strategies and targets in the front-end, it can be assumed these issues are material and strategically important for the operations. If these matters are indeed material, it logically follows that they would influence accounting estimates and judgments, and therefore should be reflected in the financial statements. Examples include assumptions used in impairment testing, decisions about the useful life of assets, or disclosures of significant estimation uncertainty. The association between the two ends of the annual report may also indicate stronger internal coordination between a firm's sustainability

and finance functions, which in turn can enhance the quality and efficiency of internal decision-making. Moreover, companies that place a greater emphasis on climate-related reporting appear to be more likely to ensure consistency between the information presented in the front- and back-end, thereby potentially strengthening their credibility and reducing the risk of being perceived as engaging in greenwashing. The observed positive association aligns with signaling theory, which posits that disclosing climate information across both sections of the annual report can signal a genuine commitment to climate issues and thereby build trust with investors. This is supported by Müller et al. (2024), who argue that extending climate disclosures into the financial statements enhances credibility as financial statements are subject to stricter regulation and are perceived as more reliable “hard” facts. Additionally, as Ching and Gerab (2017) and Paananen et al. (2021) argue, firms with strong environmental performance tend to disclose more verifiable information to investors. Thus, these findings collectively suggest that firms use climate disclosures across both sections of the annual report to signal credibility and reinforce the perception that climate issues are integrated into both their strategy and financial reporting.

Conversely, if a company discusses climate-related matters to a large extent in the front-end but omits them in the financial statements, it may raise concerns about greenwashing and a lack of internal alignment. Although this study does not directly examine connectivity, such inconsistencies could also be an indication of weak connectivity across the annual report. This discrepancy may warrant attention and further investigation as it can undermine the credibility of a firm’s overall climate reporting. One potential explanation for why not all companies provide climate disclosures in their financial statements, despite discussing it in the front-end of their annual report, can be found in the proprietary cost theory. This theory suggests that firms weigh the benefits of disclosing against potential costs, such as revealing sensitive information or increasing the exposure to litigation risk. As a result, they may choose to limit climate information in the financial statement if these costs are perceived to outweigh the benefits. The fact that climate disclosures involve trade-offs and costs is also reflected in the European Commission's (2025) Omnibus package, which highlights that enhanced sustainability reporting under the CSRD imposes a reporting burden and significant administrative costs. Although an increasing trend in providing climate-related disclosures in both the front- and back-end of annual reports is observed, consistent with signaling theory, some firms may want to limit such disclosures due to potential negative consequences. Another possible explanation for why not all firms choose to disclose climate-related

information in their financial statements is related to concerns about information overload. Firms may avoid duplicating information across sections of the annual report to maintain clarity and avoid diminishing the overall usefulness of their disclosures. Taken together, these factors may help explain why the sample firms exhibit varying levels of alignment between the front-end and the financial statements.

7.2 Hypothesis 2

The second hypothesis of this study is: *Institutional investors are associated with climate disclosures in financial statements*. The results from the main model in Table 13 show a negative and statistically significant association between institutional ownership (*InstOwn*) and climate-specific disclosures in the financial statements (*ClimateFS*). This result provides support for H2, suggesting that there is a relationship between the share of institutional owners and financial climate disclosures. However, the relationship becomes insignificant when replacing *ClimateFS* with *ClimateBroadFS*, indicating that there is not enough evidence in the data to support H2 when using broader climate terminology. As a result, there is only partial support for H2 and an existing association between institutional ownership and climate disclosures in financial statements.

As discussed in the literature review, previous research demonstrates inconsistent findings regarding the impact of institutional investors on climate disclosures. Similar discrepancies can be found in this study, as it provides only partial support for H2. The findings from the main model align with Liao et al. (2015), who observed a negative association between institutional ownership and climate risk disclosures, and Chen et al. (2024), who found a similar negative association with greenhouse gas emission disclosures. The negative relationship observed in our study challenges the view that institutional owners serve as effective monitors who encourage investee firms to provide additional disclosures. Instead, the result suggests a behavior that could contribute to increased information asymmetry and worsen the agency problem. This pattern aligns with the entrenchment hypothesis, which suggests that large and powerful stakeholders may utilize their position to prioritize self-interest (Duong et al., 2024). In this context, institutional investors may view transparency as a risk factor and thus seek to limit climate-related disclosures to avoid scrutiny and minimize the risk of sending negative signals to the market, potentially damaging the firm's reputation and market value. As a consequence, institutional investors may have incentives to discourage extensive climate disclosures to protect the value of their

holdings. Furthermore, Juhmani (2013) and Enninful-Adu et al. (2007) offer another potential explanation, suggesting that institutional investors with significant ownership stakes may gain direct access to management. Their direct access to private information may reduce their incentive to promote transparency through public disclosures, which can disadvantage minority shareholders who rely on such reporting. Conversely, the negative association observed in this study contradicts other studies like Cotter and Najah (2012) and Flammer et al. (2021), which find a positive relationship.

The result for model 4 aligns with Müller et al. (2024), who found no significant relationship between institutional ownership and climate-related disclosures in the financial statements of investee firms. The measure used in their study is similar to *ClimateBroadFS* in our model, as both are based on unigrams and bigrams covering broad climate-related terminology. This similarity further reinforces the finding that institutional ownership is not related to the inclusion of broader and less specific climate disclosures in financial statements. However, the significant result in the main model, which uses more specific climate words, may instead indicate that institutional investors are particularly interested in disclosures that reflect the financial implications of specific climate issues, as opposed to broader references to environmental or other general climate-related topics. One possible explanation for the lack of significance for the broader measure, as proposed by Müller et al. (2024), is that institutional investors may have a stronger preference for climate disclosures in sustainability reports rather than in financial statements. They may consider climate disclosures in sustainability reports as more familiar and relevant, which could reduce their incentive to push for corresponding disclosures in financial statements. Building on this reasoning, it can be argued that institutional investors are not broad or comprehensive in their demands, but rather more selective, focusing on the financial implications of particular types of climate disclosures. Another possible explanation is that institutional investors may place greater emphasis on specific climate disclosures because such information is considered more material and more closely aligned with risks that could impact firm value. Compared to broader environmental issues, specific disclosures may be viewed as posing greater portfolio risk to institutional owners and may therefore warrant more attention and prioritization in firms' disclosures. Moreover, such specific information may enable institutional investors to conduct more precise and comparable financial analyses, thereby supporting more informed investment decisions. Overall, these findings contribute to the ongoing debate and mixed empirical findings regarding the role of institutional investors in shaping climate disclosure.

8. Concluding Remarks

8.1 Conclusion

This study highlights the growing need for consistent reflection of climate disclosures between the financial statements and the front-end of annual reports. While climate information is commonly disclosed in the front-end, it continues to lag behind in the financial statements, suggesting a disconnect between the different sections of annual reports. This demand is driven by increased regulatory pressure, such as the introduction of frameworks like CSRD and the accompanying ESRS standards, but it is also influenced by expectations from investors, including institutional owners. Using a sample of Swedish companies listed on Nasdaq Stockholm across the large-, mid- and small-cap segments, we analyze their annual reports for the years 2023 and 2024. The results show that nearly all companies in the sample provide climate-related information in the front-end of their annual reports, but only 22.7% of the firms disclose climate information in their financial statements. This highlights a lack of integration between the two sections. Nonetheless, an upward trend is observed over the two years, with climate-specific disclosures rising from 21.0% in 2023 to 24.4% in 2024. Notably, there are significant variations across market segments, with large-cap companies providing the most disclosures.

We find consistent evidence of a positive association between climate-specific disclosures in the financial statements and climate-related disclosures in the front-end of the annual report. This indicates that firms disclosing climate-related information in the front-end of their annual reports are more likely to provide climate disclosures in the financial statements. Additionally, we find partial support for a negative and significant association between institutional ownership and climate disclosures in the financial statement, suggesting that institutional investors are interested in the financial implications of these disclosures. However, this association is only significant when using a dependent variable based on specific climate words and not when broader climate-related terminology is applied. This may indicate that institutional owners place more emphasis on narrow climate disclosures compared to broader references to environmental and climate-related topics. Consequently, more investigation is needed to draw more definitive conclusions about this relationship.

8.2 Contribution

The contribution of this study is twofold. First, it contributes to the limited body of research on climate-related disclosures in financial statements by offering new empirical evidence. Specifically, it builds on the academic work of Müller et al. (2024), Agrawal et al. (2025), and Aggarwal et al. (2022), who investigated the period 2017–2022, by offering updated evidence from the most recent reporting years (2023 and 2024) and extending the analysis to a Swedish context. This extension is particularly valuable given that, among the referenced studies, only Müller et al. (2024) employ statistical testing of the association, while the others rely solely on content analysis and survey-based methods. In relation to the practitioner-oriented study by Lundqvist et al. (2024), which also examined the Swedish setting, this study extends the scope by including an additional year and broadening the sample to cover not only large-cap firms but also small- and mid-cap companies.

Second, it contributes to the limited research on the role of institutional investors in shaping climate-related disclosures in financial statements. In relation to the existing study by Müller et al. (2024), this study provides more recent results by incorporating ownership data from 2023 and 2024. Moreover, in contrast to their insignificant findings, this study presents new, but partial, evidence suggesting that institutional ownership may be associated with climate-related disclosures. More specifically, the findings indicate that the association is negative, which contributes with new insights into how ownership structure may influence the extent of climate-related disclosures.

Additionally, it offers practical implications for policymakers by providing insights into the latest trends and ongoing challenges in climate-related disclosures. By comparing 2023 data with the most recent figures for 2024, this study supports previous studies covering earlier years and shows that climate-related disclosures in financial statements still remain low, with a significant gap between these disclosures and those presented in the front-end of the annual reports. At the same time, it also shows that the upward trend observed in earlier years continues in 2024, indicating that the development is moving in the right direction and that companies are gradually improving their climate-related disclosures. However, the upward trend remains relatively modest, highlighting a continued need for regulators to emphasize the importance of connectivity and to guide companies towards improving the integration of climate-related information into financial statements.

8.3 Limitations

This study is subject to some limitations. First, the relatively small sample size may reduce statistical power and lower the precision of the coefficient estimates, potentially distorting the conclusions. The decision to include only the years 2023 and 2024 was partly driven by the interest to capture the most recent trends, which are particularly relevant in the context of ongoing regulatory changes and recent sustainability reporting initiatives. The exclusion of earlier years was also influenced by the manual work required to accurately divide PDF files and review keyword hits, which was not feasible for additional years, given the time constraints of this thesis. Nevertheless, to strengthen the validity of our findings, we incorporated alternative measures to assess the robustness of the results.

Another limitation of this study is that the proxies used to measure climate-related disclosures are unable to distinguish between material and immaterial information. Capturing only the occurrence of climate-related words may overstate the actual integration between climate issues and their financial implications in the reporting. For instance, a company mentioning the word “climate” once in its financial statements does not necessarily imply that it explicitly addresses how climate-related issues affect the financial statements. This is mitigated by carefully reviewing the context where the climate-related terms are mentioned in the financial statements to exclude instances where they are unrelated to financial reporting. A related limitation is that the presence of climate-related words cannot be directly translated into qualitative disclosures. However, the aim of this study is not to measure the quality of the disclosures, but rather to investigate whether climate issues are acknowledged in the financial statements. This approach provides a useful starting point for identifying reporting patterns and aligns with existing research in the area, which has applied a similar methodology (Lundqvist et al., 2023; 2024; Müller et al., 2024; Agrawal et al., 2025).

Additionally, manually counting the search terms may have yielded a more precise result than the applied automated process, as NVivo might capture a word in an irrelevant context or fail to include a word relevant to the study. However, given the sample size and time constraints of this study, manually counting the hits in all annual reports was not feasible. Although NVivo may be less precise, it offers a uniform and scalable way to process a large volume of data quickly. Manual validation checks were also performed to mitigate the problems with the automated process, where the context of each hit was extracted and reviewed.

8.4 Suggestions for Future Research

Given that climate-related disclosures in financial statements are relatively unexplored, there exist significant opportunities for future research. One relevant suggestion is to investigate the quality of climate-related disclosures in the financial statements. Focusing on disclosure quality would move beyond the initial indications of connectivity in this study, thereby offering a deeper understanding of the concept by assessing whether firms provide firm-specific and actual decision-useful information or rely on generic and boilerplate language. Such a study could aim to distinguish between high and low quality climate disclosures in financial statements by applying a scoring system based on the specificity and clarity used to explain how climate-related matters discussed in the front-end affect the financial statements.

Another potential avenue for future research is to conduct a follow-up study after the enforcement of CSRD and its accompanying ESRS, as it constitutes one of the most significant regulatory changes in climate and sustainability reporting. This would enable a comparison between the preparatory and post-enforcement phases, which could offer insights into how firms adapt to new disclosure requirements and whether these have improved the integration of climate-related disclosures across the front- and back-end of annual reports.

In relation to our second hypothesis, an interesting topic for future research is to examine how firms with a higher degree of institutional ownership influence the extent, format, and location of climate-related disclosures across different sections of corporate reporting. Such studies could investigate whether institutional ownership affects not only the level of disclosure, but also how and where climate information is presented, such as in standalone sustainability reports, management reports or in financial statements. This could provide deeper insights into what institutional investors perceive as valuable and decision-useful disclosures, ultimately enhancing the understanding of their influence on climate disclosure practices.

References

- Aggarwal, Y., Maksimovic, D. & Van der Tas, L. (2022). Effects of climate change on financial statements of entities listed in the Netherlands. *Maandblad voor Accountancy en Bedrijfseconomie*, 96(11/12), 391–404. <https://doi.org/10.5117/mab.96.94820>
- Agrawal, P., Bayne, L., Hellman, N. & Wee, M. (2025). *Connectivity and Boundaries of Climate-related disclosures in Annual Reports*. Working paper. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5034664
- Anderson, N. (2021). *Disclosures in financial statements to better reflect investor needs*. <https://www.ifrs.org/content/dam/ifrs/resources-for/investors/investor-perspectives/investor-perspectives-sept-2021.pdf>
- Arnell, G., Lundqvist, P. & Marton, J. (2023). *Koppling mellan redovisning av klimatpåverkan och finansiella rapporter behövs*. FAR. https://www-faronline-se.ezproxy.ub.gu.se/dokument/balans-fordjupning/2020-tal/2023/balans_fordjupning_20230227/?q=connectivity
- Avery, G. (2005). Endogeneity in logistic regression models. *Emerging Infectious Diseases*, 11(3), 503–505. <https://doi.org/10.3201/eid1103.040462>
- Baboukardos, D., Dionysiou, D., Slack, R., Tsalavoutas, I. & Tsoligkas, F. (2021a). *Climate-change risk-related disclosures in extractive industries*. https://www.accaglobal.com/content/dam/ACCA_Global/professional-insights/Capitalisation_intangibles_debate/PI-CLIMATE-RISK-EI%20v5.pdf
- Baboukardos, D., Dionysiou, D., Slack, R., Tsalavoutas, I. & Tsoligkas, F. (2021b). *Climate-change risk-related disclosures in extractive industries: a comparative study*. https://www.accaglobal.com/content/dam/ACCA_Global/professional-insights/Climate_change_risk_disclosures/PI-CLIMATE-RISK-EI-COMPARATIVE-STUDYv1.pdf
- Barth, M. E., Cahan, S. F., Chen, L. & Venter, E. R. (2017). The economic consequences associated with integrated report quality: capital market and real effects. *Accounting, organizations and society*, 62, 43-64. <https://doi.org/10.1016/j.aos.2017.08.005>
- Bisman, J. & Crofts, K. (2010). Interrogating accountability: An illustration of the use of Leximancer software for qualitative data analysis. *Qualitative Research in Accounting and Management*, 7(2), 180-207. <https://doi.org/10.1108/11766091011050859>
- Bokföringsnämnden. (2024). *Information om de nya bestämmelserna om hållbarhetsrapportering*. <https://www.bfn.se/redovisningsregler/hallbarhetsrapportering/>
- Bolagsverket. (2025). *Hållbarhetsrapport*. <https://bolagsverket.se/foretag/aktiebolag/arsredovisningforaktiebolag/delarochbilagoriarsredovisningen/hallbarhetsrapport.5361.html>
- Borghei, Z., Bui, B. & Linnenluecke, M. (2024). The Disclosure of Climate-Related Risks and Opportunities in Financial Statements: The UK's FTSE 100. *Meditari accountancy research* 32(3), 1031–1063. <https://doi.org/10.1108/MEDAR-05-2023-1998>

- Bose, S., Lim, E. K., Minnick, K. & Shams, S. (2023). Do foreign institutional investors influence corporate climate change disclosure quality? International evidence. *Corporate governance : an international review* 32(2), 322–347. <https://doi.org/10.1111/corg.12535>
- Breuer, M. & deHaan, E. (2023). Using and Interpreting Fixed Effects Models. *Journal of Accounting Research*, 62(4), 1183–1226. <https://doi.org/10.1111/1475-679X.12559>.
- Brooks, C. (2019). *Introductory Econometrics for Finance* (Fourth edition). Cambridge University Press.
- Bui, B., Houqe, M. N. & Zaman, M. (2020). Climate Governance Effects on Carbon Disclosure and Performance. *The British Accounting Review* 52(2), 100880. <https://doi.org/10.1016/j.bar.2019.100880>
- Chartrand, C. & Lord, G. (2025). *Bridging the gap: Financial vs. sustainability reporting materiality*. PwC. <https://www.pwc.com/gx/en/services/audit-assurance/corporate-reporting/connectivity-between-sustainability-and-financial-reporting.html>
- Chan, V. (2023). *ISSB issues IFRS S2 new climate-related disclosure standard*. EY. https://www.ey.com/en_gl/insights/ifrs/what-you-need-to-know-about-new-issb-standard-ifrs-s2
- Chen, W., Nguyen, T. H. & Trinh, V. Q. (2024). Ownership structure and climate-related corporate reporting. *Accounting Forum*, 49(2), 336–368. <https://doi.org/10.1080/01559982.2024.2301850>
- Ching, H. Y. & Gerab, F. (2017). Sustainability Reports in Brazil through the Lens of Signaling, Legitimacy and Stakeholder Theories. *Social Responsibility Journal*, 13(1), 95–110. <https://doi.org/10.1108/SRJ-10-2015-0147>
- Chua, W.F., Simnett, R., Wang, R. & Zhou, S. (2024). Is greater connectivity of financial and non-financial information in annual reports valued by market participants? *The British Accounting Review*, 56(6), 101407. <https://doi.org/10.1016/j.bar.2024.101407>
- Cohen, S., Kadach, I. & Ormazabal, G. (2023). Institutional investors, climate disclosure, and carbon emissions. *Journal of Accounting & Economics*, 76(2–3), 101640. <https://doi.org/10.1016/j.jacceco.2023.101640>
- Cordob'es-Madueno, M., Ruiz-Lozano, M., Tirado-Valencia, P. & Vicente-Lama, M. (2024). Determinants of Interconnected Corporate Information. Evidence of the Connectivity Principle in Integrated Reporting. *European research on management and business economics*, 30(3), 100255. <https://doi.org/10.1016/j.iedeen.2024.100255>
- Cotter, J. & Najah, M. M. (2012). Institutional investor influence on global climate change disclosure practices. *Australian Journal of Management*, 37(2), 169–187. <https://doi.org/10.1177/0312896211423945>

- Davidson, B. & Schuwerk, R. (2021). *Flying blind: The glaring absence of climate risks in financial reporting*. Carbon Tracker Initiative.
<https://carbontracker.org/reports/flying-blind-the-glaring-absence-of-climate-risks-in-financial-reporting/>
- Davidson, B. & Schuwerk, R. (2022). *Still flying blind: The absence of climate risk in financial reporting*. Carbon Tracker Initiative.
<https://www.eticanews.it/wp-content/uploads/2022/10/Still-Flying-Blind..pdf>
- Davidson, B. (2024). *Flying blind: In a holding pattern - The continued absence of climate and transition risks in financial reporting*. Carbon Tracker Initiative.
<https://carbontracker.org/reports/flying-blind-in-a-holding-pattern/>
- Dhaliwal, D. S., Li, O. Z., Tsang, A. & Yang, Y. G. (2014). Corporate social responsibility disclosure and the cost of equity capital: The roles of stakeholder orientation and financial transparency. *Journal of Accounting and Public Policy*, 33(4), 328–355.
<https://doi.org/10.1016/j.jaccpubpol.2014.04.006>
- Duong, H. K., Wu, Y., Schiehl, E. & Yao, H. (2024). Environmental and social disclosure, managerial entrenchment, and investment efficiency. *Journal of Contemporary Accounting & Economics*, 20(3), 100435. <https://doi.org/10.1016/j.jcae.2024.100435>
- Dye, R. (1985). Disclosure of nonproprietary information. *Journal of Accounting Research*, 23(1), 123–145. <https://doi.org/10.2307/2490910>
- Ecovis. (2024). *EFRAG publishes paper on connectivity and reporting boundaries*.
<https://www.ecovis.com/global/efrag-publishes-paper-on-connectivity-and-reporting-boundaries/>
- EFRAG. (2022a). *Draft European Sustainability Reporting Standards*.
https://www.efrag.org/sites/default/files/sites/webpublishing/SiteAssets/ED_ESRS_AP4.pdf
- EFRAG. (2022b). *ESRS E1 Climate Change*.
<https://www.efrag.org/sites/default/files/sites/webpublishing/SiteAssets/08%20Draft%20ESRS%20E1%20Climate%20Change%20November%202022.pdf>
- EFRAG. (2023). *ESRS E1 CLIMATE CHANGE*.
https://www.efrag.org/sites/default/files/sites/webpublishing/SiteAssets/ESRS%20E1%20Delegated-act-2023-5303-annex-1_en.pdf
- EFRAG. (2024). *EFRAG Connectivity Project: Connectivity considerations and boundaries of different annual report sections*. Initial paper.
www.efrag.org/sites/default/files/2024-07/EFRA%20Connectivity%20Project_WEB.pdf
- EFRAG & IFRS Foundation. (2024). *ESRS–ISSB Standards Interoperability Guidance*.
<https://www.ifrs.org/content/dam/ifrs/supporting-implementation/issb-standards/esrs-issb-standards-interoperability-guidance.pdf>
- EFRAG & TNFD. (2024). *TNFD - ESRS Correspondence mapping*.
<https://www.efrag.org/sites/default/files/sites/webpublishing/SiteAssets/TNFD%20ESRS%20Correspondence%20mapping%20Final.pdf>

- Enniful-Adu, E., Onumah, J. & Tsamenyi, M. (2007). Disclosure and corporate governance in developing countries: evidence from Ghana. *Managerial Auditing Journal*, 22(3), 319–334. <https://doi.org/10.1108/02686900710733170>
- ESMA. (2021). *European common enforcement priorities for 2021 annual financial reports*. ESMA32-63-1186 Public Statement. https://www.esma.europa.eu/sites/default/files/library/esma32-63-1186_public_statement_on_the_european_common_enforcement_priorities_2021.pdf
- ESMA. (2022). *European common enforcement priorities for 2022 annual financial reports*. ESMA32-63-1320 Public Statement. https://www.esma.europa.eu/sites/default/files/library/esma32-63-1320_esma_statement_on_european_common_enforcement_priorities_for_2022_annual_reports.pdf
- ESMA. (2023). *European common enforcement priorities for 2023 annual financial reports*. ESMA32-193237008-1793 Public Statement. https://www.esma.europa.eu/sites/default/files/2023-10/ESMA32-193237008-1793_2023_ECEP_Statement.pdf
- ESMA. (2024). *European common enforcement priorities for 2024 corporate reporting*. ESMA32-193237008-8369 Public Statement. https://www.esma.europa.eu/sites/default/files/2024-10/ESMA32-193237008-8369_2024_ECEP_Statement.pdf
- European Commission. (2014). *Directive 2014/95/EU of the European Parliament and of the Council of 22 October 2014 amending Directive 2013/34/EU as regards disclosure of nonfinancial and diversity information*. <https://eur-lex.europa.eu/eli/dir/2014/95>
- European Commission. (2025). *Commission simplifies rules on sustainability and EU investments, delivering over €6 billion in administrative relief*. https://ec.europa.eu/commission/presscorner/detail/en/ip_25_614
- European Union. (2023). *Directive 2022/2464 of the European Parliament and of the Council of 14 December 2022 amending Regulation (EU) No 537/2014, Directive 2004/109/EC, Directive 2006/43/EC and Directive 2013/34/EU, as regards corporate sustainability reporting*. <http://data.europa.eu/eli/dir/2022/2464/oj>
- EY. (2024). *CSRD och ESRS - ESRS E1 Klimatförändringar*. <https://www.ey.com/content/dam/ey-unified-site/ey-com/sv-se/insights/sustainability/documents/ey-esrs-e1-klimatforandringar-csrd-och-esrs.pdf>
- FAR. (n.d.). *Ramverk för hållbarhetsrapportering*. https://www.far.se/kunskap/hallbarhet/ramverk-for-hallbarhetsrapportering/?srsId=AfmBOooAE-ZIYMsxGgymgZITwflzgox_rMXOCoxHmWUedEwNxF9xMNjR#GRI
- Fiechter, P., Hitz, J. M. & Lehmann, N. (2022). Real effects of a widespread CSR reporting mandate: evidence from the European Union's CSR directive. *Journal of Accounting Research*, 60(4), 1499-1549. <https://doi.org/10.1111/1475-679X.12424>

- Financial Supervisor Authority of Norway (Finanstilsynet). (2023). *Information on climate-related matters in annual financial reports*.
www.finanstilsynet.no/contentassets/bb3c71bd8f414dc19790cbfe67ecbeb7/information-on-climate-related-matters-in-annual-financial-reports.pdf
- Finansinspektionen. (2023). *Nya EU-standarder för hållbarhetsredovisning publicerade*.
<https://www.fi.se/sv/publicerat/nyheter/2023/nya-eu-standarder-for-hallbarhetsredovisning-publicerade/>
- Finansinspektionen. (2024) *Hållbarhetsrapportering (NFRD/CSRD)*.
<https://www.fi.se/sv/hallbarhet/regler/hallbarhetsrapportering/>
- Flammer, C., Toffel, M. W. & Viswanathan, K. (2021). Shareholder activism and firms' voluntary disclosure of climate change risks. *Strategic Management Journal*, 42(10), 1850–1879. <https://doi.org/10.1002/smj.3313>
- Galeotti, M., Lombardi, R., Paoloni, P. & Schimperna, F. (2022). The climate-related information in the changing EU directive on non-financial reporting and disclosure: first evidence by Italian large companies. *Journal of Applied Accounting Research*, 23(1), 250–273. <https://doi.org/10.1108/JAAR-04-2021-0117>
- Garg, M., Li, A., Michaelides, M. & Rose, M. (2019). Climate-Related Risk and Financial Statements: Implications for Regulators, Preparers, Auditors and Users. *Australian Accounting Review*, 29(3), 599–605. <https://doi.org/10.1111/auar.12296>
- GRI. (n.d.a). *Our mission and history*.
<https://www.globalreporting.org/about-gri/mission-history/>
- GRI. (n.d.b). *A Short Introduction to the GRI Standards*.
<https://www.globalreporting.org/media/wtafl4tw/a-short-introduction-to-the-gri-standards.pdf>
- GSSB. (2023). *GRI Topic Standard Project for Climate Change – Climate Change Exposure draft*.
<https://www.globalreporting.org/media/lcznznf0/gri-topic-standard-project-for-climate-change-exposure-draft.pdf>
- Günther, T., Ott, C. & Schiemann, F. (2017). Disentangling the determinants of the response and the publication decisions: The case of the Carbon Disclosure Project. *Journal of Accounting and Public Policy*, 36(1), 14–33.
<https://doi.org/10.1016/j.jaccpubpol.2016.11.003>
- Hahnkamper-Vandenbulcke, N. (2021). *Non-financial Reporting Directive*. European Parliamentary Research Service.
[https://www.europarl.europa.eu/RegData/etudes/BRIE/2021/654213/EPRS_BRI\(2021\)654213_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2021/654213/EPRS_BRI(2021)654213_EN.pdf)
- Hammarström, I., Scheja, M. & Schäfer-Juslin, K. (2025). *Detta innebär förslaget Omnibus från EU-kommissionen*. PwC. <https://www.pwc.se/omnibus>

Hartmann, M. & Weißenberger, B. E. (2024). Information overload research in accounting: a systematic review of the literature. *Management Review Quarterly*, 74(3), 1619–1667. <https://doi.org/10.1007/s11301-023-00343-7>

IFRS Foundation. (2018). *Conceptual Framework for Financial Reporting*. <https://www.ifrs.org/content/dam/ifrs/publications/pdf-standards/english/2021/issued/part-a/conceptual-framework-for-financial-reporting.pdf>

IFRS Foundation. (2022). *IFRS Foundation announces membership of the Integrated Reporting and Connectivity Council*. <https://www.ifrs.org/news-and-events/news/2022/11/ifrs-foundation-announces-membership-of-ircc/>

IFRS Foundation. (2023a). *Connectivity in practice: the IASB's new project on Climate-related Risks in the Financial Statements*. <https://www.ifrs.org/news-and-events/news/2023/03/connectivity-in-practice-the-iasb-s-new-project-on-climate-related-risks-in-the-financial-statements>

IFRS Foundation. (2023b). *ISSB issues inaugural global sustainability disclosure standards* <https://www.ifrs.org/news-and-events/news/2023/06/issb-issues-ifrs-s1-ifrs-s2/>

IFRS Foundation. (2023c). *Educational material - Effects of climate-related matters on financial statements*. <https://www.ifrs.org/content/dam/ifrs/supporting-implementation/documents/effects-of-climate-related-matters-on-financial-statements.pdf>

IFRS Foundation. (2024a). *Exposure Draft - Climate-related and Other Uncertainties in the Financial Statements*. <https://www.ifrs.org/content/dam/ifrs/project/climate-related-other-uncertainties-fs/iasb-ed-2024-6-climate-uncertainties-fs.pdf>

IFRS Foundation. (2024b). *IAS 1 Presentation of Financial Statements*. IFRS. <https://www.ifrs.org/issued-standards/list-of-standards/ias-1-presentation-of-financial-statements/>

IFRS Foundation. (n.d.a). *SASB standard-setting process*. <https://sasb.ifrs.org/standards/process/>

IFRS Foundation. (n.d.b). *General Sustainability-related Disclosures*. IFRS. <https://www.ifrs.org/projects/completed-projects/2023/general-sustainability-related-disclosures/#about>

IIRC. (2013). *The International <IR> Framework*. https://integratedreporting.ifrs.org/wp-content/uploads/2013/12/13-12-08-THE-INTERNATIONAL-IR-FRAMEWORK-2-1.pdf?utm_source=chatgpt.com

Ilhan, E., Krueger, P., Sautner, Z. & Starks, L. T. (2023). Climate Risk Disclosure and Institutional Investors. *The Review of Financial Studies*, 36(7), 2617–2650. <https://doi.org/10.1093/rfs/hhad002>

- Juhmani, O. (2013). Ownership structure and corporate voluntary disclosure: evidence from Bahrain. *International Journal of Accounting and Financial Reporting*, 3(2), 133–148. <https://doi.org/10.5296/ijafr.v3i2.4088>
- Karlsson, M. & Samevik, M. (2024). Studie: Starka kopplingar mellan hållbarhetsrapportering och finansiell rapportering. *Balans*. <https://backend.tidningenbalans.se/app/uploads/2024/10/FAR-Fo%CC%88rdjupning-2024-25-11-2024-nr1.pdf>
- Kolk, A., Levy, D. & Pinkse, J. (2008). Corporate responses in an emerging climate regime: the institutionalization and commensuration of carbon disclosure. *European Accounting Review*, 17(4), 719-745. <https://doi.org/10.1080/09638180802489121>
- KPMG. (n.d.). *Vad innebär ESRS - EU:s nya standard för hållbarhetsredovisning?* <https://kpmg.com/se/sv/home/tjanster/hallbart-foretagande/rapportera/esrs.html>
- Krueger, P., Sautner, Z. & Starks, L. T. (2020). The importance of climate risks for institutional investors. *Review of Financial Studies*, 33(3), 1067–1111. <https://doi.org/10.1093/rfs/hhz137>
- Li, Y., Richardson, G. D. & Thornton, D. B. (1997). Corporate disclosure of environmental liability information: Theory and evidence. *Contemporary Accounting Research*, 14(3), 435–474. <https://doi.org/10.1111/j.1911-3846.1997.tb00535.x>
- Liao, L., Luo, L. & Tang, Q. (2015). Gender diversity, board independence, environmental committee and greenhouse gas disclosure. *The British Accounting Review*, 47(4), 409–424. <https://doi.org/10.1016/j.bar.2014.01.002>
- Lundvall, Å. & Söderlund, C. (2024a). *Nya regler för hållbarhetsrapportering: CSRD och Årsredovisningslagen*. EY. https://www.ey.com/sv_se/insights/sustainability/nya-regler-for-hallbarhetsrapportering-csrd-och-esrs
- Lundqvist, P., Karlsson, M., Skog, E. & Söderlund, C. (2024). *Så återspeglas klimatrelaterade frågor i svenska finansiella rapporter*. EY. https://www.ey.com/sv_se/insights/assurance/sa-aterspeglas-klimatrelaterade-fragor-i-svenska-finansiella-rapporter
- Lundqvist, P., Karlsson, M. & Skog, E. (2023). *Så återspeglas klimatrelaterade frågor i svenska finansiella rapporter*. EY. https://www.ey.com/sv_se/insights/ifrs/sa-aterspeglas-klimatrelaterade-fragor-i-svenska-finansiella-rapporter
- Lundvall, Å. & Söderlund, C. (2024b). *CSRD: ESRS E1 – Klimatförändringar*. EY. https://www.ey.com/sv_se/insights/sustainability/csrd-esrs-e1-klimatforandringar
- Mazars. (2024). *Financial reporting of European companies on climate issues*. <https://www.mazars.fr/content/download/1187511/60265268/version//file/2024-PUBLIC-ATION-ENJEUX-CLIMATIQUES-GB.pdf>

- Müller, M. A., Ormazabal, G., Sellhorn, T. & Wagner, V. (2024). *Climate Disclosure in Financial Statements*. Working paper. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4763140
- Nasdaq. (n.d). *Share screener*. <https://www.nasdaq.com/european-market-activity/shares>
- Nasdaq. (2024). *Nasdaq Stockholm - Changes to the list 2024*. <https://www.nasdaq.com/european-market-activity/news/nasdaq-stockholm-changes-to-the-list-2024>
- O'Brien, R. M. (2007). A Caution Regarding Rules of Thumb for Variance Inflation Factors. *Quality & quantity*, 41(5), 673–690. <https://doi.org/10.1007/s11135-006-9018-6>
- Overland, C., Samani, N. & Sabelfeld, S. (2023). The role of the EU non-financial reporting directive and employee representation in employee-related disclosures. *Accounting Forum*, 47(2), 278-306. <https://doi.org/10.1080/01559982.2022.2158773>
- Paananen, M., Runesson, E. & Samani, N. (2021). Time to clean up environmental liabilities reporting: disclosures, media exposure and market implications. *Accounting Forum*, 45(1), 86-116. <https://doi.org/10.1080/01559982.2021.1872909>
- Roberts, M. & Whited, T. (2013). *Endogeneity in Empirical Corporate Finance*. In *Handbook of the Economics of Finance*. North-Holland.
- Sachs, J., Schmidt-Traub, G., Kroll, C., Lafortune, G. & Fuller, G. (2019). *Sustainable Development Report 2019*. New York: Bertelsmann Stiftung and Sustainable Development Solutions Network (SDSN). https://s3.amazonaws.com/sustainabledevelopment.report/2019/2019_sustainable_development_report.pdf
- Sachs, J., Schmidt-Traub, G., Kroll, C., Lafortune, G., Fuller, G. & Woelm, F. (2020). *Sustainable Development Report 2020*. Cambridge: Cambridge University Press. <https://doi.org/10.1017/9781108992411>
- Sachs, J., Kroll, C., Lafortune, G., Fuller, G. & Woelm, F. (2021). *Sustainable Development Report 2021*. Cambridge: Cambridge University Press. <https://doi.org/10.1017/9781009106559>
- Sachs, J., Lafortune, G., Kroll, C., Fuller, G. & Woelm, F. (2022). *Sustainable Development Report 2022*. Cambridge: Cambridge University Press. <https://doi.org/10.1017/9781009210058>
- Sachs, J.D., Lafortune, G., Fuller, G. & Drumm, E. (2023). *Sustainable Development Report 2023*. Paris: SDSN, Dublin: Dublin University Press. <https://doi.org/10.25546/102924>
- Sachs, J.D., Lafortune, G. & Fuller, G. (2024). *Sustainable Development Report 2024*. Paris: SDSN, Dublin: Dublin University Press. <https://doi.org/10.25546/108572>

- Sautner, Z., Van Lent, L., Vilkov, G. & Zhang, R. (2023). Firm-Level Climate Change Exposure. *The Journal of Finance (New York)*, 78(3), 1449–1498.
<https://doi.org/10.1111/jofi.13219>
- SBTi. (2022). *The journey of the Science Based Targets initiative*.
<https://sciencebasedtargets.org/blog/the-journey-of-the-science-based-targets-initiative>
- SBTi. (2024). *Climate Action Milestone: 6,000+ Companies Adopt Science-Based Targets*.
<https://sciencebasedtargets.org/blog/climate-action-milestone-6-000-companies-adopt-science-based-targets>
- SBTi. (n.d.). *The Corporate Net-Zero Standard*. <https://sciencebasedtargets.org/net-zero>
- SFS (2007:528). *Lag om värdepappersmarknaden* [Swedish Securities Market Act].
https://www.riksdagen.se/sv/dokument-och-lagar/dokument/svensk-forfattningssamling/lag-2007528-om-vardepappersmarknaden_sfs-2007-528/#K3
- Song, Y. & Xian, R. (2024). Institutional investors' corporate site visits and firm-level climate change risk disclosure. *International Review of Financial Analysis*, 93, 103145.
<https://doi.org/10.1016/j.irfa.2024.103145>
- Stanny, E. & Ely, K. (2008). Corporate environmental disclosures about the effects of climate change. *Corporate Social Responsibility and Environmental Management*, 15(6), 338–348. <https://doi.org/10.1002/csr.175>
- Stocks, M. H. & Harrell, A. (1995). The impact of an increase in accounting information level on the judgment quality of individuals and groups. *Accounting, Organizations and Society*, 20(7-8), 685–700. [https://doi.org/10.1016/0361-3682\(95\)00012-X](https://doi.org/10.1016/0361-3682(95)00012-X)
- Stroebel, J. & Wurgler, J. (2021). What do you think about climate finance? *Journal of Financial Economics*, 142(2), 487–498. <https://doi.org/10.1016/j.jfineco.2021.08.004>
- Sveriges Riksbank. (2021). *The Riksbank's Climate Report: Climate risks in the policy work*.
<https://www.riksbank.se/globalassets/media/rapporter/klimatrapport/2021/the-riksbanks-climate-report-december-2021.pdf>
- TCFD. (n.d.). *About*. <https://www.fsb-tcfd.org/about/>
- TNFD. (2023). *Recommendations of the Taskforce on Nature-related Financial Disclosures*.
<https://tnfd.global/wp-content/uploads/2023/08/Recommendations-of-the-Taskforce-on-Nature-related-Financial-Disclosures.pdf?v=1734112245>
- TNFD. (n.d.). *Our history*. <https://tnfd.global/about/history/>
- Verrecchia, R. E. (1990). Information quality and discretionary disclosure. *Journal of Accounting and Economics*, 12(4), 365–380.
[https://doi.org/10.1016/0165-4101\(90\)90021-U](https://doi.org/10.1016/0165-4101(90)90021-U)
- You, J. & Simnett, R. (2022). *Climate-related disclosures and assurance in the Annual Reports of ASX-listed companies*. AASB-AUASB Research Report.
https://aasb.gov.au/media/xu5leeby/aasb-auasb_rr_climaterelateddisclosures_12-22.pdf

Appendix

Appendix 1: Sample Selection

Appendix 1.1 Excluded firms - Dual-listed

Firms			
ABB Ltd	Better Collective	International Petroleum Corp.	Stora Enso A
Africa Oil	Cavotec	Lundin Gold	TietoEVRY Oyj
Arctic Paper	CoinShares International	Lundin Mining Corporation	TRATON
AstraZeneca	Gentoo Media	Nordea Bank Abp	

Note: This table lists the dual-listed firms that are excluded from the sample for both H1 and H2.

Appendix 1.2 Excluded firms - Not listed both years

Firms	Changes to the Nasdaq Stockholm List 2024
Apotea	IPO
Byggmästare Anders J Ahlström Holding	From First North Growth Market
Carasent	From Oslo Børs
Cinclus Pharma Holding	IPO
Enad Global 7	From First North Growth Market
EQL Pharma	From Spotlight Stock Market
Flerie	From First North Growth Market
Humble Group	From First North Growth Market
Intea Fastigheter	IPO
Karnell Group	IPO
Neobo Fastigheter	From First North Premier Growth Market
Prisma Properties	IPO
Stenhus Fastigheter I Norden	From First North Premier Growth Market
Yubico AB	From First North Growth Market

Note: This table lists the firms that are excluded from the sample for both H1 and H2 due to not being listed both years. The list has been sourced from Nasdaq (2024).

Appendix 1.3 Excluded firms - Missing data

Firms			
Aktiebolaget Fastator	Catena Media plc	Investor	Rusta
Arion Banki SDB	Fastighetsbolaget Emilshus	Millicom Int. Cellular SDB	Sampo Oyj SDB
Asmodee	Fenix Outdoor International AG	Nilörngruppen	Svolder
Autoliv, Inc.			

Note: This table lists the firms excluded from the sample for both H1 and H2 due to missing data in Capital IQ or the absence of an available annual report.

Appendix 1.4 Excluded firms - Annual reports published after 30 April 2025

Firms		
Abliva	DORO	Strax

Note: This table lists the firms excluded from the sample for both H1 and H2 since their annual reports for 2024 had not been published by 30 April, 2025.

Appendix 1.5 Excluded firms - Financial firms

Firms			
Industrivärden	Hoist Finance	Nordnet	Solid Försäkringsaktiebolag
Traction	Investment Öresund	Norion Bank	Stockwik Förvaltning
Avanza Bank Holding	Kinnevik	Qliro	Svenska Handelsbanken
Bure Equity	L E Lundbergföretagen	Ratos	Swedbank
Catella	Linc	Resurs Holding	TF Bank
Creades	Mangold Fondkommission	Seafire	VEF
EQT	NAXS	Skandinaviska Enskilda Banken	VNV Global
Havsfrun Investment			

Note: This table lists the firms categorized as Financials in Capital IQ, which have been excluded from the sample used to test H2

Appendix 2: Search Lists NVivo

Appendix 2.1 Selected climate-related search terms for *ClimateFS*

English search terms			
climate action	climate data	climate legislation	climate report
climate adaptation	climate delegated act	climate matters	climate reporting
climate adapted	climate disclosures	climate measures	climate requirements
climate agreement	climate effect	climate mitigation	climate resilient
climate alignment	climate emergency	climate neutral	climate responsibility
climate ambitions	climate emissions	climate neutrality	climate risk
climate and resource	climate energy	climate objective	climate road map
climate and resource efficiency	climate engagement	climate performance	climate savings
climate and social impact	climate exposure	climate perspective	climate scenario
climate benefit	climate focus	climate plan	climate science
climate biodiversity	climate footprint	climate pledge	climate screening
climate calculations	climate friendly	climate policy	climate smart
climate challenges	climate gains	climate positive	climate solution
climate change	climate goal	climate profile	climate strategy
climate commitment	climate impact	climate progress	climate target
climate compensation	climate increase	climate protection	climate transformation
climate concern	climate initiative	climate rating	climate transition
climate considerations	climate issue	climate reduction	climate value
climate control	climate leaders	climate related	climate work
climate crisis	climate leap	climate renewable	climate-related

Swedish search terms			
ekosystem och klimat	klimat och miljö	klimat och väderrelaterade	klimatrisk
hållbarhet och klimat	klimat och miljöaspekter	klimatpassad	klimatriskstrategi
hållbart klimat	klimat och miljöavtryck	klimatavtryck	klimatsmart
klimat avtrycket	klimat och miljöbehov	klimatbelastning	miljö och klimat
klimat och energi	klimat och miljöbelastning	klimatförändringar	miljö och klimatavtryck
klimat och energieffektiva	klimat och miljöfördelar	klimatmål	miljö och
klimat och energimål	klimat och miljöpåverkan	klimatneutral	klimatpåverkan
klimat och energiområdet	klimat och miljöstrategi	klimatomställning	torrare klimat
klimat och energiomställning	klimat och naturtillgångar	klimatpåverkan	varmare klimat
klimat och hållbarhetsrisker	klimat och omställningsrisker	klimatrelaterade	världens klimat

Appendix 2.2. Selected climate-related search terms for *ClimateBroadFS*

English search terms			
carbon	climate data	climate neutral	climate scenario
changing climate	climate delegated act	climate neutrality	climate science
circularity and climate	climate disclosures	climate objective	climate screening
climate action	climate effect	climate performance	climate smart
climate adaptation	climate emergency	climate perspective	climate solution
climate adapted	climate emissions	climate plan	climate strategy
climate agreement	climate energy	climate pledge	climate target
climate alignment	climate engagement	climate policy	climate transformation
climate ambitions	climate exposure	climate positive	climate transition
climate and environment	climate focus	climate profile	climate value
climate and resource	climate footprint	climate progress	climate work
climate and resource efficiency	climate friendly	climate protection	climate-related
climate and social impact	climate gains	climate rating	CO2
climate and the environment	climate goal	climate reduction	emission
climate benefit	climate impact	climate related	environment and climate
climate biodiversity	climate increase	climate renewable	environment and society
climate calculations	climate initiative	climate report	environment and sustainability
climate challenges	climate issue	climate reporting	environmental
climate change	climate leaders	climate requirements	ESG
climate commitment	climate leap	climate resilient	GHG
climate compensation	climate legislation	climate responsibility	global warming
climate concern	climate matters	climate risk	greenhouse gas
climate considerations	climate measures	climate road map	net zero
climate control	climate mitigation	climate savings	pollution
climate crisis			

Swedish search terms			
CO2	klimat och miljöbelastning	miljö eller klimatpåverkan	miljö och samhälle
ekosystem och klimat	klimat och miljöfördelar	miljö och energi	miljö och samhällsansvar
ESG	klimat och miljöpåverkan	miljö och hållbarhet	miljöansvar
förorening	klimat och miljöstrategi	miljö och hållbarhetsarbete	miljöarbete
GHG	klimat och naturtillgångar	miljö och hållbarhetsfrågor	miljöbelastning
global uppvärmning	klimat och omställningsrisker	miljö och hållbarhetskrav	miljökompetens
globala miljö	klimat och väderrelaterade	miljö och hållbarhetsmål	miljökrav
hållbarhet och klimat	klimatepassad	miljö och hållbarhetspolicy	miljölagstiftning
hållbarhetsarbetet	klimateavtryck	miljö och hälsopåverkan	miljömål
hållbart klimat	klimateavtryck	miljö och hälsoskadliga	miljömässig påverkan
klimat neutralitet	klimatebelastning	miljö och klimat	miljöpåverkan
klimat och energi	klimateförändringar	miljö och klimatarbete	miljörelaterad
klimat och energieffektiva	klimatemål	miljö och klimateavtryck	miljörisk
klimat och energimål	klimateneutral	miljö och klimateffektiva	människor och miljö
klimat och energiområdet	klimateomställning	miljö och klimatefrågor	netto noll
klimat och energiomställning	klimatepåverkan	miljö och klimatemedvetenheten	torrare klimat
klimat och hållbarhetsrisker	klimaterelaterad	miljö och klimatepakten	utsläpp
klimat och miljö	klimaterisk	miljö och klimatepåverkan	varmare klimat
klimat och miljöaspekter	klimateriskstrategi	miljö och klimatesmart	världens klimat
klimat och miljöavtryck	klimatesmart	miljö och natur	växthusgas
klimat och miljöbehov	koldioxid	miljö och resursanvändning	

Appendix 2.3 Selected climate-related search terms for *ClimateFE_Cov* and *ClimateFE_Ref*

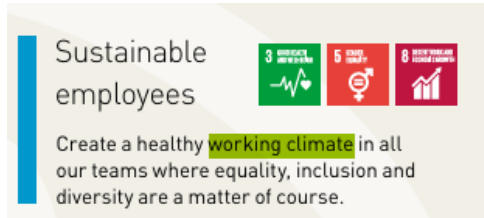
English search terms			
carbon	climate data	climate neutrality	climate screening
changing climate	climate delegated act	climate objective	climate smart
circularity and climate	climate disclosures	climate performance	climate solution
climate action	climate effect	climate perspective	climate strategy
climate adaptation	climate emergency	climate plan	climate target
climate adapted	climate emissions	climate pledge	climate transformation
climate agreement	climate energy	climate policy	climate transition
climate alignment	climate engagement	climate positive	climate value
climate ambitions	climate exposure	climate profile	climate work
climate and environment	climate focus	climate progress	climate-related
climate and resource	climate footprint	climate protection	CO2
climate and resource efficiency	climate friendly	climate rating	emission
climate and social impact	climate gains	climate reduction	environment and climate
climate and the environment	climate goal	climate related	environment and society
climate benefit	climate impact	climate renewable	environment and sustainability
climate biodiversity	climate increase	climate report	environmental
climate calculations	climate initiative	climate reporting	ESG
climate challenges	climate issue	climate requirements	GHG
climate change	climate leaders	climate resilient	global warming
climate commitment	climate leap	climate responsibility	greenhouse gas
climate compensation	climate legislation	climate risk	net zero
climate concern	climate matters	climate road map	physical risk
climate considerations	climate measures	climate savings	pollution
climate control	climate mitigation	climate scenario	transition plan
climate crisis	climate neutral	climate science	transition risk

Swedish search terms			
CO2	klimat och miljöbehov	miljö och energi	miljö och samhällsansvar
ekosystem och klimat	klimat och miljöbelastning	miljö och hållbarhet	miljöansvar
energi och miljö	klimat och miljöfördelar	miljö och hållbarhetsarbete	miljöarbete
ESG	klimat och miljöpåverkan	miljö och hållbarhetsfrågor	miljöbelastning
fysisk risk	klimat och miljöstrategi	miljö och hållbarhetskrav	miljökompetens
förorening	klimat och naturtillgångar	miljö och hållbarhetsmål	miljökrav
GHG	klimat och omställningsrisker	miljö och hållbarhetspolicy	miljölagstiftning
global uppvärmning	klimat och väderrelaterade	miljö och hälsopåverkan	miljömål
globala miljö	klimatpassad	miljö och hälsoskadliga	miljömässig påverkan
hållbarhet och klimat	klimatavtryck	miljö och klimat	miljöpåverkan
hållbarhetsarbetet	klimatbelastning	miljö och klimatarbetet	miljörelaterad
hållbart klimat	klimatförändringar	miljö och klimatavtryck	miljörisk
klimat neutralitet	klimatmål	miljö och klimateffektiva	människor och miljö
klimat och energi	klimatneutral	miljö och klimatfrågor	netto noll
klimat och energieffektiva	klimatomställning	miljö och klimatmedvetenheten	omställningsplan
klimat och energimål	klimatpåverkan	miljö och klimatpakten	omställningsrisk
klimat och energiområdet	klimatrelaterad	miljö och klimatpåverkan	torrare klimat
klimat och energiomställning	klimatrisk	miljö och klimatsmarta	utsläpp
klimat och hållbarhetsrisker	klimatriskstrategi	miljö och natur	varmare klimat
klimat och miljö	klimatesmart	miljö och resursanvändning	världens klimat
klimat och miljöaspekter	koldioxid	miljö och samhälle	växthusgas
klimat och miljöavtryck	miljö eller klimatpåverkan		

Appendix 3: Contextual Analysis

Appendix 3.1 Examples of excluded hits

Examples of excluded hits of climate



Source: Moberg Pharma Annual Report 2024

Internal control and risk management – three lines of defense

To enable satisfactory risk management, it is of vital importance for the corporate culture and organization to be characterized by clear internal governance and control. The Bank's Board and CEO have ultimate responsibility for ensuring that the Bank has good internal governance and control. Norion Bank maintains an open business climate with a high level of business ethics and has a whistleblower system available to all staff through which irregularities and other misconduct can be reported. In order to achieve a good control environment, Norion Bank applies the principle of three lines of defense, whereby the different lines of defense have different tasks but a shared responsibility for achieving good internal governance and control. The Bank's entire organization participates in this control environment.

Source: Norion Bank Group Annual Report 2024

Examples of excluded hits of environment

Safe operations

Health and safety are core priorities for Orrön Energy, and the Company maintains a strong focus on the health and safety of both employees and contractors. It is the Company's responsibility to identify and mitigate potential risks, and to ensure that the workforce has a safe and healthy working environment. The Company's aim is to achieve zero serious incidents, for all employees and contractors.

Source: Orrön Energy Annual & Sustainability Report 2024

In 2024, the Board resolved on an overall financial plan and investment framework for the Group's operations. In addition, the Board regularly monitors the Group's earnings and financial position and maintains continuous focus on risk related issues such as overall risk management and ongoing legal disputes and investigations. The Board proposed a distribution of an ordinary dividend of SEK 7.50 per share and an extraordinary dividend of SEK 10.50 per share, which was resolved by the Annual General Meeting 2024. Furthermore, the Board regularly reviews the management's short and long-term incentive programs to ensure that they fulfill their purpose and drive the right behavior in the current business environment.

Source: Volvo Group Annual Report 2024

INTRODUCTION

STRATEGY AND BUSINESS MODEL

▶ BUSINESS MODEL

STRATEGY

TARGETS AND TARGET FULFILMENT

STORSKOGEN AS AN INVESTMENT

STORSKOGEN'S FINANCIAL STRATEGY

ORGANISATION AND EXPERTISE

BUSINESS AREAS

SUSTAINABILITY REPORT

CORPORATE GOVERNANCE

DIRECTORS' REPORT

FINANCIAL STATEMENTS

SUSTAINABILITY NOTES

THE STORSKOGEN SHARE

Business model

Storskogen owns and develops small and medium-sized businesses to create resilience and profitable growth.

1. Opportunity


- **Evergreen opportunity** to acquire profitable companies with proven business models in select industries.
- **Attractive return potential** driven by lower valuation of small and medium-sized businesses.
- **Value-creation opportunities** through professionalisation, business development and synergies.

2. The Storskogen model

- **Long-term perspective and stability** ensure companies' future competitiveness.
- **Decentralisation** promotes entrepreneurship.
- **Active ownership** enables businesses to realise their full potential.
- **Diversification** is central to spread risks and take advantage of opportunities.

3. Result

- **Profitable growth** is generated by reinvesting cash flows into both new acquisitions and organic growth initiatives.
- Geographic and industry diversification creates **resilience** over business cycles.



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STORSKOGEN ANNUAL AND **SUSTAINABILITY** REPORT 2024

Source: Storskogen Annual & Sustainability Report 2024

NOTES

■ Contents ■ Introduction ■ Strategy ■ Our studios ■ Corporate **sustainability** ■ Directo

01 ACCOUNTING AND VALUATION PRINCIPLES

Modern Times Group MTG AB (MTG) is a company domiciled in Stockholm, Sweden and it is a listed company according to Swedish legislation. The Company's registered office is located at Skeppsbron 18, P.O. Box 2094, SE-103 13 Stockholm, Sweden. The consolidated financial statements of the Company for the year ended December 31, 2023 comprise the Company and its subsidiaries and their share of participation in associated companies.

The financial statements were authorized for issue by the Board of Directors on April 3, 2024. The consolidated income statement and statement of financial position, and the income statement and the balance sheet of the parent company will be presented for adoption by the Annual General Meeting on May 16, 2024.

The consolidated financial statements have been prepared in accordance with the International IFRS Accounting Standards (IFRSs) issued by the International Accounting Standards Board (IASB) and its interpretations provided by the IFRS Interpretations Committee as endorsed by the European Commission. Recommendation RFR 1 on Supplementary Accounting Rules for groups as issued by the Swedish Financial Reporting Board has also been applied in the preparation of the Annual Report.

The consolidated accounts have been prepared based on the acquisition values, except for certain financial assets and liabilities that are stated at fair value; contin-

gent considerations, shares and participations in other companies and derivative financial instruments. For shares and participations in other companies, acquisition cost is initially considered to be a representative estimate of fair value. Subsequently, values are remeasured at fair value and gains/losses recognized when there is subsequent financing through participation by a third party investor, in which case the price per share in that financing is used, when there is a realized exit or when there are indications that cost is not representative of fair value and sufficient, more recent information is available to measure fair value. Listed holdings are valued at the current share price. For contingent consideration the expected future values are discounted to present value. The discount rate is risk-adjusted. The most critical parameters are estimated future revenue growth and future operating margin.

The accounting policies set out below have been applied consistently to all periods presented in these consolidated financial statements, unless otherwise stated below. For information on accounting for certain line items, see each note.

Change in accounting principles and new accounting standards

The group's consolidated accounts have been prepared according to the same accounting policies and calculation methods as were applied in the preparation of the 2022 Annual Report.

Source: Modern Times Group Annual & Corporate Sustainability Report 2023

Appendix 3.2 Examples of included hits in the front-end

Examples showing hits from all included search terms for ClimateFE_Ref and ClimateFE_Cov

Our ESG Strategy

PILLAR 1

Evolve our products for a better environment

GOAL	TARGET	ADVANCEMENT
Reduce our climate impact and increase the energy efficiency of our property portfolio	Assess the potential for setting and committing to science-based targets ¹	Assessed Catella's current greenhouse gas emissions, the preconditions for collecting emission data and how data quality and comprehensiveness can be improved
Adapt our property portfolio to a changing climate	Assess the ongoing potential for increasing energy efficiency in our property portfolio.	Conducted an ongoing assessment to identify energy efficiency opportunities and prevent stranded assets.
Decrease our environmental footprint; minimising waste, material consumption, water consumption and biodiversity loss	Analyse our ongoing impact related to waste generation, material consumption, water consumption, and biodiversity, and identify impact mitigation measures continuously.	Conducted high-level assessments to understand Catella's impact and what Catella can do to manage that impact

1) Science-based targets (SBT) are **greenhouse gas** emissions reduction targets that are in line with the level of decarbonization required to meet the goals of the Paris Agreement: to limit **global warming** to well-below 2°C above pre-industrial levels and pursue efforts to limit warming to 1.5°C.

Achieved and Expected **Greenhouse Gas (GHG) Emission** Reduction

Actions and resources in relation to climate change policies	UNIT	2024
Achieved GHG emission reductions	tCO ₂ e _q	20.5

Compared to the known emissions from 2023, a significant reduction of 20.5 tCO₂e_q was observed based on the reported emissions from 18 out of 21 corporate offices.

As Catella progresses towards full CSRD alignment in the coming years, the focus will be on presenting like-for-like data when disclosing absolute **emission** reduction figures. In addition, estimated **GHG** emissions are expected to be included in the next reporting cycle.

Resource Availability and Allocation Constraints in Implementing Climate Actions

Catella's implementation of **climate related** actions depends on the allocation of financial resources. There is not currently any documentation that relates to an explanation of extent to which ability to implement action depends on availability and allocation of resources.

Source: Catella Annual Report 2024

Physical **Climate Risks** and Resilience Strategies

Catella's real estate portfolio is exposed to physical **climate risks**, including extreme weather events, rising temperatures, and changing precipitation patterns. These factors may lead to higher maintenance costs, increased insurance premiums, and potential devaluation of assets that fail to meet **climate adaptation** standards. To mitigate these risks, Catella is integrating **climate resilience** measures into investment decisions, prioritising energy-efficient building design, regional portfolio diversification, and investment in **climate-resilient** infrastructure. These initiatives enhance long-term asset stability, reduce operational risks, and improve regulatory compliance.

Financial Effects of Material Risks and Opportunities

The findings of the DMA provide Catella with valuable insights to further enhance its financial performance, assess potential risks and opportunities, and ensure that its sustainability strategy remains aligned with stakeholder expectations. The regulatory landscape surrounding **climate action** continues to evolve, introducing transition risks such as increased compliance costs, shifting investor expectations, and potential valuation adjustments in real estate assets. Rising energy prices and stricter efficiency regulations may elevate operational costs, requiring proactive investment in energy-efficient and low-**carbon** assets to mitigate financial exposure.

Conversely, sustainability-driven opportunities are expected to enhance Catella's financial resilience. The growing demand for green real estate and sustainable investment strategies aligns with the Group's core expertise, providing avenues for revenue growth and competitive differentiation. Investments in energy-efficient buildings and **climate-resilient** infrastructure contribute to long-term cost savings and operational efficiencies while strengthening the company's ability to attract capital from investors prioritising **environmental** and social responsibility.

Access to capital is another key financial consideration. Strong market reputation, transparent **ESG** disclosures, and compliance with emerging sustainability regulations enhance investor confidence, ensuring continued access to funding sources. However,

Examples showing hits from all included search terms for ClimateFE_Ref and ClimateFE_Cov, cont

Stakeholder group	Important sustainability aspects
Guests	<ul style="list-style-type: none"> • Opportunity to make sustainable choices when they stay (food and beverages, cleaning, single-used plastics etc.) • Reducing CO₂ emissions and energy efficiency • An inclusive hotel experience
Corporate customers	<ul style="list-style-type: none"> • Reducing CO₂ emissions • Efficient use of resources (energy, water, etc.) • Responsible employer (fair labor practices, diversity and inclusion)
Team members and Executive Committee	<ul style="list-style-type: none"> • Responsible use of resources (minimize waste, recycling) • A safe and inclusive work environment with fair labor practices • Responsible use of guest data
Owners and investors	<ul style="list-style-type: none"> • Reducing CO₂ emissions (including mitigating climate-related risks) • Efficient use of resources (energy, water, food and beverages) • Responsible employer (fair labor practices, diversity and inclusion) • Clear governance model for sustainability (engagement of Executive Committee and Board, integrated across entire organization)
Business partners (suppliers and property owners)	<ul style="list-style-type: none"> • Responsible employer (diversity and inclusion, fair labor practices, recruiting, preventing harassment) • Close collaboration with suppliers and other business partners on sustainability issues • Reducing environmental impact (use of resources, CO₂ emissions)

Metrics and targets

Targets related to climate change mitigation and adaptation

	2024	2023
CO₂ emissions		
Decrease CO ₂ e/m ² by 50% by 2030 compared with the base year 2019 (scope 1 and 2)	-30%	-9%

Scandic involves relevant stakeholders including team members, guests and suppliers in its work to define and implement its climate targets. Through continuous dialogue and collection of feedback, the company ensures that its targets are both achievable and responsible.

To ensure that the climate goals remain relevant and effective, Scandic adjusts its goals and methods as needed, in line with the latest scientific research and changes in legislation. This flexible and proactive strategy enables long-term and sustainable initiatives to reduce the company's climate impact.

Source: Scandic Annual & Sustainability Report 2024

SUSTAINABILITY

Scandic conducts a double materiality analysis to identify and evaluate how various sustainability aspects impact its operations and how its operations, in turn, affect the environment, society and economy. This methodology involves a thorough assessment of impacts, risks and opportunities, providing a comprehensive view that forms the basis for strategic decisions and long-term sustainability management. Scandic has identified the following material areas in accordance with the ESRs-standards:

- ESRs E1, E3-E5 – Environmental matters: Climate change, water resources, biodiversity and ecosystems as well as resource use and circular economy.
- ESRs S1-S4 – Social matters: These include the well-being of Scandic's team members and suppliers' employees, the impact on the communities Scandic is part of and a strong focus on guest well-being and safety.
- ESRs G1 – Governance matters: This area pertains to corporate governance, business ethics and anti-corruption.

Transition plan for climate change mitigation

Svedbergs Group has developed a transition plan to mitigate climate change which has been approved and adopted by the Board and management. Action plans have been developed for each company and these will form the basis for a broader review and further development of the transition plan. Important aspects are factors such as the growth and overall development of the company. A key part of this work is the implementation of a circular business model, focusing on identifying both challenges and opportunities and specifying how this can be realised in practice. The development of the transition plan will continue in 2025.

Every year, a Climate Audit is carried out, in which greenhouse gas emissions in the value chain are analysed according to the Greenhouse Gas Protocol (GHG Protocol). The analysis is used to develop and adjust reduction plans and targets for all Group companies, and activities to prioritise greenhouse gas reduction measures adapted to each company.

Source: Svedbergs Group Annual & Sustainability Report 2024

Impact, risks and opportunities

Impact in the value chain

Energy use in connection with the manufacture of Svedbergs Group's products accounts for a large proportion of the Group's total emissions. This applies to both products purchased from external suppliers and those manufactured in the Group. The manufacture of products made of glass and porcelain is particularly energy intensive. Transport of incoming and outgoing products also generates greenhouse gas emissions and has a negative climate impact, as does travel by the Group's employees.

Risks and opportunities for Svedbergs Group

The main risks relate to regulatory changes, new incentives for energy efficiency and renewable energy, and the increasing competitiveness of alternative energy sources, which may lead to greater price fluctuations and instability both in conventional electricity grids and in fossil fuel costs. Changing customer demands as a result of increased awareness of climate change and environmental issues may present an opportunity for the Group's companies if they can adapt and offer products with a lower environmental

Appendix 3.3 Examples of included hits in the back-end

Note 30 "Provisions", Lundbergsföretagen

NOTE 30 – PROVISIONS

A provision differs from other liabilities in that uncertainty prevails concerning the date of payment or the amount that will be required to settle the provision. A provision is recognized when an existing legal or informal commitment arises from an event that has occurred, it is probable that an outflow of resources will be required to settle the commitment and the amount concerned can be reliably estimated.

The provision is posted in an amount that represents the best estimate of what will be required to settle the existing obligation on the balance-sheet date. A provision for restructuring is recognized when a detailed and formal restructuring plan has been established, and restructuring has either been started or announced publicly.

Provisions are posted for **environmental** measures associated with prior operations when **pollution** arises or is discovered and when it is probable that payment liability will arise and the amount can be reliably estimated.

SEK m.	2024	2023
On January 1	466	456
Provisions during the year	32	22
Utilized during the year	-46	-27
Unused that was reversed during the year	-1	-5
Reclassification		20
Translation differences		0
	451	466
Non-current	406	435
Current	45	31
	451	466

Provisions primarily pertain to uncertainty associated with obligations for restoration of the environment. SEK 85 m. of these provisions are expected to be settled within three years, while the remainder are expected to be settled over a longer time frame.

Source: Lundbergsföretagen Annual Report 2024

Note A1 "General accounting principles and new accounting rules", SCA

Climate-related risks and opportunities

SCA sees both risks and opportunities linked to a changed **climate and measures** to counteract or adapt operations to expected **climate change**. Identifying and managing these risks are integrated into the company's risk process. SCA has analyzed **climate-related** risks and opportunities using two alternative scenarios, one scenario with low future emissions and one scenario with high future emissions, refer to the risk section in the Board of Directors' Report. Negative impacts could be increased costs or reduced opportunities to conduct forest operations and thus lower harvesting rates. Positive opportunities could be greater demand for renewable materials and renewable energy.

The expected physical **climate change** is deemed to have the greatest impact on the development of the forest holding and conditions for forest operations and is currently considered to be related to more frequent extreme weather conditions, increased risk of infestation and a longer growing season. Transition risks, such as political decisions, could entail both opportunities and risks for the company. Positive or negative impacts were identified in the following areas and are discussed under each note:

- Measurement of assets, see Notes D1 and D2.
- Measurement of forest assets, see Note D3.
- Access to and terms of financing, see Note E4.

Source: SCA Annual Report 2024

Note 9: Intangible assets, Billerud

Intangible assets

Emission rights

Billerud participates in the European system for **emission** rights and each year Billerud receives allowances free of charge. Billerud has chosen to recognize the **emission** rights as a current intangible asset since Billerud intends to sell or utilize the **emission** rights within 12 months and as a pre-paid revenue. The **emission** rights are initially recognized at market value as of the date to which the allocation pertains.

During the financial year, the prepaid revenue is dissolved linearly as actual emissions occur and a liability for use of **emission** rights is recognized. Both the revenues and the expenses are reported on the row for Raw materials and consumables in the income statement to achieve the purpose of the allocation of **emission** rights, which is to cover Billerud's emissions of **carbon** dioxide.

At the subsequent measurement of the **emission** rights, an assessment is made based on whether the price at the initial recognition is higher or lower than the market price at the end of the accounting period. There is an active market for **emission** rights, and observable prices on **emission** rights are determined on a daily basis. The market price reflects the price that Billerud expected to gain from a sale of the emissions rights and is therefore the residual value of the asset. During the year, Billerud signs forward contracts for a predetermined share of the emissions rights with delivery in December. Possibly positive results from the sale of **emission** rights are reported upon delivery in December. The amortized amount of the **emission** rights is zero, because there is no ongoing consumption of the **emission** rights after the previous year's liability has been settled. Instead, impairment assessment is carried out.

Source: Billerud Annual & Sustainability Report 2024

Cont. Note 9: Intangible assets, Billerud

SEK m	Emission rights	
	2024	2023
Carrying amount at start of year	123	132
Emission rights allocated	492	737
External purchase	5	6
Sales	-413	-674
Settlement with Swedish government	-60	-78
Carrying amount at year-end	147	123
Accumulated impairment losses		
Carrying amount at start of year	-12	-2
Impairment	-18	-180
Sales	30	170
Carrying amount at year-end	-	-12
Carrying amount according to balance sheet	147	111

During 2024, a positive result of SEK 471 million (575) from **emission** rights was accounted for, which has been recognized under the item Raw material and consumables in the income statement. **Emission** rights that Billerud is entitled to but has not yet been allocated amounted to SEK 33 million (-), and are accounted for as an accrued income up until allotment. At the end of the year, the liability for **emission** amounted to SEK 53 million (70), which are accounted for as a Other current liability.

In accordance with the applicable legislation for the EU **Emission** Trading Scheme (EU ETS), Billerud will only be allotted free **emission** rights during the financial year 2025. It means that no free emissions right can be expected 2026 and going forward.

For more information on **emission** rights, see the Risks and risk management Report on page 41 and ESRs 2 SBM-3 on page 60.

Source: Billerud Annual & Sustainability Report 2024

Performance share program 2015 to 2024

Financial targets for the 2015 to 2020 programs are earnings before interest, tax, depreciation and amortization (EBITDA) and total shareholder return (TSR). The final allotments of performance shares will be based 50% on accumulated EBITDA and 50% on TSR during the full performance period of three years. TSR is measured in relation to TSR of a group of comparable telecom companies defined by the Board of Directors. The 2021 program got a target on Return on Capital Employed (ROCE) in addition to EBITDA and TSR. The final allotments of performance shares will be based on 25% weighting on accumulated EBITDA, 50% on TSR and 25% on ROCE. To align the performance measures with the Group's strategic priorities, an Operational Free Cash Flow (OFCF) target and an **Environmental, Social and Governance (ESG)** target was introduced for the 2022 program in addition to the TSR and the ROCE targets. The 2023 and 2024 programs respectively, are similar to the 2022 program. The final allotments of performance shares in the 2022, 2023 and 2024 programs will be based on 40% weighting on TSR, 20% on ROCE, 25% on OFC and 15% on **ESG**. The maximum number of performance shares a participant can be initially granted corresponds to 30% of the participant's annual base salary.

Source: Telia Annual Report 2024



Accounts payable and other liabilities

Accounts payable and other liabilities include financial liabilities measured at amortized cost.

Supplier financing arrangements

Supplier invoices relating purchases that are part of SSAB's supplier financing program are reported as accounts payables on the consolidated statement of financial position.

Emission rights

SSAB participates in the EU's **emission** rights trading system. If there is a deficit between the free **emission** rights allocation and the estimated emissions for the period, the difference is accrued as an expense for the period. **Emission** rights are reported as intangible assets and are booked at acquisition value.

Source: SSAB Annual Report 2024

3.6 ESG risk

3.6.1 Definition

The risk of any current or prospective negative impact on the Group stemming from **Environmental, Social or Governance ("ESG")** factors. The impact can be indirect through the Group's counterparties and invested assets, or direct on the Group.

3.6.2 Risk management

ESG risk stems from direct or indirect exposure to **ESG** factors. Swedbank is primarily exposed to **ESG** factors indirectly through its customers' and counterparties' exposure to **ESG** factors, but also directly through its own operations. **ESG** risk materialises through existing risk types, e.g. as credit risk through the financial performance of Swedbank customers or strategic risk if Swedbank fails to seize business opportunities that arise from the transition to a more sustainable economy.

Although all **ESG** factors may in principle drive risks, the emphasis is currently on **environmental** factors and in particular on **climate change**. Climate and **environmental** risks have distinctive characteristics demanding special considerations, including a potentially large impact, an uncertain and longer-term time horizon during which they could materialise, and the dependency on short-term action. Thus, despite some risks being more likely to materialise in the long term, they require management today.

Methodologies to assess the financial materiality for individual institutions, i.e. establishing a clear and measurable link between **ESG** factors and credit risk, are still in an early stage of development. The European Banking Authority (EBA) has been mandated with developing common methodologies for **ESG** risk assessment. In the EBA report on **ESG** risk management and supervision a set of risk assessment methods are presented. These are: (i) the alignment method, which focuses on how aligned an institution's portfolio is with global sustainability targets, (ii) the exposure method, which focuses on how individual exposures and counterparties perform on **ESG** factors, and (iii) the risk framework method, which focuses on how sustainability related issues affect the risk profile of a bank's portfolio and its standard risk indicators and includes scenario analysis and stress testing. Swedbank has developed methods within all three categories.

3.6.2.1 The portfolio alignment method - Swedbank is measuring financed emissions and has set climate targets for the lending portfolio

The primary purpose of the **climate targets** is to contribute to combatting **climate change** by supporting our customers in their transition to more sustainable business models, but they also allow Swedbank to manage its exposure to **ESG** risk as they steer the lending portfolio towards activities that are aligned with limiting **global warming** to 1.5°C. Read more about Swedbank's **climate targets** on page 22.

Source: Swedbank Annual & Sustainability Report 2023

Conclusions from the scenario analysis

Climate-related risks are increasing in both scenarios but are likely to be contained given that they are carefully managed. The sustainable development scenario entails more transition risk in the short to medium term, while the stated policy scenario entails physical risks in the long term. The Group will closely manage these risks together with its customers while supporting them in their transition, and in this way build a sustainable lending portfolio. An extensive development work is ongoing both among companies and financial actors to enhance capabilities to manage **climate-related** risks. The corporate customer **ESG** analysis tool is an important step in the right direction for the Group and its customers.

Monitoring climate-related risks in the credit portfolio

Swedbank has implemented Key Risk Indicators (KRI) to monitor the lending exposure to corporate segments where significant transition risk has been identified. The identification and materiality assessment has mainly been made through the TCFD scenario exercises and supported by **greenhouse gas** emissions data. Consequently, Energy, Transportation and Materials and Buildings are in scope for this KRI.

Source: Swedbank Annual & Sustainability Report 2023

Appendix 4: Robustness and Model Validity

Appendix 4.1 Pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) ClimateFS	1.000											
(2) ClimateBroadFS	0.649*	1.000										
(3) ClimateFE_Cov	0.283*	0.388*	1.000									
(4) ClimateFE_Ref_In	0.298*	0.412*	0.788*	1.000								
(5) InstOwn	0.072	0.154*	0.229*	0.271*	1.000							
(6) MV_In	0.353*	0.397*	0.501*	0.633*	0.358*	1.000						
(7) ROA	0.083*	0.182*	0.303*	0.406*	0.174*	0.455*	1.000					
(8) Lev	0.091*	0.072	0.178*	0.276*	0.056	0.053	-0.011	1.000				
(9) BtM	-0.087*	-0.131*	0.009	-0.020	-0.224*	-0.310*	-0.039	-0.062	1.000			
(10) Age_In	0.246*	0.336*	0.372*	0.370*	0.148*	0.427*	0.249*	0.123*	-0.112*	1.000		
(11) ESRS	0.112*	0.204*	0.411*	0.490*	0.213*	0.389*	0.241*	0.158*	-0.019	0.163*	1.000	
(12) ESRSE1	0.029	0.092*	0.325*	0.292*	0.105*	0.216*	0.104*	0.074	-0.038	0.018	0.359*	1.000

Note: This table presents the pairwise correlations among all variables, except for categorical variables. The definition for each variable can be found in section 4.2, Table 3.

Appendix 4.2 Variance inflation factor (VIF)

	Main Model for H1		Main Model for H2		
	VIF	1/VIF	VIF	1/VIF	
MV_In	2.020	0.496	MV_In	1.910	0.523
ClimateFS	1.670	0.599	ESRS	1.360	0.734
ESRS	1.390	0.718	ROA	1.300	0.772
Age_In	1.320	0.759	Age_In	1.260	0.796
ROA	1.300	0.769	InstOwn	1.180	0.848
ESRSE1	1.220	0.817	ESRSE1	1.170	0.857
BtM	1.180	0.847	BtM	1.160	0.859
Lev	1.070	0.937	Lev	1.050	0.954
Mean VIF	1.400		1.300		

Note: This table presents the variance inflation factors (VIF) for the main models used to test hypotheses 1 and 2.