


## RESEARCH ARTICLE OPEN ACCESS

# Credit Risk Assessment From a Strategic Sustainability Perspective: The Case of the Nordic Banking Sector

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## ABSTRACT

The financial sector plays an important yet ambivalent role in society's sustainability transition. Credit decisions have a substantial impact as they determine the allocation of large amounts of financial resources. This study applies the Framework for Strategic Sustainable Development as a lens to review literature and investigate practices in Nordic banks on sustainability considerations in corporate credit risk assessment. Three gaps and recommendations are presented: (i) banks should apply a systems perspective that goes beyond a narrow focus on climate change to avoid sub-optimisation; (ii) strategies like inclusion and exclusion should be informed by backcasting from basic sustainability principles to foresee the long-term direction of change and to assess whether solutions are scalable towards sustainability; and (iii) instead of asking whether it 'pays to be sustainable', research and practice should focus on 'how' companies can work strategically with sustainability, finding the optimal timing between being too passive and too proactive.

## 1 | Introduction

There is a pressing need for societal transition to address the rapid degradation of the ecological and social systems that human society is dependent on (Richardson et al. 2023). Climate change, loss of biodiversity and erosion of trust are just a few examples of alarming trends that come with severe consequences for society (UNEP Finance Initiative 2022; Edelman Trust Institute 2024). The financial sector, especially corporate banks, plays a vital role in facilitating this transition because they hold and allocate significant financial resources (Net-Zero Banking Alliance 2024; Nguyen et al. 2023; Scholtens 2006). However, the financial sector is not 'a uniform entity that is guided by univocal standards and norms' (Wiek and Weber 2014) but comprises a diverse array of institutions such as ethical banks and corporate banks. Despite the existence of various instruments under the umbrella of sustainable finance, many banks continue

to provide large amounts of financial resources to unsustainable operations (Rainforest Action Network, BankTrack, Indigenous Environmental Network, Oil Change International, Reclaim Finance, the Sierra Club and Urgewald 2023). While banks have significant impact on sustainable development, the inverse is also true: a shift towards sustainable development entails substantial impact on banks and their clients, e.g., through material scarcity, changing customer preferences and stakeholder expectations, requiring banks to integrate sustainability into their common practices (Scholtens 2009; Weber 2014).

Credit risk management is an operation that is particularly affected by this complex two-way impact. However, with some exceptions like social banking and impact investment, most attention has focused on the outside-in effects on companies while the inside-out effect on society has been largely neglected (Cunha et al. 2021; Porter and Kramer 2006). As history has

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shown how both environmental and social issues can disrupt not only individual companies but entire sectors, banks must adapt their credit risk assessment (CRA) practices to adequately consider the effects of sustainability aspects on debtors' repayment capacity and credit risk rating (Anderson 2005; Weber et al. 2015). Doing so effectively can improve predictions of the financial performance of debtors on increasingly sustainability-driven markets (Henisz and McGlinch 2019; Weber et al. 2010).

Despite its importance, the sustainable finance literature is excessively fragmented, and the under-theorisation of the sustainable finance concept is described as one of the greatest challenges in the field (Cunha et al. 2021; Ozili 2023a). For instance, theoretical differences and overlaps between corporate responsibility, which builds on a normative foundation, and corporate sustainability, which builds on a natural science foundation, result in different views on the motivations for banks to pursue sustainable finance (Bansal and Song 2017). In CRA, challenges remain, among other things, regarding what sectors or company practices that qualify as 'sustainable' and how that can be assessed (Johnstone et al. 2023). Cunha et al. (2021) further emphasise the need for qualitative studies to gain deeper insights into how practitioners perceive and operationalise sustainable finance.

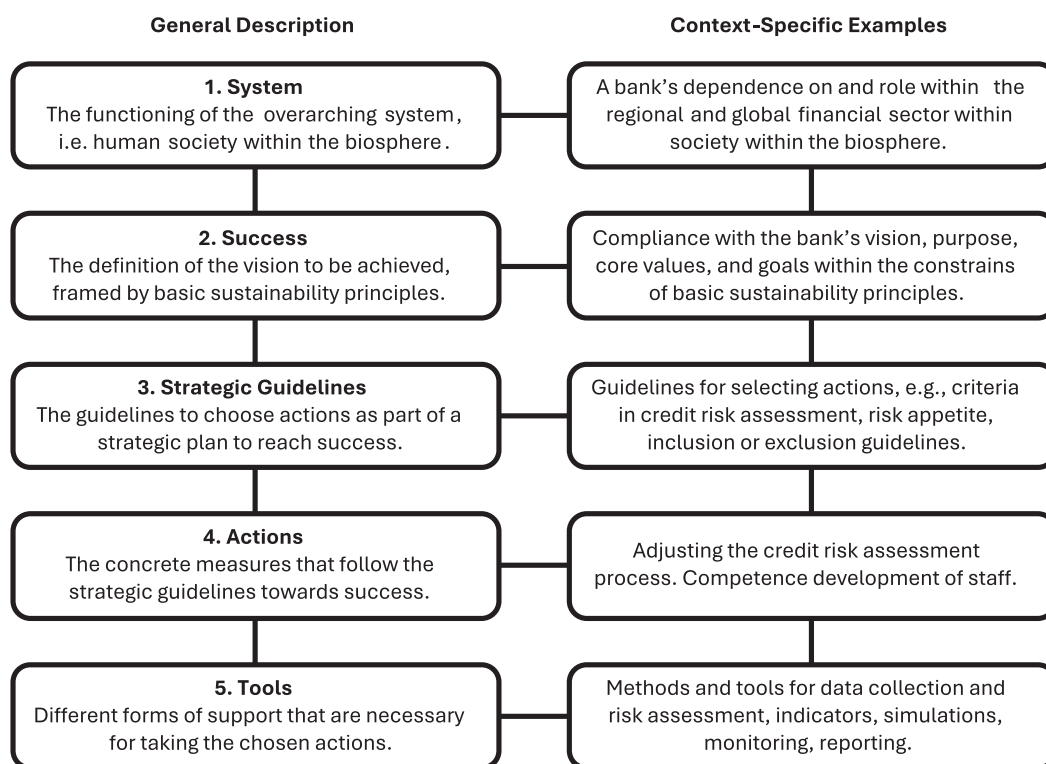
In response to these challenges, the aim of this study is to identify gaps and opportunities in CRA through a strategic sustainable development lens, which is introduced in the following section. Through literature review and an empirical study of large conventional Nordic banks, further detailed in Section 3, current perspectives and approaches in academia and practice are explored. These findings are presented in Section 4, structured along five distinct but interconnected levels. Section 5

discusses the findings from a strategic sustainability perspective and Section 6 distils the gained insights into three proposed gaps and corresponding recommendations. Thereby, the contribution of this study is threefold: (i) it depicts and structures literature on sustainable finance in the context of CRA; (ii) it qualitatively explores how practitioners in the Nordic banking sector perceive and address sustainability aspects in CRA; and (iii) it shows the implications of a strategic sustainable development lens for sustainable finance in the context of CRA. The following research questions are addressed:

1. What conceptualisations and approaches for integrating sustainability considerations into CRA are described in literature?
2. How are Nordic banks incorporating sustainability considerations into their CRA practices?
3. What gaps and opportunities can be identified from a strategic sustainability perspective?

## 2 | Conceptual Framework

Even for organisations that recognise the importance of sustainability, it is challenging to navigate the complexity of the sustainability transition and to identify solutions that both promote sustainable development and are viable from a business perspective. There is an abundance of concepts, initiatives, methods and tools that aim to support actions towards sustainability in general and sustainable finance in specific. Even though this growing amount of knowledge and resources is an important asset, for practitioners operationalising them, they may often seem misaligned or in competition with each other, creating



**FIGURE 1** | The five-level model of the FSSD, based on Broman and Robèrt (2017), and context-specific examples.

difficulties for decision-making when they provide conflicting recommendations (Bastianoni et al. 2018; Lu et al. 2019). This is also the case for sustainable finance in specific, where multiple authors problematise the overabundance of heterogenous concepts, definitions and supports and describe it has a hinder for the development of the area (Cunha et al. 2021; Migliorelli 2021; Ozili 2023a).

## 2.1 | The Framework for Strategic Sustainable Development

The Framework for Strategic Sustainable Development (FSSD) was designed with the purpose to provide decision-makers with the necessary perspective and understanding that enables the complementary use of methods, tools, etc., for strategic planning towards sustainability in complex systems (Broman and Robèrt 2017). Its usefulness for that purpose has been demonstrated in numerous studies for more than 20 years (e.g., D’Amato and Korhonen 2021; Hallstedt et al. 2010; Korhonen 2004; Robèrt et al. 2002; Robèrt et al. 2013). The FSSD includes a Five-Level Model (5LM), Figure 1, to help differentiating between entities on different levels while remaining mindful of the interrelationships between them, which is important for comprehensive planning and decision-making in complex systems (Broman and Robèrt 2017; Robèrt 2000).

The system level includes the overall functioning of the system that banks are nested within, i.e., human society within the biosphere. Knowledge about, e.g., resource stocks and flows, processes in Nature such as biochemical cycles, as well as about human beings and societal institutions are included in this level. A clear definition of success is a prerequisite for strategic planning and decision-making. However, the success level is often either too general to provide operational guidance in practice, for example, when only the Brundtland definition of sustainable development is used or it is too specific, for example, when specific scenarios are used, which makes consensus difficult and the vision inflexible (Robèrt et al. 2013). Based on studies of the underlying mechanisms that degrade the essential aspects of the ecological and social systems that society is dependent on, the FSSD uses eight first-order sustainability principles: ‘In a sustainable society, nature is not subject to systematically increasing (1) concentrations extracted from the Earth’s crust, (2)

concentrations of substances produced by society, (3) degradation by physical means; and people are not subject to structural obstacles to (4) health, (5) influence, (6) competence, (7) impartiality, and (8) meaning making’ (Missimer 2015). By covering the root causes, up-streams in cause-and-effect chains, the principles enable the application of a holistic systems perspective without drowning in the myriads of symptoms of unsustainable development, such as climate change, biodiversity loss, corruption, discrimination, etc. The principles can be used as boundary conditions for the vision of success, ensuring that the vision is sustainable, while not being more prescriptive than necessary. Strategic guidelines are important to arrive at a stepwise approach for how to move towards the vision of success. This includes that actions should serve as economically beneficial, flexible platforms that lead towards the vision over time. Concrete actions need to be taken as part of a strategic plan informed by the guidelines. Finally, tools and other forms of support are required to facilitate the chosen actions.

To support strategic decision-making, the FSSD incorporates a backcasting approach called the ABCD procedure: (A) creating a vision of success within the frame of the sustainability principles; (B) assessing the current situation in relation to the vision; (C) listing potential solutions to bridge the gap between the vision and the present state; and (D) prioritising among these solutions to develop a strategic plan.

## 3 | Methods

To answer the RQs, this study combined literature review with empirical data collection and the application of a strategic sustainable development lens, see Figure 2.

Given the exploratory nature of RQ1, a semi-systematic literature review was conducted as this type of review is particularly well suited for gaining an overview and exploring the historical development of topics that are diverse and span across multiple disciplines (Snyder 2019). The journals Business Strategy and the Environment (BSE) and Journal of Sustainable Finance and Investment (JSF&I) were selected as they explicitly include sustainable or green finance in their aim and scope. For BSE, the following search string was applied: *TOPIC: (credit\* OR loan OR lend\* OR debt\* OR bank\* OR ‘sustainable finance’ OR ‘green*

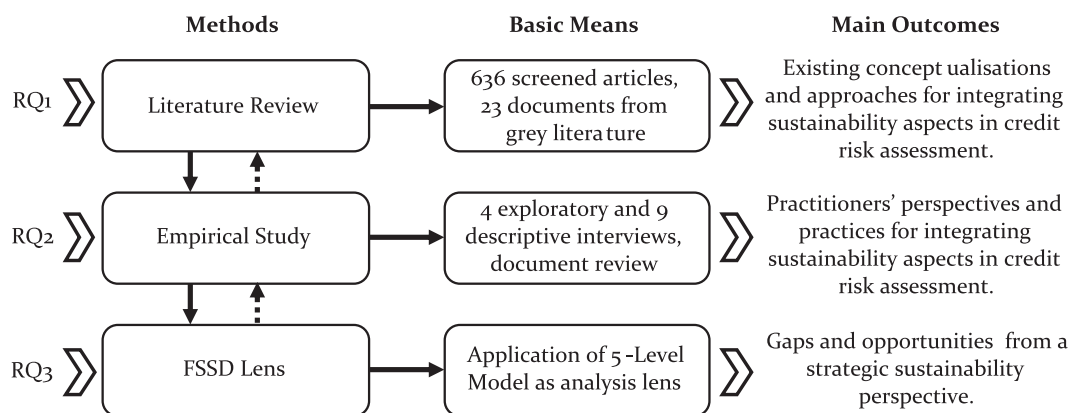


FIGURE 2 | Overview of the research design.

finance'), yielding 116 results. Due to the narrower scope and differences in indexing, for JSF&I, all articles from the first issue of Volume 1 in 2011 to the fourth issue of Volume 14 in 2024, were systematically reviewed, in total 520 articles. Through a stepwise process, starting with a review of the title and then, based on relevance, the abstract, introduction and conclusions and the full article, 55 key references were identified. From those, backward snowballing was done to also cover central articles published in other journals (Wohlin 2014). The review of academic articles was complemented by a review of grey literature, for example, sector guidelines, in total 23 documents.

Following the call for qualitative studies (Boiral et al. 2024; Cunha et al. 2021; Wiek and Weber 2014) to not only deal with the abstract but to also understand the people working with sustainable finance in practice, interviews were conducted. The purpose was to gain an understanding of how Nordic banks currently perceive and manage sustainability aspects in CRA. In the first step, four exploratory interviews were conducted with sustainable finance experts, selected through convenience sampling, to get an initial understanding of the practitioners' contexts. Alongside the RQs and the 5LM, the results of these interviews supported the creation and calibration of an interview protocol (available as [Supporting Information](#)), which then was used for semi-structured interviews with purposively sampled practitioners at Nordic banks. The banks were selected based on the criteria that they offer corporate credit services in one or multiple Nordic countries (Denmark, Finland, Iceland, Norway, Sweden). The Nordic countries were chosen as they are leading when it comes to working with sustainability as indicated by high scores in ratings such as the Sustainable Development Goals (SDG) index (Sachs et al. 2024) and the Robeco Country Sustainability Ranking (Robeco 2023). According to the resource theory of sustainable finance, countries with high human-made resources have an advantage and are quicker in the transition from traditional to sustainable finance practices (Ozili 2023a). It can therefore be hypothesised that sustainability aspects are more prevalent in banking activities and CRA in the Nordic countries compared to other regions. In total, 43 banks met the criteria and 70 employees, selected based on having roles related to credit risk assessment, sustainability or ESG were contacted via e-mail. Nine interviews at six banks, each lasting 60–90 min, were conducted, see Table 1. The interviewees include both people with a distinct focus on sustainability and people working with CRA more generally. They all have significant experience of working in the finance sector, on average 14 years. All the studied banks have long history of providing corporate credit and are among the biggest five conventional banks in their respective market. Two researchers were present in all interviews. In addition to note taking during and immediately after the interviews, all interviews were transcribed. Document review of material sourced from the banks was conducted for triangulation, in total 42 documents.

The collected data was coded using a thematic approach to identify underlying themes. A combination of deductive and inductive coding was applied, where code groups were created deductively based on the 5LM and codes within the code groups were created inductively from the data. The codes were then used to restructure the data. Analysis followed the three-step iterative process described by Corbin and Strauss (2008): firstly, the data was read

**TABLE 1** | Interviewee information.

Interview No.	Organisation	Country	Role
P1	Bank 1	Denmark	Senior ESG advisor
P2	Bank 2	Finland	Senior ESG analyst
P3	Bank 2	Finland	Senior project manager ESG risk
P4	Bank 3	Iceland	Sustainability manager
P5	Bank 3	Iceland	Financial risk analyst
P6	Bank 4	Norway	Senior sustainability advisor
P7	Bank 5	Sweden	Credit portfolio analyst
P8	Bank 6	Sweden	Sustainability analyst
P9	Bank 6	Sweden	Senior ESG advisor

repeatedly by multiple researchers and the content was assigned to codes through an open coding process. Secondly, axial coding was performed to make connections between the codes and place them into categories. Thirdly, through selective coding, the core findings were identified. Multiple strategies based on Miles et al. (2014) were applied to generate meaning from the coded data, primarily constant comparisons, theme generation, clustering and looking for conflicting evidence.

In the last step, the findings of the literature review and empirical study were analysed through the lens of the FSSD to provide insights on the concept of sustainable finance and implications for CRA. This was in part done by using the 5LM in the coding process and in part by contrasting the findings of the data analysis with the FSSD's strategic approach to sustainability.

## 4 | Findings

Following the structure of the 5LM, this section presents the findings of the literature review and interviews to answer RQs 1 and 2.

### 4.1 | The System Level

The system level addresses questions on the role of the financial sector in relation to the social and ecological systems, as well as the role of banks' lending operations within the financial sector.

#### 4.1.1 | Literature Findings

While sustainable development is commonly defined by the Brundtland definition (WCED 1987) and a Triple Bottom Line (TBL) perspective of ‘simultaneous pursuit of economic prosperity, environmental quality, and social equity’ (Elkington 1998) is frequently used as a business approach to sustainability, there is a multiplicity of concepts and initiatives that aim to support understanding and operationalising sustainable finance. Despite many proposed definitions (e.g., Cunha et al. 2021; European Commission Forthcoming; Ozili 2023a), there is no consensus on the meaning of the term ‘sustainable finance’. Eccles (2013) finds that a concrete discussion of the concept of sustainability has been omitted and concludes that it can be described as an ‘empty signifier’. Dimmelmeier (2023) instead refers to it as a ‘contested concept’, whose meaning is ambiguous and debated but not completely open to interpretation. He identifies five frames through which sustainable finance is viewed: socially responsible investment (SRI), risks and opportunities, critical, climate finance and integrated. Ozili (2023a) summarises five theories of sustainable finance. Boiral et al. (2024) problematise the vagueness of sustainable finance and describe the role of standardisation processes for decontesting and recontesting the term. Similarly, Cunha et al. (2021) discuss advantages and disadvantages with more or less rigid definitions. In contrast to Dimmelmeier, who avoids the notion of progress towards a more true or real conceptualization, Schoemaker (2017) presents a hierarchical typology in his framework for sustainable finance, which ranges from finance-as-usual (maximising financial value for shareholders) to sustainable finance 3.0 (optimising social and environmental impact while considering financial value to create value for the common good). Current literature does not seem to ascribe to one frame or typology (e.g., Akomea-Frimpong et al. 2022; Kuhn 2022; Ozili 2023b).

When it comes to lending activities specifically, considering sustainability aspects dates back to 1992 and the UNEP statement by Banks on the Environment and Sustainable Development (UNEP 1992). More recently, multiple initiatives were launched to support the banking sector in adapting more sustainable practices, such as the UN Principles for Responsible Banking (PRB), the Net-Zero-Banking Alliance (NZBA) and the Task Force on Climate-related Financial Disclosures (TCFD). The UN Environment Programme Finance Initiative (UNEP FI 2021) stresses the importance of a systems perspective and a holistic and proactive approach that acknowledges that sustainability issues not only are about reducing negative impacts, but also about creating positive impacts for society and the environment. Such voluntary initiatives, as well as mandatory regulation and changes in stakeholder awareness and expectations constitute a system level with increasing pressure for banks to develop their capabilities to include sustainability considerations into their operations (Akomea-Frimpong et al. 2022; Friede et al. 2015).

#### 4.1.2 | Empirical Findings

The interviewees within the Nordic banks recognise their significant role within the larger system’s transition towards

sustainability. Even though there is an impact of the banks’ internal operations, ‘that is a drop in the ocean – the real impact comes through the investment and lending portfolios’ (P3) as this is ‘where you decide where your capital flows’ (P5). Policy makers can regulate the finance sector to direct that flow to achieve their targets, making banks act as ‘the extended arm of regulators’ (P9). In the EU, policy makers ‘decided on all these regulations, all these targets, all these policies [...]’. So, they [actors within the financial market] can roll out all of it on the markets and in that sense enable this transition’ (P9). Thereby, financial institutions become ‘this execution authority or this enabler of the transition through steering of capital’ (P9).

While frameworks and initiatives like PRB, Global Reporting Initiative and UN Global Compact have been applied for many years, translating sustainability ambitions into credit risk operations is ‘very fresh’ (P6), in most cases starting around 2020, but ‘rapidly evolving’ (P5) since. Interviewees describe that ‘strategy and operations were two different things’ (P4) and that there has been ‘a big shift now that it is coming down into day-to-day business with our clients’ (P6) and it is ‘going to be implemented into the core business of every division of the bank’ (P4).

The driving forces behind this acceleration are described as ‘a tsunami - it’s just going over everything now’ (P3). Externally, it is primarily regulations and customer requirements, partly also driven by ‘general pressure from society for more transparency and more open discussions about what is sustainable and what is not’ (P9). Internally, an important driver is ‘the strategic focus of the bank [...]’. It’s not just something we have to do – it is something we also really want to do’ (P3). Several interviewees describe that working with sustainability is important ‘to keep your employees’ (P4), because they experience ‘a real desire to make this happen and find the ways for how the heck to overcome all these challenges [...]’. Especially among the younger employees, everybody wants to do something with sustainability’ (P3). Reputational issues for the bank are also a driver as ‘financing customers with a harmful behaviour on the environment results in reputational risk for the bank’ (P7). Still, the most important driver are the risks themselves and how they will affect customers’ repayment capacity, indicating that the banks operate within what Dimmelmeier (2023) calls ‘risks and opportunities frame’.

## 4.2 | The Success Level

The success level addresses questions on the objectives of actors within the financial system, objectives of including sustainability aspects in CRA and how these relate to success on societal level.

#### 4.2.1 | Literature Findings

In recent years, there have been attempts to reassess the role and objective of the corporate within the social system to view it as ‘a mechanism that expresses social purpose and responsibility (Business Roundtable 2019; Edmans 2020)’ (Johnstone et al. 2023). Traditionally however, in most post-war Western economies, success in the financial sector ‘first-and-foremost,

means a financial benefit for the business that adopts the strategy' (Weber 2014), which is also referred to as the Friedman-doctrine or finance-as-usual (Schoenmaker and Schramade 2019). Based on this foundation, it has been widely discussed whether considering sustainability aspects would imply an abandonment of the fiduciary duty, especially since some studies presented evidence that sustainability considerations could cost financial performance. On the other hand, the opposite position has been put forward, i.e., that it would be an abandonment of the fiduciary duty not to consider sustainability aspects. The main argument for this position being that there are regulatory requirements and stakeholder (including shareholder) expectations to include sustainability considerations and that only by doing so effectively, financial benefit can be maximized (Eccles and Klimenko 2019). Since the early 1970s, a plethora of studies have investigated the question of whether it 'pays to be sustainable' (also referred to 'does it pay to be green' due to a common focus on environmental aspects). Friede et al. (2015) provided a meta-analysis of evidence from more than 2000 studies and concluded that the business case for ESG investing is empirically well founded with a large majority of studies reporting positive findings. On the other hand, Atz et al. (2023), also doing a meta-analysis, found the financial performance of ESG investing to be indistinguishable from conventional investing. Other recent studies also present diverging findings (Abdulla and Jawad 2024; Broccardo et al. 2024; De Mendonca and Zhou 2019; Mathew and Sivaprasad 2024; Mohamed Buallay et al. 2023; Sharma et al. 2024; G. Zhou, Liu and Luo 2022). This question has also been studied specifically in the context of banks and credit but with inconclusive results (e.g., Adu 2022; Ali et al. 2023; Gangwani and Kashiramka 2024; Hasan et al. 2022; Wellalage and Kumar 2021; X. Y. Zhou, Caldecott, et al. 2022).

There is a long history of incorporating environmental risks in CRA, primarily related to (i) site contamination, (ii) regulatory-driven investments, (iii) market changes and consumer attitudes and (iv) reputation (Weber et al. 2010; Weber et al. 2015). The benefits of integrating sustainability aspects in CRA are widely acknowledged (Bauer and Hann 2010; Goss and Roberts 2011; Nkurunziza 2012; Weber 2012; Weber et al. 2010) and several studies have provided empirical evidence for the correlation between incorporating (environmental) sustainability aspects and lower credit risk (e.g., Graham et al. 2001; Henisz and McGlinch 2019; Höck et al. 2020; Weber et al. 2015). For example, including sustainability aspects in CRA was found to improve the predictions of the financial performance of debtors and the predictive validity of the credit rating process (Weber et al. 2010). While the primary reason for banks to incorporate sustainability aspects into lending operations is risk management, there is a stronger focus on negative effects of sustainability risks than on positive effects, i.e., opportunities (Goss and Roberts 2011; Thompson and Cowton 2004). For instance, sustainability work is often referred to as having an insurance-like effect that helps hedging and mitigating and lowering tail risk (Aljughaiman et al. 2024; Atz et al. 2023; Landi et al. 2022). Environmental aspects, especially climate change, receive the most attention, while social aspects are considered marginally (Schoenmaker and Schramade 2021).

#### 4.2.2 | Empirical Findings

The empirical findings indicate that the necessity and importance of integrating sustainability aspects in CRA are not questioned, as it is seen as intertwined with the ability to reach the fundamental meaning of success in CRA, i.e., to get the loan back with interest. This shows an awareness of the outside-in perspective, meaning that the interviewees are aware that society's sustainability challenges and ambitions have implications for the success of the clients and thus of the banks that provide loans to the clients. In an ideal case 'the goal is to optimise credit risk. [...] The purpose of the credit should be fully understood, the lending should be proportionate to the repayment capacity of the borrower, all lending should be done based on analysis, the source of repayment should be known, and there should be a second way out in terms of collateral' (P7). This optimisation is also guided by the banks' risk appetite, which is 'cascaded down into various policies and limits and instructions for credit risk assessment' (P7). While this foundation is well-established, the change is that banks increasingly 'realise that many of what we traditionally called non-financial risk, actually is financial risk' (P6) because 'it's becoming more and more clear now how ESG risks are affecting profitability of our borrowers' (P9).

A variety of initiatives and sustainability aspects (both ecological and social) are used to define success; for example, how the banks' activities contribute to the SDGs, the Paris Agreement, human rights, labour rights, biodiversity, anti-corruption, gender equality and more. Despite the diversity of aspects that are mentioned, there is a strong focus on the environmental dimension and on climate change within it, mostly because of regulatory push and because 'you can calculate it, you can compare it, build models on it' (P7). These findings are aligned with the literature (e.g. Kennett et al. 2023). Biodiversity is also mentioned as important but considering it in CRA is deemed to be at an early stage, in line with findings by Nedopil (2023). Regarding the social dimension, aspects mentioned include 'activities towards the community and society, employee relationships and labour standards, customer protection and product responsibility and human rights' (P4). However, these vary more on a case-by-case basis and are considered difficult to assess and find data on. The impact of sustainability risks can happen in rather direct ways, e.g. through physical risks or regulatory and reputational issues as 'especially in the Nordic countries, many companies are operating in an environment where the breaching of any regulations would be hitting them hard' (P2). However, transition risks, i.e., 'anything from stranded assets to just businesses that become relatively non-competitive compared to other businesses' (P1) and the question of whether 'you are operating in a business that is actually still viable after 10 years' (P2) are deemed even more important to include in risk models. Measuring transition risks is perceived as a challenge. Meanwhile, the interviewees also note that an increasing income is generated from sustainability-related offerings, meaning that there also is a 'business risk, which is essentially not capturing ESG business opportunities - a kind of opportunity cost' (P7).

### 4.3 | The Strategic Guidelines Level

The strategic guidelines level asks questions on how to approach the vision of success. What strategic guidelines are meaningful is largely dependent on how success within the system is defined.

#### 4.3.1 | Literature Findings

Johnstone et al. (2023) ask what qualifies capital allocation as sustainable. This could be the *ex-ante* intent or the *ex-post* effects of a decision. The answer to that question has significant implications for which guidelines and consequently, actions and tools that are implemented. A common approach has been to work with inclusion and exclusion criteria. Inclusion criteria, also referred to as positive screening, are common in the SRI frame and mean that only sectors that are deemed 'good' from a sustainability or ethical point of view may receive investments or credit (Dimmelmeier 2023). Such credits are sometimes called 'green credits' or 'sustainable credits' and given to actors that aim to develop innovative solutions that contribute to sustainable development (Akomea-Frimpong et al. 2022). Exclusion criteria on the other hand identify sectors that are deemed 'sinful', oftentimes fossil fuel industries, pornography and certain military weapons. However, Blitz and Swinkels (2023) found that there is currently no sin premium and that exclusion can lead to under-diversification. To avoid that, it is possible to do best-in-class screening instead of excluding entire industries completely. However, this raises questions about how to do such assessments and ratings. For example, how should they consider past actions, current situation or future intentions (Cregan et al. 2024). There are also momentum strategies trying to identify the most improving companies (Atz et al. 2023). The effectiveness of these approaches is debated, both in relation to contributing to society's sustainability transition and in relation to financial implications for the actor applying these approaches (e.g., Chen et al. 2023). Weber et al. (2015, 2010) described the incorporation of sustainability criteria into credit risk management and found that they were effective in predicting the financial performance of a debtor. Mengze and Wei (2015) presented a checklist with indicators for evaluating environmental credit risk management performance of banks, which may also be used to guide improvement. The International Finance Corporation (2019) further showcased several actors' work of including environmental and social criteria in CRA.

#### 4.3.2 | Empirical Findings

The data from interviews and bank documents indicates a significant increase in the importance of sustainability aspects in credit operations. There are guidelines derived from external frameworks like the TCFD or the EU taxonomy to support and standardise the classification of what is considered sustainable or unsustainable. There are also internal guidelines, such as exclusion lists and ESG scoring. While some banks have exclusion lists for sectors, some interviewees are critical as 'you are penalising a full sector without going into the nuances of the different companies in that sector' (P7) and state that they do not use any exclusion and rather 'like to transition them [the clients]

into sustainability instead of excluding them' (P4) to avoid carbon leakage. In those cases, 'you need to ensure that they have a transition plan – that is paramount in our discussions with our customers who are not performing very well on sustainability' (P9). Still, it is a common practice to have restrictive policies in place for providing financial resources for what is considered unsustainable industries and to have offerings that are specifically directed towards clean technology. However, several interviewees express challenges in understanding with certainty what is sustainable what is not, to avoid taking actions that might backfire in the future. This connects to the difficulties in assessing companies' transition plans, because 'you can't just focus on where the company is right now – you also have to see what they are moving towards. One way to do that is to look at the company's goals. But more importantly, what are they actually doing and investing in?' (P1). Portfolio-, sector-, or carbon caps are also mentioned as ways to manage credit risk and steer towards sustainability. However, it may contradict the idea of supporting clients' transition instead of exclusion.

### 4.4 | The Actions Level

The actions level addresses what specifically banks can or should do to follow their strategic guidelines and reach success.

#### 4.4.1 | Literature Findings

The UNEP Statement by Banks on the Environment and Sustainable Development (UNEP 1992) provides historical insight on what actions signatories committed to, namely, to adopt common principles of environmental protection by using best practices of environmental management in internal operations and incorporating environmental risks into the standard risk management process. The actual effects of such public commitments and reporting are however unclear (Cowton and Thompson 2000; Di Marco et al. 2023; Weber et al. 2008).

A distinction can be made between actions that address sustainability risks separately from traditional credit risks and those that aim to integrate a sustainability perspective in the general CRA process. Historically, most banks have managed sustainability risks separately from traditional credit risks because they were perceived as not that influential (Weber 2012; Weber et al. 2010, 2015). Ellahi et al. (2023) describe how some banks established separate green banking units, which have the benefit of creating clarity and awareness. On the other hand, Edmans (2023) and Weber et al. (2015, 2010) argue for the importance of integration, analysing the relationship between debtors' sustainability risks and financial performance instead of considering them in isolation.

#### 4.4.2 | Empirical Findings

While some interviewees view 'ESG risk not as a separate risk factor but as a potential amplifier of all the others' (P5), most banks currently use explicit sustainability risk categories. However, some interviewees think 'that will change in a few years because ESG risk will just be an extra factor in all of the

other risks [...] because it affects everything' (P4). In practice, some interviewees state that the financial models and ESG models are separated and run in parallel, due to a lack of history and data for the ESG model. Still, 'it is part of it [CRA] from the beginning' (P6) and the banks are 'quickly incorporating ESG risk analysis in all credit decisions' (P2).

The extent to which ESG factors are assessed in CRA is described to be dependent on the size of the loan. In most cases, the first step is to identify and assess 'the ESG factor exposure in certain industries' (P9). This results in a list of risks that all companies in this sector face. The next step is to assess how well an individual company within the sector is managing that risk to gain insights on how the ESG factors may 'impact the repayment capacity of the borrower or the collateral value' (P7). For larger loans, internal sustainability committees are usually coming into play.

There is strong consensus among the interviewees regarding the most important barriers and enablers, see Table 2, partly confirming and partly complementing findings by Nguyen et al. (2023). The dominating barrier is availability of high-quality, standardised, quantitative data that goes beyond CO<sub>2</sub> emissions. Social risks are considered particularly challenging to assess. As a response, banks are developing their data procurement practices, data storage, quality assurance and methods for analysing data, including the use of artificial intelligence (AI). New regulations, especially the Corporate Sustainability Reporting Directive (CSRD) and the EU taxonomy are expected to be a major enabler in this context. The other main barrier unanimously highlighted by the interviewees is access to competence and some of the banks have launched sustainability training programmes. 'Banks need credibility and for that you need competence. Building such systemic competence takes time' (P6). Especially, interviewees see a need for experts who can connect the complicated regulatory environment to specific CRA practices and for 'more people who understand this long-term picture, these trends and this systemic shift which is going on' (P9). However, one interviewee also mentions the problem of 'ESG washing' (P8), where people claim to be experts despite little actual competence.

## 4.5 | The Tools Level

The tools level addresses what explicit tools that can support taking actions that are in line with the strategic guidelines.

### 4.5.1 | Literature Findings

ESG ratings and indices are a common way of integrating environmental and social aspects into decision-making. However, they usually lack a systems perspective and address symptoms rather than root causes of the sustainability challenge. Moreover, they are often dealt with as add-ons to existing decision-making processes and do not drive business decisions (Schoenmaker and Schramade 2021). They should be considered as a useful starting point for analysis, rather than a definitive indicator of sustainability performance

**TABLE 2** | Barriers and enablers for sustainability integration in credit risk assessment ordered based on how frequently they were mentioned.

	External barriers	Internal barriers	External enablers	Internal enablers
1.	Insufficient data availability and quality to base ESG evaluation on.	Lack of ESG competence and experts.	Structured data availability.	Integration of sustainability in core strategy of organisation.
2.	New regulations that do not allow for sufficient implementation time.	Little historic data as sustainability is a new field within organisations.	Regulatory support for better data availability and comparability.	Knowledge to cope with increased regulatory pressure.
3.	Uncertainty due to political and social tension resulting in legislation changes.	Uncertain effects of short-term decisions on long-term outcomes.	Pressure of institutional investors enforcing change.	Capabilities to manage complexity.
4.	Extensive approval duration for new ESG tools by financial authorities.	Risk adversity in top management, reinforcing status quo.	Increased public awareness of the importance of sustainability.	Incentivizing green financial products to increase effect of sustainable lending.
5.	Comparability of data due to inconsistent reporting guidelines.	Time-pressure and lack of sufficient human resources to cope with manual workload.	Enhanced company credibility and trust by society.	Ambitious company goals.



(Schoenmaker and Schramade 2019). Esposito et al. (2021, 2019) first presented the ‘environment-risk weighted assets’ and later the ‘external costs footprint’ as a tool to calculate and internalise debtors’ sustainability impact. Such impacts can also be assessed through environmental and social risk assessment (ESRA) tools (Mulder and Koellner 2011).

Data quality and reliability play a key role in most tools. Annual sustainability reports are found to be a key source for sustainability assessments (Nikolaou et al. 2014; Schoenmaker and Schramade 2021), while there is also a variety of other sources, e.g., ESG and credit rating agencies, company visits, interviews, press reports and more (Bassen et al. 2023; Thompson and Cowton 2004). Regardless of the data source, the quantification of sustainability aspects is challenging, in part because many aspects lack standardised definitions (Faiella and Lavecchia 2022; Mulder and Koellner 2011). Kennett et al. (2023) argue that initiatives like TCFD and regulatory requirements should facilitate more efficient pricing of climate risks. When quantifying climate-related risks, banks typically adopt either a top-down or a bottom-up analytical approach to estimate the risks of the borrower, while Mihaylova and Blumer (2022) make the case that these two approaches are not mutually exclusive and can instead complement each other.

As an alternative to ESG ratings, Bassen et al. (2023) presented a methodology for rating companies’ contributions to the SDGs. Thereby, focus can be shifted towards the inside-out perspective, i.e., the impact of companies on the ecological and social systems. Wiek and Weber (2014) presented a 10-step procedure for designing and testing finance interventions that address sustainability challenges, focusing more on the complex intricacies and the interplay between different actors that characterise many socio-ecological sustainability issues.

#### 4.5.2 | Empirical Findings

The studied banks make use of an array of different frameworks and initiatives, such as NZBA, PRB, TCFD, Science-based Targets Initiative, UN Global Compact and the Equator

Principles. Some interviewees express that ‘many of these frameworks kind of say the same thing’ (P6). In combination with what one interviewee calls ‘herd mentality’ (P7), where banks commit to various frameworks because they see other banks do so, supporting the peer emulation theory of sustainable finance (Ozili 2023a), it creates an overload of commitments that require time and distract from real action. Hence, there is a need to carefully select and then focus on delivering in line with the commitments. They are however often on such a high level that they are difficult to apply in CRA unless they are carefully broken down and create trickle-effects.

The operational tools applied by the studied banks are often-times internally developed but guided by external requirements or initiatives, see Table 3. While external ESG ratings are used, the banks also rely on own data, primarily collected through sector-adjusted surveys, for which the results are compiled into an ESG score. These surveys are in some cases based on a double materiality perspective and include both the exposure and the company’s ability to manage it. The predominantly qualitative nature of the data is viewed as problematic by many interviewees and the ongoing shift towards more data-driven assessments is appreciated because ‘you always want to quantify things – in particular in the risk function’ (P7).

## 5 | Discussion

In this section, the findings from the literature review and empirical study are discussed through a strategic sustainable development lens to spotlight insights concerning the relationship between society’s transition towards sustainability and companies’ success on financial markets and resulting implications for CRA.

### 5.1 | Risk Management Within the Funnel Paradigm

Applying a systems perspective requires understanding the nested interdependencies and dynamic interplay between society’s transition towards sustainability and its implications

**TABLE 3** | Tools used by the studied Nordic banks for addressing sustainability aspects in CRA.

Tool	Type	Application in CRA
ESG and/or climate risk assessment tools	Internal	Different level of detail between banks. Used to assess GHG emission intensity, quality of transition plans and impact of climate-related transition risk on repayment capacity.
ESG classifications and scales	Internal	After providing ESG data for a credit case, it is classified to select standardised decision paths forward.
Questionnaires	Internal	Set of guiding questions to be answered in each credit case. Often based on external sources, e.g., UN Global Compact.
Sector guides	Internal/external	Sector guides for sector performance assessment on mainly environmental aspects. Can be sourced from external organisations but can also be developed internally.
ESG ratings	External	Used to assess a company’s market position and performance in terms of ESG.

for banks and their debtors, which can be further explored through the funnel metaphor (Robèrt and Broman 2017), Figure 3.

The decreasing cross-section of the funnel symbolises the systematic decline of the ecological and social systems' capacity to support human civilization. Importantly, this decline is systematic, meaning that the global situation is progressively worsening as a result of violating the sustainability principles. The vision is to achieve a state where society no longer systematically degrades ecological and social systems, i.e., alignment with the sustainability principles. This point is represented by the funnel turning into a cylinder, symbolising a sustainable society. Over time, society can work towards restoring some of the damage caused, as indicated by the widening cross-section of the funnel on the right side (Broman and Robèrt 2017).

As society approaches the funnel walls, awareness of threats for adverse effects of environmental and social degradation and, ultimately, survival grows among people, politicians and markets. Debtors that contribute to such unsustainable development more than competitors will face increasing threats, e.g., in the form of legislative change, reputational damage, increasing raw material costs and fading customer demand (Anderson 2005), resulting in lower repayment capacity. Simultaneously, there is a growing impetus to shift development towards sustainability. Consequently, debtors that provide solutions aligned with sustainable value creation can benefit from opportunities such as a strong brand, rising demand, top talent attraction and resilient supply chains, resulting in higher repayment capacity. Based on this reasoning, sustainability risks can be defined as 'threats and opportunities that are due to an organisation's contribution or counteraction to society's transition towards strategic sustainable development' (Schulte and Hallstedt 2018).

This definition shows that the outside-in and the inside-out perspectives are inherently connected and dependent on each other. For banks, this means that they must assess how the risks resulting from a debtor's contribution or counteraction to society's

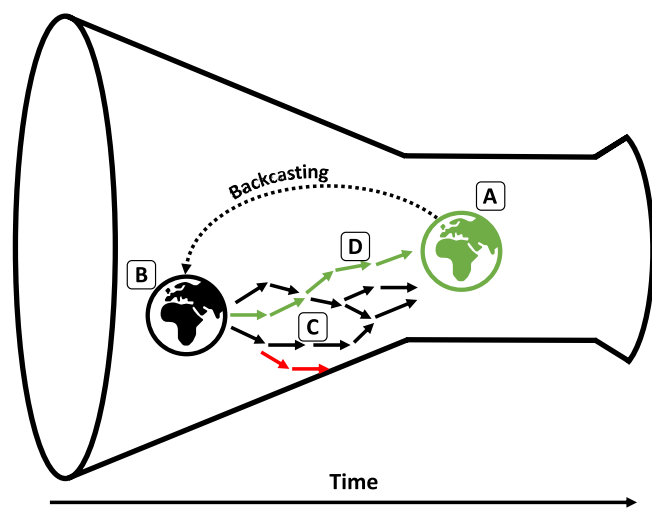
transition towards sustainability will affect repayment capacity. The empirical findings indicate a general awareness of the interconnection between debtors' positive or negative sustainability impact and repayment capacity. However, banks need to apply a systems perspective that goes beyond a narrow focus in (i) time (disregarding whether planned practices of companies are scientifically possible to scale up on future markets or not) and (ii) space (reducing the complex sustainability challenge to one or a few aspects like climate change or biodiversity, which comes with the risk of sub-optimisation and failing to identify important sustainability risks). Backcasting from the eight sustainability principles can be used to identify which solutions are scalable, i.e., lead in the direction towards the opening of the funnel, while covering both the ecological and social dimensions without getting lost among the countless symptoms of unsustainable development.

## 5.2 | From Asking 'Does it Pay to Be Sustainable' to a Focus on Strategic Proactivity

The TBL is still commonly used as conceptualisation of sustainability in literature and practice but has been widely misinterpreted as a balancing act or trade-off between the environmental, social and economic dimensions (Elkington 2018). This misunderstanding is also reflected in conceptualisations of sustainable finance, e.g., in the attempts to make organisations prioritise environmental and social impact over financial value, while in reality, 'there is no shift away from the fact that risk-adjusted returns on investments have principal priority over environmental or social considerations' (Nykqvist and Maltais 2022). In line with this view of sustainable finance, attention has been focusing on understanding the balance between the three dimensions, which resulted in the numerous studies investigating the question of whether it 'pays to be sustainable'.

The funnel metaphor however shows that this is not a relevant question. From the definition of a sustainable society, it follows logically that society (including actors in the economic system which are nested within it) eventually must reach a state of sustainability or cease to exist. The relevant question is how companies can work with sustainability strategically, i.e., in a way that contributes to society's transition towards sustainability while benefiting the own organisation. As also proposed by Atz et al. (2023), instead of getting stuck in a false dichotomy, research and practice should focus on understanding the mediating factors and materiality pathways between the inside-out impact and outside-in implications to be able to strategically manage sustainability aspects. This means that the goal is not to make companies prioritise socio-ecological sustainability aspects over financial success. As stated by the interviewees, getting the money back with interest remains at the core of what successful credit operations are. But it also means that there is no trade-off and no need to accept lower financial performance for the sake of sustainability. On the contrary, working strategically with sustainability is a necessity for long-term financial success.

However, the findings showed that inclusion and exclusion criteria have been the primary approaches for considering sustainability aspects, more recently complemented by so called transition criteria. Even if regulations increase the availability



**FIGURE 3** | The funnel metaphor and ABCD procedure of the Framework for Strategic Sustainable Development. Adopted from Schulte (2021) and based on Broman and Robèrt (2017).

of more and standardised data, the interviewees pointed towards the question of what actually should be assessed. While such approaches and data can be useful, they must be embedded in the mindset of ABCD within the funnel to be effective in what should be assessed. Using backcasting from a vision framed by the eight sustainability principles, it is possible to foresee the direction of change in the long term and to find solutions that are scalable and provide flexible platforms in the transition. Only then can it be assessed whether, for example, a cleantech solution truly should be included or if it does not present a scalable and flexible stepping stone that can be further developed towards compliance with the sustainability principles. Similarly, looking at transition criteria may lead decision-makers astray if they are solely based on forecasting scenarios that are not checked against the sustainability principles and thus fail to foresee the inevitable direction of change.

The challenge for companies is to find the optimal pace, i.e., to manoeuvre the smart zone between being too passive in relation to sustainability (risking falling behind competitors, facing legislative constraints, suffering from poor reputation, etc.) and too proactive (risking being too far ahead in relation to supply chain maturity and customer demand, not getting sufficient return on investment, etc.) (Villamil et al. 2022). The task for banks is to assess whether a debtor is navigating that smart zone. Questions remain on how such an assessment can be made and what information it should be based on. The FSSD's strategic guidelines of considering (i) whether a company is providing flexible platforms that can lead towards sustainability (compliance with the eight sustainability principles) over time; and the balance between (ii) return on investment and (iii) the pace of contributing to the transition towards sustainability, can provide a starting point but leave questions as to how to operationalise such an assessment in practice.

## 6 | Conclusions

This study investigated literature and practices in Nordic banks on CRA within the area of sustainable finance and structured them along the 5-Level Model of the Framework for Strategic Sustainable Development. While the question of whether it 'pays to be sustainable' or not is still an important discussion in the literature, the empirical findings show that practitioners in the context of CRA operate within a risk and opportunity frame with an awareness of the interconnection between debtors' sustainability impact and their repayment capacity. Hence, they recognise that the outside-in and inside-out perspectives are inherently connected and dependent on each other and thus the necessity of increasing capabilities for integrating sustainability considerations in decision-making to improve CRA precision. However, from a strategic sustainability perspective, three key gaps and corresponding recommendations are identified:

- **Gap 1:** Both in literature and in practice, there is a narrow focus on a few symptoms of unsustainable development, primarily climate change. Social aspects are found to be particularly challenging to account for. While the interviewees show awareness of this limitation, lack of data and policy makers' focus on CO<sub>2</sub> emissions are perceived barriers.

- **Recommendation 1:** To avoid sub-optimisation, it is necessary to apply a holistic system perspective, which can be aided by using basic sustainability principles that capture the root causes of unsustainability. Policy makers should promote a wider perspective and practitioners should improve combinations of qualitative and quantitative assessments and data collection practices.
- **Gap 2:** While the interviewees recognise the importance of direct sustainability risks like physical climate change risks and reputational risks, so called transition risks are deemed to be most crucial but also most difficult to assess due to a narrow focus in time. Common practices are to work with inclusion and exclusion criteria or to work with customers to support their transition. To this end, both external ESG ratings and internally collected data, often through qualitative surveys, are utilised and increasingly integrated in CRA. The perceived main challenges are competence gaps and the lack of standardised and comparable quantitative data. New regulation and AI technology are viewed as main enablers in this context. However, the conceptual question of what qualifies capital allocation as sustainable remains.
- **Recommendation 2:** By applying backcasting from basic principles for sustainability, the long-term direction of change can be foreseen and it can be assessed whether solutions are scalable and provide flexible platforms towards full sustainability. This perspective is crucial to inform strategies like inclusion, exclusion or transition criteria, which otherwise risk luring decision-makers into non-scalable solutions that later turn out to be blind-alleys in the transition.
- **Gap 3:** In addition to the conceptual question described in Gap 2, banks face the practical question of what information that would be needed to assess a debtor's transition risk. The application of the funnel metaphor showed that instead of asking 'does it pay to be sustainable', the important question is how companies can work with sustainability strategically, i.e., contributing to society's transition in ways that strengthen the own company.
- **Recommendation 3:** Both researchers and practitioners should focus their efforts on how to assess whether clients have the right pace between being too passive and too proactive. This requires new approaches for data collection and analysis.

If these recommendations are followed, debtors will be chosen both for their capacity to serve as stepping stones for further developments towards scalable futures and for their high repayment capacity. Both managerial action and future research may be guided by these conclusions. Specifically, this could mean (i) studying the materiality pathways that connect the outside-in and inside-out perspectives; (ii) developing and testing practical support for how to assess debtors' contribution or counteraction to sustainable development and to identify resulting risks in terms of threats and opportunities to assess whether they have the optimal pace; and (iii) promoting competence development in relation to strategic sustainability thinking, which may happen both through company training programmes and through re-design in the education system.

Limitations of this study are the focus on a subset of the literature, which while helping to position this study and increasing its relevance within this subset also means that there may be additional literature on the topic that was not covered. The empirical study provided insights into how some practitioners in Nordic banks work with sustainability in CRA. While this scope was purposefully chosen, it also means that the findings likely are not representative for the banking sector in other geographical areas. The limited number of interviews also means that more research is needed to validate the findings. Finally, the FSSD has previously been criticised for not challenging the underlying growth paradigm where the ultimate objective for companies is to make profit (Sandström 2005; Upham 2000). Therefore, it could be argued that it would reinforce capitalist realism (Fisher 2009) and not contribute to a mindset shift addressing deep leverage points (Gaziulusoy 2015). However, it should be emphasised that the FSSD is a framework, i.e., a system of ideas and concepts that provides a structure of thought that allows relating and making effective use of other ideas, methods, tools, etc. As such, it does not prescribe any paradigm. If anything, by showing how almost all parts of society currently violate the sustainability principles, it points towards the need for profound change.

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#### Author Contributions

**Jesko Schulte:** conceptualisation, formal analysis, funding acquisition, investigation, methodology, supervision, visualisation, writing – original draft preparation, writing – review and editing. **Emma Bäckman, Vincenzo Giunta, Monica Salirwe:** conceptualisation, data curation, formal analysis, investigation, methodology, validation, writing – review and editing.

#### Acknowledgements

This work was supported by the Knowledge Foundation, Sweden, under grant number 20240015. Parts of this research are based on the thesis by Bäckman et al. (2023). Sincere thanks to the interviewees and to Jackline Kalyonge and Karl-Henrik Robèrt for contributing to this research.

#### Conflicts of Interest

The authors declare no conflicts of interests.

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### Supporting Information

Additional supporting information can be found online in the Supporting Information section.