

“Mange bekker små”

Scaling up Norwegian SMEs' Actions Towards Nature and
Biodiversity

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Abstract

While there is a growing academic, regulatory and public focus on the state of nature and biodiversity and how it's linked to business activities, small and medium enterprises (SMEs) usually fall outside of both the scope and spotlight. Yet, SMEs make up a substantial size of the Norwegian, EU and world economy, and its environmental impact. This thesis seeks to contribute to scaling up SMEs' action towards nature and biodiversity, through investigating how Norwegian SMEs address nature-related dependencies, impacts, risks and opportunities across their own operations, value chains, investments and strategies (RQ1), what SMEs and other ecosystem actors perceive as drivers and barriers for action (RQ2) and how external actors can better enable a scale-up of SMEs' nature-positive practices (RQ3). The research questions have been answered with a qualitative approach, using data gathered through 14 semi-structured interviews and deductive-inductive coding. The results identified actions taken towards all five drivers of biodiversity loss, and across all four decision-making levels. Actions towards climate change dominated, followed by direct and indirect actions towards land use change to different extents. Most work is done in own operations or value chains. A wide range of drivers and barriers for action were identified, with the most frequently mentioned being regulations and enforcement, customer and market demand and knowledge/expertise on the topic. "Capacity and knowledge" was the enabler most mentioned, and many brought up finance and economic. Importantly, SMEs and ecosystem actors differ in their views on drivers, barriers and enablers; more stringent regulations were seen as important drivers and enablers by most ecosystem actors, which SMEs opposed. This study concludes that 1) while more stringent regulations might push for more action, opposing views should be taken into account, 2) capacity and knowledge are the most sought-after enablers overall, and 3) public and private finance can be important enablers going forward.

Keywords: Nature-related risks, biodiversity, small and medium enterprises (SMEs), Biodiversity management, Policy

Executive Summary

Problem definition, research aim and research questions:

Nature and biodiversity are disappearing at an alarming rate, as humans and economic activities are degrading the ecosystems and ecosystem services that we depend on to survive. While there is a growing academic, regulatory and public focus on the state of nature and biodiversity, and how it's linked to business activities, small and medium enterprises (SMEs) usually fall outside of both the scope and spotlight. “Mange bekker små blir en stor å”, a Nordic proverb goes. It refers to how the many seemingly insignificant contributions create a large impact; SMEs indeed make up a substantial size of the Norwegian, EU and world economy, and its environmental impact. SMEs are increasingly implementing a range of sustainability strategies, but action is lagging on the topic of nature and biodiversity. Addressing nature and biodiversity is notoriously complex; even LSEs with more resources fall short in addressing biodiversity in their strategies. Yet, ensuring SMEs' involvement is key to mitigating the biodiversity crisis.

This thesis aims to support the speeding and scaling up of SMEs' implementation of nature-positive practices. It seeks to do so through investigating how a sample of Norwegian SMEs who are part of a network for responsible business understand and address nature-related dependencies, impacts, risks and opportunities (DIROs) across own operations, value chains, investments and strategy. It further mapped the perceived drivers, barriers, and changes needed to scale up their nature-positive practices. The perspectives of interviewees from SMEs were complemented by those of other actors with knowledge of and/or influence on how Norwegian SMEs understand and work with nature-related DIROs. By understanding the context within which SMEs operate, these learnings can help understand and identify areas of intervention and how to shape policies, tools and other supporting mechanisms. As the research is conducted in cooperation with UN Global Compact Norway (UNGCN), an additional aim is to produce insights UNGCN can use to better support their members in understanding their relevance and applying nature-positive practices. The following research questions have been addressed:

RQ 1: How do Norwegian SMEs address nature-related dependencies, impacts, risks and opportunities, across own operations, value chains, investments and strategies?

RQ 2: What do SMEs and other ecosystem actors perceive as drivers and barriers for action?

RQ 3: How can external actors better enable a scale-up of SMEs' nature-positive practices?

Research Design

This study employs a qualitative research design, as the research questions are explorative in nature and touches upon quite a new topic with a limited body of research. 14 semi-structured interviews were conducted to capture the different experiences and perspectives of SMEs and other stakeholders, with regards to how Norwegian SMEs are applying nature-positive practices and what's needed to scale up this work. Interviewees include representatives from SMEs in the HVAC, battery, brewery, fisheries/aquaculture industries and finance sector, and representatives from NGOs (1), authorities (1), consultancy firms focusing on the SME market and nature-related risks (3), certification schemes (2), academia (1), insurance (1). Most interviews were conducted online, three were conducted over phone and one over email. Interviews were conducted and coded in Norwegian to preserve nuance, before relevant

material was manually translated. The data was coded using NVivo and a deductive-inductive approach with a pre-designed codebook that allowed for adjustments.

Results and conclusions to RQs

With regards to actions taken (**RQ1**), climate change is the factor most extensively covered by SMEs. **All interviewed SMEs work with climate, both in value chains and own operations**, and the majority places the topic among their key priorities, which could be expected. The second most mentioned category of actions is the one tied to land use change, which is indeed the key driver of biodiversity loss. **All interviewed SMEs mentioned direct or indirect actions related to land use change**. Two had put in place direct actions in their value chain via supplier selection, four address land use change indirectly in the form of circular practices, and two mention direct actions in own operations. The latter had worked actively with nature and biodiversity in relation to routines, construction and expansion of their factory, which stands out as the most direct action related to land use change. Among other drivers of biodiversity loss, four SMEs are taking steps towards different forms of pollution, while two mention overexploitation and one invasive species. These findings go against reviewed literature on the topic and ecosystem actors' perceptions, who argue that most SMEs do nothing although it varies from sector to sector. All but one SME take actions in their own operations, and all SMEs had taken actions in their value chains, which collides with what the reviewed literature other ecosystem actors see. It should be noted that no SMEs working with their value chains were involved in e.g. restoration activities, but rather addressed the topic via e.g. certification schemes. Finally, fewer SMEs have worked on the investment and strategy levels.

A wide range of internal, external and inter-firm drivers and barriers for action (**RQ2**) were identified. The most frequently mentioned external and inter-firm factors were **regulations and enforcement** (11 mentions as driver, 3 mentions as barrier), **customer and market demand** (9 mentions as driver, 2 mentions as barrier), finance and investors (5 mentions as driver) and gov. support and incentives (2 mentions as driver, 3 as barriers (design of)). With regards to internal factors, the most frequent were access to **knowledge/expertise on topic** (6 mentions as barrier), individual trainings, experience, skills and values (6 mentions as barrier) and organisational culture and strategy (6 mentions as driver). These findings are mostly in line with reviewed literature on SMEs' implementation of sustainability practices and businesses' work with biodiversity. Importantly, SMEs and ecosystem actors differ somewhat in their views on drivers and barriers.

Consequently, SMEs and ecosystem actors also differ in their views on enablers (**RQ3**). Mentions of policy and legal as enablers are dominated by ecosystem actors, while SMEs are more represented in the other categories. One important finding here, is that most ecosystem actors would welcome more stringent regulation, e.g. expanding the Transparency act, which is rejected by all SMEs. They experience being over-regulated, with limited capacity to meet all requirements. **“Capacity and knowledge” was the enabler most mentioned overall**. Within this category, stronger cooperation, context/geography-specific guidance and education from UNGC, the authorities and other organisations was requested. Some requests include guidance on how to best monitor and address nature and biodiversity in own operations and value chains in feasible manners, and arenas for knowledge-sharing. **Most actors also brought up finance and economics as important enablers**, for instance through financial actors posing demands and pricing according to nature-related risks. Data and technology were also brought forward by many, and beyond developing more and better tools, it was underlined that they should be easy to use. Finally, norms and values were mentioned by a few interviewees but shouldn't be underestimated; one SME was indeed influenced by their municipality's ambitions.

This study concludes that 1) while more stringent regulations might push for more action, opposing views on leverage points should be taken into account, 2) capacity and knowledge are the most sought-after enablers and these can be provided or supported by a number of ecosystem actors, and 3) public and private finance can important enablers going forward.

Recommendations

In mapping how SMEs are currently addressing nature and biodiversity and what the perceived drivers, barriers and enablers are, this study finds several recommendations for actors seeking to support SMEs’ scale-up of nature-positive practices:

UNGC, NGOs, industry associations, other organisations and the authorities are recommended to support SMEs endeavors through offering more context-specific knowledge and guidance, e.g. on how to address the topic in a feasible and efficient way across value chains and operations, and arenas for cooperation.

Authorities and policy makers should take into account the differences in viewpoints among SMEs and other ecosystem actors regarding stricter regulations and the potential expansion of the Transparency Act. Authorities should also aim to develop tools that are easy to use for SMEs with constrained capacity, e.g. through gathering data on a centralised platform.

Public and private finance can be an important enabler going forward: findings show that public procurement posing demands work well, especially for sectors dependent on this customer. Concretising the requirement of weighting environmental considerations 30% to specifically include nature-related requirements might be an important enabler. Signals from the private finance sector can also contribute, via e.g. investing in companies with lower levels of nature-related risks, using investor power to influence firms in a “greener” direction”, pricing insurance with more nature-related risks higher and educating customers on the topic.

Industry associations can play a powerful part in promoting industry-best practice.

Certification schemes could look into (more) nature-related requirements without it becoming too complicated, while showcasing a clear link e.g. between actions and value chain impacts.

For **SMEs** interested in the topic, this thesis provides an overview of the connections and business relevance. While acknowledging that resources to address nature and biodiversity may be sparse, there are also recommendations for taking action: identifying the most material risks (who are likely upstream), incorporating nature in existing systems (e.g. EMS), and starting small.

Further research would benefit from going more specific, investigating e.g. sector-specific challenges and what best-practice is or should be, or whether and how SMEs are impacted by LSEs practices. For SMEs following best practice, one could investigate and draw recommendations from how they navigate constraints. Taking a geography-specific approach, mapping how to translate recommendations to the Norwegian context or specific regions, could be interesting too. It could also be interesting researching empirical insights on one idea that was discussed in an interview: whether cooperations on data and risks mapping based on geographic proximity could be worth trying. An idea which was considered in the scoping of this thesis, is to conduct a comparative analysis between e.g. Norway and Sweden, to map the and learn from differences e.g. in regulations or capacity building. Finally, it would be of interest to map value chain impacts, e.g. for the Norwegian manufacturing sector and propose pathways for working with these, to make sure that also “invisible” and global risks rooted in local decisions are addressed to a larger extent going forward.

Table of Contents

ACKNOWLEDGEMENTS.....	I
ABSTRACT	II
EXECUTIVE SUMMARY	III
LIST OF TABLES.....	VII
ABBREVIATIONS.....	VIII
1. INTRODUCTION	1
1.1 BACKGROUND AND PROBLEM DEFINITION.....	1
1.2 AIM AND RESEARCH QUESTIONS.....	3
1.3 SCOPE AND DELIMITATIONS.....	3
1.3.1 <i>Larger SMEs</i>	3
1.3.2 <i>SMEs: Members of UN Global Compact Norway</i>	3
1.3.3 <i>Geographic and temporal scope</i>	4
1.3.4 <i>Motivations behind applying a broad scope</i>	4
1.4 ETHICAL CONSIDERATIONS	5
1.4.1 <i>Researcher honesty and personal integrity</i>	5
1.4.2 <i>Ethical responsibilities to the subjects of research</i>	5
1.4.3 <i>Use of AI</i>	5
1.5 AUDIENCE.....	5
1.6 KEY CONCEPTS USED IN THE THESIS	6
1.7 DISPOSITION.....	7
2. BACKGROUND AND LITERATURE.....	8
2.1 BUSINESS AND BIODIVERSITY.....	8
2.1.1 <i>The state of nature and biodiversity today</i>	8
2.1.2 <i>Looking at nature through the lens of risk management</i>	8
2.1.3 <i>Topic-specific barriers for addressing nature and biodiversity</i>	9
2.1.4 <i>International frameworks & tools to address nature-related risks</i>	10
2.2 LITERATURE ON SMEs AND SUSTAINABILITY	11
2.2.1 <i>SMEs: Mange bekker små</i>	11
2.2.2 <i>Literature at the intersection of SMEs and biodiversity</i>	12
2.2.3 <i>Outside the scope of CSRD, but not free of nature-related risks</i>	13
2.2.4 <i>Drivers and barriers: implementation of sustainability practices</i>	14
2.3 SYNTHESIS: SMEs AND BIODIVERSITY	14
3. THE CONTEXT IN WHICH NORWEGIAN SMES OPERATE.....	15
3.1 A GLANCE AT THE ECONOMY	15
3.2 THE REGULATORY LANDSCAPE.....	15
3.2.1 <i>The EEA Agreement</i>	16
3.2.2 <i>Public and private initiatives, and available resources</i>	17
3.3 INSIGHTS ON NORWEGIAN ENTERPRISES	19
4. THEORETICAL AND ANALYTICAL FRAMEWORK	20
4.1 INSTITUTIONAL THEORY	20
4.2 THE RESOURCE-BASED VIEW	21
4.3 THE RESOURCE-DEPENDENCY THEORY.....	21
4.4 AN INTEGRATED THEORETICAL FRAMEWORK.....	22
5. RESEARCH DESIGN, MATERIALS AND METHODS	23
5.1 RESEARCH DESIGN	23

5.2 WORLDVIEW AND BIAS	23
5.3 METHODS FOR DATA COLLECTION	23
5.3.1 Selection of interviewees.....	23
5.3.2 Qualitative semi-structured interviews	24
5.3.3 Methods used to process information	25
6. FINDINGS AND ANALYSIS	26
6.1 HOW NORWEGIAN SMEs ADDRESS THEIR NATURE-RELATED DEPENDENCIES, IMPACTS, RISKS AND OPPORTUNITIES (RQ1)	26
6.1.1 Action across the drivers of biodiversity loss.....	26
6.1.2 Action across the different decision levels	28
6.2 PERCEIVED DRIVERS AND BARRIERS FOR ACTION (RQ2)	30
6.2.1 COERCIVE PRESSURES	30
6.2.2 Mimetic and normative pressures.....	32
6.2.3 Value chain dynamics (Resource dependency).....	33
6.2.5 Physical capital.....	33
6.2.6 Human capital.....	34
6.2.7 Organisational capital.....	36
6.3 HOW EXTERNAL ACTORS CAN ENABLE ACTION (RQ3)	38
6.3.1 Capacity and knowledge.....	38
6.3.2 Economics and finance.....	39
6.3.3 Policy and legal.....	40
6.3.4 Technology and data.....	43
6.3.5 Values and norms	45
7. DISCUSSION.....	46
7.1 RESULTS IN LIGHT OF REVIEWED LITERATURE AND THEORIES.....	46
7.1.1 How SMEs are addressing biodiversity (RQ1).....	46
7.1.2 External and internal drivers and barriers: comparing results with theories and literature (RQ2)	47
7.1.3 How can external actors contribute to the scale-up of SMEs’ nature-positive practices? (RQ3)	49
7.2 REFLECTING ON THE RESULTS AND LIMITATIONS OF THE STUDY	52
7.2.1 Methodological, theoretical and analytical choices	52
7.2.2 Legitimacy and Contribution	53
7.2.3 Generalisability	53
8. CONCLUSION.....	54
8.1 CONCLUSIONS FROM THE RESEARCH	54
8.2 IMPLICATIONS FOR POLICY AND PRACTICE	55
8.3 RECOMMENDATIONS FOR FUTURE RESEARCH.....	55
BIBLIOGRAPHY	56
APPENDIX.....	63

List of Tables

Table 1-1: Key concepts applied in the thesis.....	7
Table 2-1: Initiatives, frameworks and tools to address nature-related risks	10
Table 2-2: Tools for addressing nature-related impacts and dependencies.....	11
Table 3-1: A non-exhaustive overview of political commitments, laws and regulations, and voluntary certifications related to nature.....	16

Table 3-2: A non-exhaustive overview of projects, initiatives, guidelines, tools and certifications seeking to support businesses transitioning to more nature-positive practices.....	18
Table 4-1: Theoretical framework of this thesis-----	22
Table 5-1: Overview of respondents, dates of interview and codes	25
Table 6-1: Overview of which actions and action levels are mentioned by which interviewees	29
Table 6-2: Overview of drivers and barriers identified through the interviews	38
Table 6-3: Identified enablers across the 5 IPBES categories.....	46

Abbreviations

SME – Small and Medium Enterprise

LSE – Large-scale Enterprise

CBD – (UN) Convention on Biodiversity

GBF – (Kunming-Montreal) Global Biodiversity Framework

IPBES – Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services

SDGs – (UN) Sustainable Development Goals

UN – United Nations

EU – European Union

EEA – European Economic Agreement

OECD – Organisation for Economic Co-operation and Development

WEF – World Economic Forum

TNFD – Taskforce on Nature-Related Financial Disclosures

SBTN – Science-Based Targets for Nature

ISO – International Standardisation Organisation

UNGC & UNGCN – UN Global Compact & UN Global Compact Norway

NOU – Norwegian Official Report (Norsk Offentlig Utredning)

INT – Institutional Theory

RBV - Resource-Based View

RDT – Resource Dependency Theory

1. Introduction

1.1 Background and problem definition

Nature and biodiversity are disappearing at an alarming rate, as humans and economic activities are degrading the ecosystems that we depend on to survive. When Rockström et al. (2009) identified the nine planetary boundaries for a safe operating space within the stable Earth system, the boundary with respect to rate of biodiversity loss had already been transgressed. One of the consequences of biodiversity loss is the weakened resilience of ecosystems e.g. to disturbances like climate change (Rockström, 2009), and their ability to provide ecosystem services (IPBES, 2019). Ecosystem services, meaning the goods and services that ecosystems provide to humans, are vital not only for human health and well-being, but also for the functioning of a global economy. Indeed, the World Economic Forum (WEF) estimated that more than half the world’s GDP depends on nature and its provision of ecosystem services, such as climate regulation, pollination, water regulation and raw materials (WEF, 2020).

There’s a growing global understanding of the severity of the state of nature today, and the urgency of addressing the loss of nature and biodiversity (IPBES, 2026; zu Ermgassen et al., 2022). In 2026 the WEF global risk assessment ranked biodiversity loss and ecosystem collapse as the second most severe long-term global risk (WEF, 2026). The concept of nature-related risks, meaning risks arising from organisations’ and society’s nature-related dependencies and impacts, is gaining traction in private and public sectors (Carvalho et al., 2023; Gjerde et al., 2025; NOU 2024:2, 2024; TNFD, 2023). Impacts can be defined as changes “*in the state of nature (quality or quantity), which may result in changes to the capacity of nature to provide social and economic functions*”, and dependencies “*are aspects of environmental assets and ecosystem services that a person or an organisation relies on to function*”. (TNFD, 2023, p. 30). In 2022, the 196 signatories of the UN Convention on Biodiversity (CBD) adopted the Kunming-Montreal Global Biodiversity Framework (GBF). The GBF establishes the direction for the global transition needed to meet the overarching goal of halting and reversing biodiversity loss by 2030, presenting 23 targets to yield necessary economic, regulatory, societal and technological changes. Target 15 calls for large firms to assess and disclose their nature-related risks, impacts and dependencies (CBD, 2022).

There are five major direct drivers of biodiversity loss, all who can be linked to economic activities: land and sea use change, overexploitation, pollution, introduction of invasive species and climate change (CBD, 2022; IPBES, 2019, 2026; Panwar et al., 2023). Literature on the relationship between business and biodiversity has often focused on land use change, and primary sectors and extractive industries (Panwar et al., 2023; Salmi et al., 2023). Global logistics companies can however unintentionally introduce invasive species, and practically every enterprise emits CO₂ and other pollutants. Overfishing, over-harvesting rare plant species for medicines or building office complexes on land that was previously untouched nature, are all examples of activities adding to the issue. In other words, while certain industries and firms are more culpable than others, every enterprise, regardless of size and activity, has an impact on nature and biodiversity (IPBES, 2026; NOU 2024:2; Panwar et al., 2023). And while it’s easier to spot the nature-related risks of primary sectors and extractive industries, downstream actors in these value chain, such as grocery stores and restaurants are also subject to indirect risks, as they rely on e.g. agricultural output for sourcing ingredients (IPBES, 2026; Salmi et al., 2023).

“Mange bekker små blir en stor å”, a Nordic proverb goes. It refers to how the many seemingly insignificant contributions create a large impact. Environmental legislation, civil society scrutiny, and research on private sector adaptation of sustainability practices have historically focused on large-scale enterprises (LSEs) (Dinesen, 2025; Yunusbayeva et al., 2025). Small and Medium Enterprises (SMEs) in contrast make up more than 99% of all Norwegian and EU enterprises

(European Commission, n.d.-b; NHO, 2024)). The European Commission defines SMEs as companies with less than 250 employees, and a turnover of less than €50 million or a balance sheet total of up to €43 million (European Commission, n.d.-b). SMEs are key drivers of the economy, accounting for two thirds of private-sector jobs in the EU, almost half of the 2022 turnover, and crucial parts of value chains (Dinesen, 2025; European Commission, 2022). While the impact of one SME is limited, they are altogether responsible for large parts of the world's resource use, waste generation, 60-70% of all pollution and 63% of all CO₂ emissions in Europe (European Commission, 2022; Herbert et al., 2023). As resource use, pollution and climate change are all drivers of biodiversity loss (IPBES, 2019; Panwar et al., 2023), one could argue for SMEs having a significant impact on biodiversity. Adding onto the rationale for SMEs taking more action, is the fact that the size of a business doesn't necessarily reflect the extent of their impacts (IPBES, 2026; NOU 2024:2; Panwar et al., 2023).

Whereas SMEs are increasingly implementing sustainability strategies, action is lagging on the topic of nature and biodiversity (Herbert et al., 2023; Wagner, 2022). Addressing nature and biodiversity is notoriously complex; even LSEs with more accountability and more resources, fall short in addressing biodiversity (Carvalho et al., 2023; zu Ermgassen et al., 2022). Yet, ensuring SMEs' involvement is key to mitigating the biodiversity crisis, both for their negative impacts (Herbert et al., 2023) and for their potential to innovate and specialise in solutions needed for the green transition (Dinesen, 2025; European Commission, 2022). Like LSEs, SMEs can face nature-related risks via e.g. dependencies on local ecosystem services or elevated borrowing costs (Nguyen et al., 2025; Schopohl et al., 2026). Addressing risks by mitigating negative impacts on nature, or creating positive impacts, may on the other side lead to positive outcomes, i.e. nature-related opportunities (TNFD, 2023).

Norwegian SMEs provide a compelling case, with regards to national and global nature-related risks across own operations, value chains and investments. International frameworks and agreements, public and private initiatives, and media attention towards the topic have all helped spark a public debate about how Norwegian nature is governed. Especially a series of articles and documentaries from 2024, revealing the rate and magnitude of national nature loss, led to a growing interest (NRK, n.d.; Spigseth, 2024). Yet, Norway is the European country with the largest number of square kilometres of yearly land use change per capita (Støstad et al., 2025). Half of all Norwegian habitats, and 21% of Norwegian species are on the red list of threatened species. An assessment from 2022, conducted by the Organisation for Economic Co-Operation and Development (OECD) concludes that Norway is not doing enough to meet international targets for stopping or reversing national nature loss (OECD, 2022). Finally, while the extent is only quantified in CO₂ equivalents, it's evident that Norwegian imports, investments and exports contribute to the global loss of nature and biodiversity. Indeed, the government-appointed Nature Risk Commission argues that large parts of Norwegian nature-related impacts and dependencies occur outside of the land's borders (NOU 2024:2). It becomes clear that Norway has a way to go in terms of meeting the goals of the GBF and halting biodiversity loss.

There exists a body of research on the relationship between business and biodiversity, and several studies mapping the drivers and barriers of SMEs' implementation of sustainability practices. Literature on the intersection of nature, biodiversity and SMEs reveals that the topic is deprioritised in sustainability strategies, hypothesised to be due to its perceived low relevance to business and compliance, difficulty of measuring impacts, and other barriers. Research covering SMEs, nature and biodiversity is however sparse and somewhat outdated, given that this is a topic of growing focus and rapid developments. Adding these facts together with SMEs' key role for the economy, and their nature-related risks and opportunities, there is a need for an updated overview and understanding of the situation, in a context where the concept of nature-related risks has entered the public spotlight and business discourse.

1.2 Aim and research questions

This thesis aims to support the speeding and scaling up of SMEs’ implementation of nature-positive practices. It seeks to do so through investigating how a sample of Norwegian SMEs who are part of a network for responsible businesses understand and address nature-related dependencies, impacts risks and opportunities (DIROs) across their own operations, value chains, investments and strategy. It further seeks to map the perceived drivers, barriers, changes needed to scale up their nature-positive practices (see section 1.6 for definition). The perspectives of the SMEs are complemented by those of other actors with knowledge of and/or influence on how Norwegian SMEs understand and work with nature-related DIROs. The thesis draws on a theoretical framework developed by the author, which combines the institutional theory (INT), the resource-based view (RBV) and the resource dependency theory (RDT). INT helps shed light on how external pressures affect the actions taken by a firm, the RBV is useful for understanding the role of internal resources and constraints, while the RDT brings in the inter-firm and supply chain dynamics.

Learnings from investigating the context within which SMEs operate can help understand and identify areas of intervention and how to shape policies, tools and other support mechanisms. As the research is conducted in cooperation with UN Global Compact Norway (UNGCN), an additional aim is to produce insights UNGCN can use to better support their members’ in understanding their relevance and applying nature-positive practices. The following research questions have been developed to meet the research aim:

RQ 1: How do Norwegian SMEs address nature-related dependencies, impacts, risks and opportunities, across different own operations, value chains, investments and strategies?

RQ 2: What do SMEs and other ecosystem actors perceive as drivers and barriers for action?

RQ 3: How can external actors better enable a scale-up of SMEs’ nature-positive practices?

1.3 Scope and delimitations

1.3.1 Larger SMEs

The study is limited to SMEs with 100-250 employees. 99% of Norwegian enterprises actually have less than 100 employees, so there is a majority-related argument for focusing the analysis on this size instead. Choosing to investigate larger SMEs however allows for the exclusion of firms who likely have fewer resources to address sustainability topics and therefore are less likely to address their nature- and biodiversity impacts. While somewhat larger, these firms still share typical characteristics and challenges of SMEs of all sizes. Learnings from them therefore become relevant for understanding how to address a complex topic when operating with limited room for manoeuvre. Further, it’s not unlikely that larger and listed SMEs had started preparing for the EU Corporate Sustainability Reporting Directive (CSRD) before the Omnibus was passed. The CSRD mandates that firms report on Biodiversity and Ecosystems (ESRS E4) and other relevant topics (see section 1.6) when material. The smallest LSEs were to report in 2026 and listed SMEs in 2027, but are now out of scope (Directive 2022/2464; Directive 2026/470).

1.3.2 SMEs: Members of UN Global Compact Norway

The scope, with respect to interviewed SMEs, is limited to members of the UNGCN network. UN Global Compact is the world’s, and Norway’s, largest voluntary corporate sustainability initiative, with over 26000 members globally, and 324 members in Norway. The initiative supports members through providing learning materials, guidance and an arena for exchanging

knowledge (UNGCN, n.d.). All members commit to following ten principles for responsible business, where three are related to environmental sustainability: “*Businesses should support a precautionary approach to environmental challenges; undertake initiatives to promote greater environmental responsibility; and encourage the development and diffusion of environmentally friendly technologies.*” (UNGC, n.d.). Members report yearly on their work towards the principles and the Sustainable Development Goals (SDGs), via their Communication on Progress (CoP) (UNGCN, n.d.). For one, focusing on UNGCN members was a choice made due to practicalities; cooperating with UNGC provided legitimacy in outreach, a higher likelihood of securing enough interviews, and access to insights on the Norwegian context. Further, a certain level of maturity in terms of sustainability was ensured. This was key, as the topic is new and complex, demanding a willingness to invest in necessary resources to understand and address it.

1.3.3 Geographic and temporal scope

The geographical scope is set to SMEs in Norway but seeks to include their relevant nature-related risks and opportunities that span globally via supply chains or investments. As elaborated in section 1.1, these SMEs and the context they operate within provide a compelling case. Adding onto this, the same 2022 OECD assessment that concluded that Norwegian management of nature and biodiversity has room for improvements, noted that Norway has a well-functioning system for managing the environment and is a frontrunner in many environmental areas (OECD, 2022; NOU 2024:2). Focusing on this context may therefore shed light on challenges and solutions in terms of meeting international goals on nature and biodiversity, when many of the prerequisites for improvement are already fulfilled.

The data was collected over the course of March and April 2026. As this is a field with rapid developments, the temporal scope becomes a limitation. A new ISO14001-standard for Environmental Management Systems (EMS) was for instance launched in April 2026, which incorporates biodiversity to a much larger extent than the previous standard. Holders of the ISO 14001:2015 certificates must implement changes and go through a transition audit before the transition period ends in 2029 (Standards Norway, 2026a, 2026b). As many SMEs obtain ISO14001 certifications due to customer demand (Mousellas, 2020), some of the interviewed firms will likely adjust their work with nature and biodiversity accordingly. Whether or not strategies tied to biodiversity will already change from March/April to June 2026, this factor should be mentioned as one that may lower the robustness of the results.

1.3.4 Motivations behind applying a broad scope

The study was purposefully not scoped down to e.g. a specific sector, the biodiversity aspect of nature, region, or a part of the value chain. While a narrower scope was considered, this study aims to provide an overall picture of how SMEs, and not just those operating in primary or extractive sectors, are addressing nature and biodiversity and can scale up their efforts. Furthermore, as stated in the problem definition, this is a new field with somewhat low maturity, rapid developments and context-specific challenges. “Working with nature” might mean working with land use change for some, limiting CO₂ emissions for others, recycling and reducing waste for another firm, or restoration projects for a fourth firm. A narrow scope was therefore considered a risk with regards to the amount of findings. Keeping the research questions and scope rather broad and open is therefore a methodological choice, which is more tailored to the audience and case, and allows for catching up what the mainstream perceptions and actions tied to the topic of nature and biodiversity are. On a similar note, as this thesis seeks to map perceptions rather than taking a normative approach, actions are not sorted after their relevance and effects for nature and biodiversity beyond the identified main categories of drivers for biodiversity loss. This thesis neither seeks to provide a complete overview of the situation as of today, nor does it seek to provide an in-depth analysis of one sector, which is also needed

due to the context-specific nature of the topic. It rather seeks to map and describe how relevant stakeholders perceive the research problem. I recognize that these delimitations would all be worth investigating, and hope that this study can provide an overview and an entry point for further research.

1.4 Ethical considerations

1.4.1 Researcher honesty and personal integrity

One aim of the thesis was to produce findings and grounds for how UNGCN can support their members in scaling up work on nature and biodiversity. Having this objective might have led to the research questions being more instrumental and action-oriented, rather than purely academic. The research was not funded by UNGCN, but there have been meetings between the contact person in the organisation and thesis author throughout the process, e.g. to discuss relevant scoping and points of foci. As this was a learning experience for the organisation too, they were keen to engage in discussions on the topic and issues that arose. These meetings additionally enriched the research, as bouncing ideas helped with understanding the context better and finding “the right” questions. To ensure that this did not compromise the integrity of the thesis, both parties signed an agreement stating amongst others that UNGCN would not seek to influence the design and carrying out of the thesis project (appendix 4).

1.4.2 Ethical responsibilities to the subjects of research

The interviews were based on voluntary participation. To ensure informed consent, this was clearly stated in the invitation email, together with the plan and purpose of the research. Before the interviews, interviewees received a combined information sheet and consent form (see appendix 1), elaborating on the project and their rights as participants such as withdrawing consent and participation, or requesting deletion of data. The collected data was anonymized when transcribed, and the recordings and transcripts were stored in separate locations on a password-protected hardware. All raw data was deleted upon publication of the thesis. Anonymisation was one important ethical concern in relation to the research, as nature-related DIROs can be sensitive to firms who haven’t already publicly disclosed these, and some might worry about reputational risks. One challenge here was that population-wise, Norway is a small and tight-knit country. Pseudo-anonymising participants to e.g. “an SME with 100-250 employees in the brewery industry” might not be enough to ensure full anonymisation, especially when stated that they are part of the UNGC network. To ensure a certain level of transparency, it was however important that some characteristics were presented. The information- and consent form therefore stated that participants would be pseudo-anonymized when transcribed, with personal data and the name of firms/organisation being replaced by a code, but the type of organisation and sector being disclosed.

1.4.3 Use of AI

AI was used as a tool for literature search (ScopusAI, ConsensusAI), in addition to more traditional search motors and databases. ChatGPT was used to clarify and identify different definitions of concepts, and when seeking to identify relevant sources of information. Examples of prompts used are: “*can you explain the difference of organisational and human capital, and refer me to the key academic resources of these definitions?*”, “*what is the link between the Norwegian Nature Diversity Act and the Plan and Building act?*” and “*can you refer me to key definitions of nature-positive practices?*”. (See appendix 5 for a wider disclosure of AI use).

1.5 Audience

The thesis was written with several target audiences in mind. UNGCN can use the findings to better understand and support their members’ efforts in addressing nature and biodiversity, e.g.

via design of educational material, or informed conversations with policy makers seeking to shape policies that better meet the needs of SMEs. The thesis may also be of interest to the SMEs themselves, policy makers, industry organisations, consultancy firms, environmental NGOs, academia and other actors with an interest in contributing to halting the loss of nature.

1.6 Key concepts used in the thesis

The concepts of nature and biodiversity are used somewhat interchangeably in the literature and in the literature review. Some scholars focus on the former, while others narrow down on the latter. Due to the practical aim of the research, and the geographical scope, this thesis primarily uses “nature”. Definitions from the Taskforce on Nature-related Financial Disclosures (TNFD) are applied for key concepts, partially because Norwegian key documents and guidelines on the topic largely build on TNFD definitions, e.g. the officially commissioned *NOU 2024:2 In interaction with nature - Nature risk for industries, sectors and society at large in Norway* (hereby: NOU 2024:2) and the guidance on nature-positive management (PwC & Sabima, 2023; NOU 2024:2). Second, the NOU 2024:2 recommends that actors follow a general method for evaluating and managing their nature-related risks inspired by the TNFD (NOU 2024:2). Norwegian actors’ understanding of the topic is thus likely highly coloured by the TNFD glossary. Finally, most acknowledged frameworks and methods related to nature and biodiversity overlap or complement each other. The TNFD recommendations were indeed developed to be consistent with the GFB and reporting standards like ISSB, ESRS and GRI (NOU, 2024:2; TNFD, n.d). TNFD and the advisory group for the European Sustainability Reporting Standards (ESRS), have worked closely together to ensure common languages, definitions and approaches (EFRAG & TNFD, 2024), and most Norwegian firms likely know of ESRS due to the CSRD.

A clarification should be made regarding what counts as “nature-positive”. While there is a myriad of definitions for “nature-positive” The International Union for Conservation of Nature (IUCN) argues that there is growing consensus toward the one of The Nature Positive Initiative “*Nature positive by 2030’ refers to halting and reversing biodiversity loss by 2030 from a 2020 baseline, through measurable gains in the health, abundance, diversity and resilience of species, ecosystems and nature processes*” (Baggaley et al., 2023, p. 7) The UK Council for Sustainable Business’ is more grounded in business: “*A nature-positive approach puts nature and biodiversity gain at the heart of decision-making and design. It goes beyond reducing and mitigating negative impacts on nature as it is a proactive and restorative approach focused on conservation, regeneration, and growth.*” (zu Ermgassen et al., 2022).

Regarding what should count as “nature-positive practices”, this thesis stresses that land and sea use change, pollution, overexploitation, climate change and invasive species, can all be linked to economic activities, economic growth, and changes in patterns of production and consumption (see section 2.2.2) (IPBES 2019; Panwar et al., 2023). Circa 90% of biodiversity loss results from extraction and processing of natural resources (European Commission, n.d.-a). Reducing resource use then reduces negative impacts on nature, and circular practices like recycling can be deemed indirect “nature-positive” actions (IPBES, 2026). The Nature Risk Commission points to how, beyond biodiversity and ecosystems (E4), the ESRS for resource use & circular economy (E5), water & marine resources (E3) and pollution (E2) are relevant for assessing how firms handle nature-related risks (NOU 2024:2). Studying how SMEs address ecosystem services and biodiversity, Wagner (2023) included direct and indirect actions, with the first category including investments in conservation, restoration, and offsetting; indirect actions included e.g. reduced water and material consumption, reduced emissions and pollution (air, water, noise), and circular practices. Recognising the interconnectedness of nature and other topics, and that both direct and indirect activities are necessary means to an end, this thesis sees actions to directly or indirectly limit land and sea use change, pollution, overexploitation, climate change and the spreading of invasive species, as “nature-positive practices”.

Nature	“The natural world, emphasising the diversity of living organisms, including people, and their interactions with each other and their environment (IPBES 2015).” (TNFD, 2023, p. 27)
Biodiversity	“The variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part. This includes diversity within species, between species and of ecosystems.” (TNFD, 2023, p. 27).
Ecosystem	“A dynamic complex of plant, animal and microorganism communities and the non-living environment, interacting as a functional unit.” (TNFD, 2023, p. 27)
Ecosystem services	“The contributions of ecosystems to the benefits that are used in economic and other human activity.” (TNFD, 2023, p. 27)
Nature-related dependencies	“...are aspects of environmental assets and ecosystem services that a person or an organisation relies on to function.” (TNFD, 2023, p. 30)
Nature-related impacts	“...refer to a change in the state of nature (quality or quantity), which may result in changes to the capacity of nature to provide social and economic functions. Impacts can be positive or negative.”, and direct, indirect or cumulative (TNFD, 2023, p. 30)
Nature-related risks	“...are potential threats posed to an organisation that arise from its and wider society’s dependencies and impacts on nature. Risks can be physical risks, transition risks or systemic risks.” (TNFD, 2023, p. 33).
Nature-related opportunities	“...activities that create positive outcomes for organisations and nature through positive impacts or mitigation of negative impacts on nature” (TNFD, 2023, p. 36)
Nature-positive practices	“Direct and indirect actions addressing land and sea use change, pollution, overexploitation, climate change and invasive species.” (author)

Table 1-1: Key concepts applied in the thesis.

1.7 Disposition

Chapter 1 (Introduction) introduces the research topic of the thesis, the research aim and the research questions. Scope and delimitations, ethical considerations and intended audience are further introduced, before key concepts tied used in the thesis are discussed and defined.

Chapter 2 (Literature Review) examines existing research on SMEs’ adaptation of nature-positive practices, complemented by general literature on business and biodiversity, SMEs and sustainability, and nature-related risks and opportunities.

Chapter 3 (The Norwegian Context) presents the economic and regulatory context Norwegian SMEs operate within, with regards to nature and biodiversity. An overview of existing initiatives and resources is provided, and two relevant surveys are discussed.

Chapter 4 (Theoretical and Analytical Framework) outlines relevant theories, before presenting the theoretical and analytical framework that combines the INT, RDT and RBV.

Chapter 5 (Research design, materials and methods) presents the research design, including methods for data collection and analysis.

Chapter 6 (Findings & Analysis) presents and analyses findings from the data collection.

Chapter 7 (Discussion) discusses the findings in light of existing literature, before moving on to methodological and analytical choices, legitimacy, and the generalisability of the study.

Chapter 8 (Conclusions) presents the main conclusions to the research questions, what implications these have for the identified audiences, and recommendations for future research.

2. Background and literature

2.1 Business and biodiversity

2.1.1 The state of nature and biodiversity today

Biodiversity, which can be defined as “*the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part*”, encompassing “*diversity within species, between species and of ecosystems*.”, is declining rapidly (TNFD, 2023, p. 27). As mentioned in section 1.1, the planetary boundary (PB) with respect to biodiversity loss was already transgressed in 2009, with severe implications for the stable Earth system (Rockström et al., 2009). Biosphere integrity was later identified as one of two core PBs, together with climate. The biosphere and the climate have coevolved for nearly 4 billion years and are highly interconnected (Steffen et al., 2015). Global warming and changing weather patterns represent threats to species who can’t adapt rapidly, while the loss of species and nature impacts the Earth’s ability to sequester carbon (Sankaran et al., 2021). Both PBs have the potential to drive the Earth system into a new state of their own, if overshoot. They are also highly connected to all other PBs; the biosphere and climate are regulated by other PB systems and provide the overarching systems through which these operate (Steffen et al., 2015). Land-system change for instance, another PB, weakens the earth’s ability to regulate climate (Steffen et al. 2015) and is the major cause of biodiversity loss (IPBES, 2019; Panwar et al., 2023).

Beyond intrinsic arguments, there exist clear economic rationales for halting and reversing the loss of biodiversity and nature, “*the natural world, emphasising the diversity of living organisms, including people, and their interactions with each other and their environment*” (TNFD, 2023, p. 27). As nature and biodiversity is lost, ecosystems are degraded, and so are the ecosystem services. Ecosystem here refers to “*a dynamic complex of plant, animal and microorganism communities and the non-living environment, interacting as a functional unit*, and ecosystem services “*the contributions of ecosystems to the benefits that are used in economic and other human activity*” (TNFD, 2023, p. 27). They can be divided into provisioning services, e.g. provision of raw materials and food, regulating services such as climate regulation and flood control, cultural services like recreation and spiritual value, and supporting services like soil formation and nutrient cycling (Millennium Ecosystem Assessment, 2005). These are vital for human health and well-being, and more than half of the world’s GDP (WEF, 2020). Nonetheless, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)’ assessment in 2019 showed that most ecosystem services are declining. Out of the 18 analysed categories of nature’s contributions to people (e.g. regulation of air and freshwater quality), nature’s ability to sustain the contributions was decreasing in 14 (IPBES, 2019). Maintaining biodiversity, on the other hand, supports ecosystem resilience towards increasing pressures of e.g. diseases and climate change, and the provision of ecosystem services (Rockström, 2009; IPBES, 2019).

2.1.2 Looking at nature through the lens of risk management

Despite a global landscape characterised by geopolitical, societal and technological short-term risks, biodiversity loss and ecosystem collapse, extreme weather events, critical change to Earth Systems, natural resource shortages and pollution are recognised global long-term risks (WEF, 2026). Indeed, the concept of “nature-related risks” is gaining traction in both private and public spheres (see section 1.1 or 1.6 for definition) (Carvalho et al., 2023; Gjerde et al., 2025; NOU 2024:2; TNFD, 2023). The sorts of nature-related risks tied to economic activities’ dependency on nature and vulnerability to its degradation, are referred to as physical nature risks. Nature-related risks can also arise from the transition towards a more nature-positive society. Changes in policies, technology, markets, reputation and liability are examples of transition risks that can negatively affect a company. Finally, systemic risks can arise to an organisation, as the result of

not only individual parts, but an entire ecosystem or financial system breaking down (TNFD, 2023). Nature-related risks are not only part of financial frameworks like the TNFD, but also the GBF, which seeks to ensure that “by 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people” (CBD, 2022, p. 8). As mentioned earlier (see section 1.1), the GBF calls for large companies to assess and disclose their nature-related risks, impacts and dependencies (CBD, 2022).

Economic activity and biodiversity are closely interlinked, with the former being one of the principal threats to the latter (Herbert et al., 2023; IPBES, 2026). The five major direct drivers of biodiversity loss can all be linked to economic activities: land and sea use change, overexploitation, pollution, introduction of invasive species and climate change (IPBES, 2019; Panwar et al., 2023). Literature on the relationship between business and biodiversity has often focused on land use change as this is the major driver, with most attention being drawn to primary sectors and extractive industries sectors such as mining, forestry and agriculture. These all have substantial direct impacts (Salmi et al., 2023; Panwar et al., 2023; Zu Ermgassen et al., 2022). Over-harvesting fish, unintentionally spreading invasive species through transport or building factories on land that was previously untouched nature, are however examples of other activities adding to the issue (IPBES, 2026; NOU 2024:2; Panwar et al., 2023). IPBES (2026) and Salmi et al. (2023) additionally make the case for downstream actors’ clear responsibility for nature-related impacts occurring in the primary sectors, as these activities are ultimately driven by demand. Indeed, Zu Ermgassen et al. (2022) point to many companies finding the majority of their impacts on biodiversity in the value chain, and not in their own operations. They thus argue that businesses should expand their scope to work with biodiversity upstream and downstream, and horizontally towards improving sustainability practices in their sector.

The state of nature and biodiversity may also pose threats to businesses. Agriculture is a typical example of a sector dependent on several ecosystem services. If pollination, soil formation and regulation of the climate and water falter, food production will as well (Power, 2010). And while mining impacts nature negatively through e.g. land use change and pollution, it’s also dependent on soil formation to limit erosion that would make mining more difficult, or water resources for production (NOU 2024:2). Again, looking to the more indirect links, literature and practice regarding nature-related risks has been less preoccupied with supply chains (Salmi et al., 2023). Nature-related risks however affect downstream actors such as food retailers or electronics manufacturers; while certain industries and firms are more dependent than others, every enterprise, regardless of size and activity, has some level of nature-related risks (IPBES, 2026; NOU 2024:2; Panwar et al., 2023). IPBES (2026) also stresses that all businesses can be positive change-makers: “Because businesses are highly influential and can move quickly when motivated, informed and enabled to do so, they can be agents of positive change.” (IPBES, 2026, p. 5).

2.1.3 Topic-specific barriers for addressing nature and biodiversity

While there is a significant overlap of challenges in the implementation of general sustainability practices and nature-positive practices, the topic of nature and biodiversity does come with its topic-specific challenges. The recent business and biodiversity assessment by IPBES presents five main categories through which business activities are shaped, and one can work to create an enabling environment. These are 1) policy, legal and regulatory frameworks, 2) economic and financial systems, 3) social values, norms and culture, 4) technology and data, and 5) capacities and knowledge. Out of these, regulations have historically been the main driver of businesses’ actions to manage negative impacts on biodiversity (IPBES, 2026).

IPBES’ assessment further lists several barriers for addressing biodiversity, spanning across the five abovementioned categories. Looking at the technical enablers, there exist clear gaps in availability of business-relevant data and literature, value chain transparency, completeness of

evidence, and adoption and applicability of methods such as ecosystem accounting. Businesses lack data and knowledge to understand and address their impacts and dependencies, especially those in the supply chain (Zu Ermgassen et al., 2022; IPBES, 2026). Limited quantitative, standardised and comparable estimates of impacts from different businesses furthermore limits businesses’ ability to fully understand and manage them. The data further needs to be context specific, adjusted to sector and geographical location. These challenges are echoed in other literature on business and biodiversity (IPBES, 2026; McKenzie et al., 2025; NOU 2024:2).

The local and context-specific characteristic of the issue makes it more challenging to measure and address than climate change, where progress is substantially faster than for biodiversity (Zu Ermgassen et al., 2022). Climate is measured in a standardised manner, through CO₂ equivalent, while biodiversity can’t be fully assessed in just one metric (Zu Ermgassen et al., 2022; Dinesen, 2025). Regarding the economic and financial system that businesses operate within, it’s noteworthy that longer ecological cycles don’t necessarily align with shorter-term time pressures on decision making, quarterly earnings and return on investments (IPBES, 2026). There are also perverse incentives in place. Large public subsidies directed at business activities that drive biodiversity loss, function as barriers. Together with the lack of adequate penalties and rewards, and most disclosure schemes being voluntary, the system is currently rigged in a way that does not incentivize a transition to nature-positive practices (IPBES, 2026).

2.1.4 International frameworks & tools to address nature-related risks

A growing number of public and private-led initiatives have been established over the last years (see table 2), seeking to address the private sector’s impact on nature and biodiversity, and harness its potential to be part of a positive change. TNFD and the CSRD are some of the more tone-setting initiatives in the EU and will thus briefly be summed up.

Societal Goals	SDGs, GBF (CBD), Paris Agreement (UNFCCC), UNCCD
Reporting & disclosure frameworks (voluntary or mandatory)	TNFD, CSRD/ESRS/VSME, GRI, IFRS & ISSB, CDP, UNGC CoP
Implementation & action	Business 4 nature, IFC, WBCSD, UN Guiding Principles on Business and Human Rights
Target setting	SBTN, SBTi, Accountability Framework Initiative, Alliance for Water Stewardship
Impact assessment	Capitals Coalition, GHG Protocol
Standards	ISO17298:2026, ISO14001:2026

Table 2-1: Initiatives, frameworks and tools to address nature-related risks. Adapted by SBTN (2024) and elaborated on by author.

TNFD is a market-led, science-based, GBF-aligned and government-supported initiative founded in 2021. It aims to provide organisations with the tools to map and address nature-related dependencies, impacts, risks and opportunities. In addition to general recommendations, TNFD has published a number of sector-specific guidelines (TNFD, n.d). On the mandatory side, the CSRD of 2022 requires all EU companies in scope to report on sustainability following the ESRS. In line with TNFD, the ESRS presents a framework for enterprises to identify and report on material impacts, risks and opportunities related to biodiversity and ecosystems (EFRAG & TNFD, 2024).

In the 2026 methodological assessment on business and biodiversity, IPBES maps the availability and applicability of five categories of methods and tools for measurement: location-based observations, participatory mapping and monitoring, spatial analysis, LCA, macro-scale environmental economic models. These are mapped across four decision-making levels: operations, value chain, corporate and portfolio. There are 13 assessed methods available and applicable, 27 can be used with caution, and there are methods available for all decision-making levels. IPBES encourages businesses to start using these methods, while acknowledging the constraints in quality: “*Where methods do not meet the necessary requirements (red: coverage, accuracy and responsiveness), they may not be entirely fit for purpose. However, they may still provide useful information on which businesses can act*” (IPBES, 2026, p. 11), whereas other scholars argued already in 2022 that: “*A lack of metrics should no longer be an excuse for businesses to delay taking ambitious action to measure and address their biodiversity impacts and dependencies.*” (Zu Ermgassen et al., 2022, p. 8).

The 2026 IPBES assessment doesn’t provide a list of the 40 tools reviewed, but table 2-2 provides an overview of available tools based on Barth et al., (2025)’s revision of biodiversity assessment tools. This revision analysed 45 tools that have been proposed by the Science-Based Target Network (SBTN), to aid businesses in assessing their nature-related impact and dependencies (Barth et al., 2025). IPBES (2026) however stresses that the available biodiversity assessment methods bring challenges for SMEs, as they require resources for applying them.

Material Screening	SBTN Materiality Screening Tool (MST), SBTN High Impact Commodity List (HICL), ENCORE, CDP Water Watch, WWF Biodiversity Risk Filter
Value chain assessment: pressure	Bioscope, Corporate Biodiversity Footprint, Earthstat, ecoinvent, Environmental Profit & Loss (EP&L), Eora, Exiobase v3, FAOSTat, Federal LCA Commons, GABI, Global LCA Data Access network (GLAD), LandGriffon, MapSPAM, OpenLCA, Simapro, Water Footprint Network, WWF Biodiversity Risk Filter
Value chain assessment: state	Aqueduct Water Risk Atlas, Biodiversity intactness Index, Critical natural assets map, Ecoregion intactness index, Ecosystem integrity index, Forest Landscape Integrity Index, Global Ecosystem Typology, Global Forest Watch, GLOBIO 4, HCV Approach, IMPACT World+, Integrated Biodiversity Assessment Tool (IBAT), Ocean+, ProNet, Protected planet, ReCIPE, Red List of Ecosystems (RLE), Resource Watch, SBTN Unified State of Nature datasets for Water Availability and Water Pollution to support SBTN Step 1: Assess and Step 2: Interpret & Prioritize, Trends.Earth, WWF Water Risk Filter, WWF Biodiversity Risk Filter

Table 2-2: Tools for addressing nature-related impacts and dependencies. Adapted by Barth et al. (2025), p. 4.

2.2 Literature on SMEs and sustainability

2.2.1 SMEs: Mange bekker små ...

As explained in section 1.1, environmental legislation, civil society scrutiny, and research on private sector adaptation of sustainability practices has historically focused on LSEs (Dinesen, 2025; Yunusbayeva et al., 2025). The abovementioned CSRD did place SMEs within scope, until the Omnibus simplification package was passed in 2025. Initially the CSRD was to be implemented in three phases: Large, listed enterprises with more than 500 employees were set to publish their first reports in 2025, with non-listed large corporations starting in 2026. Listed SMEs were to publish their first reports in 2027. The threshold for being in scope is now 1000 employees and a net turnover of €450 million (Directive 2022/2464; Directive 2026/470). In-scope companies with SMEs in their supply chain may furthermore only request information from SMEs that is included in the voluntary reporting standards for SMEs (VSME), limiting the trickle-down effects of the directive (Directive 2026/470).

As mentioned in section 1.1, no estimate of SMEs' aggregated nature-related impacts has been identified in the literature search. Yet, most EU enterprises are SMEs, and SMEs are responsible for large parts of the world's resource use, waste generation, pollution and CO₂ emissions in Europe (European Commission et al., 2022; Herbert et al., 2023), factors tied to biodiversity loss. IPBES (2026) additionally stresses that the size of a business doesn't necessarily reflect the extent of their impacts and argues together with Salmi et al. (2023) that all downstream actors share responsibility for impacts of primary sectors, as these activities are ultimately driven by demand (IPBES, 2026; Salmi et al., 2023). Looking beyond negative impacts, SMEs are highlighted as important actors for the green transition, as they are often innovative by nature, and can identify and adapt to new market opportunities. Their ability to specialise in and deliver solutions, products, expertise and information needed for the green transition is brought forward by the same sources (Dinesen, 2025; European Commission, 2022). This thesis therefore argues that SMEs are responsible for both negative and positive nature-related impacts (Panwar et al., 2023; Salmi et al., 2023; IPBES, 2026).

2.2.2 Literature at the intersection of SMEs and biodiversity

Links between biodiversity and business have been studied by a broad range of disciplines, such as business and management, conservation biology, ecology, ecological economics, political science, development studies, and international affairs (Panwar et al., 2023). The research primarily organises itself around two strands: studies on biodiversity accounting and reporting, and studies tied to biodiversity management (Panwar et al., 2023; Torelli & Balluchi, 2022). Looking to the research strand tied to management, only three peer reviewed articles specifically discussing the intersection between SMEs and biodiversity were identified. Indeed, Wagner stresses that his study on prioritisation of activities supporting ecosystem services provides *"insights into SME activity that are rare in the existent literature."* (Wagner, 2023, p. 2584). Of course, articles exploring SMEs' general adaptation of sustainability practices or businesses' general adaptation of biodiversity, may very well cover this intersection implicitly and are therefore added to the review.

Drawing on case studies of four sustainability-oriented small Italian bakeries, Torelli & Balluchi (2022) map and analyse the motivations behind the organization owners' commitment to biodiversity protection through the businesses. Wagner (2023) seeks to analyse how German manufacturing firms have implemented activities that support ecosystem services and biodiversity and understand risks tied to ecosystem degradation, using a mix of quantitative and qualitative methods. With a survey of 270 responses, whereas 37% represent SMEs, they apply a content analysis and multiple statistical techniques. Herbert et al. (2023)'s study is based on a survey conducted on 61 SME leaders in the UK, employing the value-belief-norm framework to investigate whether leaders with strong biospheric and altruistic value orientations recognise biodiversity loss as a sustainability priority.

Herbert et al. (2023) find that even business leaders with pro-environmental values do not recognize biodiversity as essential. Only 30% of respondents had incorporated direct biodiversity actions within their business sustainability priorities. The percentages were 77% for energy, 70% for waste and 61% for materials. The scholars hypothesise the reason to be resource costs. Emissions, compliance to regulations and sustainability expectations of their suppliers have clear implications for business. The connections between biodiversity and business performance on the other hand appeared to be less visible (Herbert et al., 2023). This corresponds to Wagner (2023)'s findings: upon mapping direct and indirect biodiversity-related activities undertaken by SMEs, the most practiced were not biodiversity conservation, restoration or offsets, but rather waste reduction, material use and recycling packaging (Wagner, 2023). Herbert et al. (2023) further hypothesise that higher priority is given to measurable

impacts, while biodiversity monitoring lacks good definitions and broadly accepted metrics, especially tied to business performance (Herbert et al., 2023).

Both Wagner (2023) and Herbert et al. (2023) highlight the importance of the business case for addressing the topic. Interestingly, Torelli & Balluchi’s (2022) findings diverge somewhat from the other scholars to this end. Only one out of the four reviewed companies see economic motivation as a prevailing driver. Rather, personal values, respect for biodiversity and the chance to supply a healthy product with intrinsic value, are stated to be major drivers. This might be partly explained by the fact that these businesses all have less than 6 employees and are family owned, which is proven to guide businesses towards pro-environmental strategies (Torelli & Balluchi, 2022). “Place attachment”, a concept from environmental psychology referring to how geographic context strongly affects the public reaction to negative ESG behaviour, can also explain this. One paper looking into the phenomenon found that investment analysts tend to be more mindful of the environment in their country of origin (Gerasimova & Rohrer, 2022).

2.2.3 Outside the scope of CSRD, but not free of nature-related risks.

One argument for the business case for biodiversity, is that SMEs, like LSEs, face nature-related risks (Herbert et al., 2023; Schopohl et al., 2026; Wagner, 2023). LSEs are more prone to transition risks such as stricter regulations and reputational risks than SMEs, who typically face more physical risks. SMEs will however also be noticing transitional risks, for instance in the form of having to report to investors and lenders (Schopohl et al., 2026; NOU 2024:2). Some studies point to how biodiversity risk exposure raises borrowing costs for SMEs. Managing nature-related risks better on the other hand, lowers the credit risk (Nguyen et al., 2025). Other studies find that investors have started revising valuations for firms with a higher level of nature-related risks or -impacts (Garel et al., 2024).

The physical nature-related risks arise from the fact that SMEs typically operate and source at a more local and geographically anchored scale, with a higher dependency on local ecosystem services, Schopohl et al (2026) argue. Consequently, sudden local shocks pose a larger risk to SMEs than LSEs, who are more likely to have the financial and managerial room to handle a shock, and possibly absorb shocks through diversified operations and supply chains. SMEs face tighter conditions. As such, Schopohl et al. (2026) continue, local degradation of biodiversity and sudden shocks, e.g. degraded water and soil quality, reduced pollination or flood protection, translate directly to higher operating costs and decline in profitability for SMEs. This effect is stronger for firms in sectors classified as nature-dependent by the tool ENCORE, firms in more ecologically degraded areas, or micro-firms, - even those with a limited impact on nature. Upon a cross-sectoral study on how local biodiversity loss is financially material to SMEs in the UK and Ireland, Schopohl et al. (2026) estimate an average 36% loss of operational profit across the sample. This loss of profit mostly stems from higher operational costs, and not lower revenues (Schopohl et al., 2026).

Wagner (2023) finds that firms more concerned with risks pursue more activities directly targeted at biodiversity protection. Herbert et al. (2023, p. 5644) note that “*businesses are competent at risk management, so setting often overlooked interactions with ecosystems in those terms helps articulate the importance of biodiversity for business success.*”. Companies are increasingly acknowledging the significance of nature-related risks (Gjerde et al., 2025). In a 2025 survey conducted on 222 portfolio companies of a large investor, 48% of the respondents considered nature-related risks to be financially material (Gjerde et al., 2025). The specific number of SMEs (if any) in the study is not stated, and the authors note that smaller companies are underrepresented in the sample, so the generalizability of these findings to SMEs are limited. Nevertheless, Wagner (2023) notes that SMEs perceive similar levels of risks tied to ecosystem services as larger firms but engage

in relatively fewer direct biodiversity conservation and protection activities. Herbert et al. (2023) argues that resources, knowledge and sense of responsibility are likely explanations to this.

2.2.4 Drivers and barriers: implementation of sustainability practices

Literature mapping the drivers and barriers for SMEs to adapt general sustainability practices, complemented with the mapping conducted by Gjerde et al. (2025), provides further insights on this matter. Internal drivers and barriers include leadership and top management, resources such as time, money and expertise (Bakos et al., 2020; Gjerde et al., 2025; Moursellas et al., 2024; Yunusbayeva et al., 2025), and organization culture and individual values (Bakos et al., 2020). External factors include regulations and enforcement, customer demand e.g. for certificates such as ISO14001, other forms of stakeholder pressures, social norms and reputation (Bakos et al., 2020; Torelli & Balluchi, 2022; Gjerde et al., 2025; Moursellas et al., 2024; Yunusbayeva et al., 2025), competitor behaviour and competitiveness, and governmental incentives like subsidies and loans (Moursellas et al., 2024; Yunusbayeva et al., 2025). Yunusbayeva et al. (2025) note two interesting drivers: global, national and local collaborations for practical tools, and localized initiatives that appear less centralized and vague than the UN SDGs.

2.3 Synthesis: SMEs and biodiversity

The reviewed literature paints a picture of biodiversity having been deprioritised in sustainability strategies up until quite recently, especially for SMEs. In the case of SMEs, this de-prioritisation is hypothesised to be due to its perceived relevance to business and compliance, and measurable impact (Herbert et al., 2023). Beyond perceived relevance, a number of internal and external barriers to action have been identified.

There are however limitations to the generalizability of the reviewed articles. Taking Torelli & Balluchi (2022), Herbert et al. (2023) and Wagner's (2023) studies as examples: one factor is the different geographies, with different legislation, markets and culture. More importantly, the survey Wagner (2023) relies on was conducted in 2016. Herbert et al. (2023) do not state when their data was collected. This is a rapidly evolving field, with increasing focus, understanding and regulations (Zu Ermgassen et al., 2022). As an example, both articles problematize negligence of biodiversity in current reporting standards and the ISO14001-standard (Wagner 2023; Herbert et al., 2023). SMEs were nevertheless set to report in compliance with the ESRS at the time these articles were published, and a ISO14001 version including more biodiversity-related aspects was published in April 2026 (Standard Norway, 2026a, 2026b). Finally, the concept of nature-related risks is gaining traction, if not yet in the SMEs, then in the financial sector that these SMEs depend on for credit and insurance. What was true in 2016 is not necessarily true today. Given the urgency and rapid development of the topic, and SMEs' instrumental part of the economy, this intersection should be revisited in a context where the topics of nature and biodiversity have entered the spotlight.

3. The context in which Norwegian SMEs operate

3.1 A glance at the economy

Norway has an open economy, characterised by a high share of SMEs. Following the Norwegian definition, where only enterprises with less than 100 employees are defined as SMEs, 99% of all Norwegian enterprises are SMEs and 55% of all private sector employees work in an SME. Using the EU-definition for SMEs (see section 1.1) these enterprises were responsible for 1,4 billion NOK of total Norwegian value creation in 2023 (NHO, 2024). The EU constitutes the most important trade partner, as 80% of exports and 64% of imports are tied to the European market (Røkås & Gómez-Baggethun, 2025). EU legislations therefore pose a transition risk (see section 2.1.2) for Norwegian businesses seeking to enter or stay in the EU market, with rapid adaptation to them being an important risk management strategy (NOU 2024:2).

The domestic economy is further characterised by heavy reliance on natural capital. Oil, natural gas and hydropower production represented 15% of the GDP, and other important economic activities include fisheries and forestry (Langseth, 2025; Røkås & Gómez-Baggethun, 2025). According to the Nature Risk Commission’s mapping, the following industries are most vulnerable to nature-related risks: agriculture, forestry, traditional indigenous livelihoods (e.g. reindeer husbandry), fisheries and aquaculture, mineral extraction, tourism, energy production and infrastructure, construction, petroleum, the wood industry, metal industry, mineral fertilizer industry, and retail (NOU 2024:2). In other words, large parts of the economy are prone to physical nature-related risks.

Norwegian economic activities are facing nature-related risks globally as well, albeit often upstream in the value chains. Approximately 30% of the domestic consumption consists of imported goods and services, and a 2024 estimate of consumption-based CO₂ emissions from Norway showed that 60% of the 70 million tonnes of CO₂ equivalents were emitted abroad. Together with the environmental footprint of investments abroad and exported goods, there is reason to assume that large parts of Norwegian nature-related dependencies and impacts are found outside of the land’s borders (NOU 2024:2).

3.2 The Regulatory landscape

As a signatory of the Kunming-Montreal Global Biodiversity Framework, Norway is bound by target 15: “Take legal, administrative or policy measures to encourage and enable business, and in particular to ensure that large and transnational companies and financial institutions:

a) regularly monitor, assess and transparently disclose their risks, dependencies and impacts on biodiversity including with requirements for all large as well as transnational companies and financial institutions along their operations, supply and value chains and portfolios; b) provide information needed to consumers to promote sustainable consumption patterns; c) report on compliance with access and benefit-sharing regulations and measures as applicable;

in order to progressively reduce negative impacts on biodiversity, increase positive impacts, reduce biodiversity-related risks to business and financial institutions, and promote actions to ensure sustainable patterns of production” (CBD, 2022, p. 11).

Norway’s 7th national report to the CBD states that the following acts contribute to meeting target 15: the CSRD (part of the Norwegian Accounting Act), the EU Taxonomy (part of the Norwegian act on disclosures in the financial sector), and the SFDR (part of the Norwegian Disclosure Act). The EU Eco-design directive is partially implemented in Norwegian law as well. Following the Nagoya Protocol, there are national regulations in place for the import and use of genetic material from other countries. The Norwegian Transparency Act is also

mentioned in the 7th national report and frequently brought forward in the context of nature-related risks. This act will be revised during 2026 and 2027, with a consideration of implementing environmental aspects (CBD, 2026; NOU 2024:2). As of today, the act mandates that companies liable to account under the Norwegian Accounting Act, which applies to approximately 9000 companies including SMEs, shall assess, address and report on value chain risks related to human rights violations and working conditions (NOU 2024:2).

The 7th report also brings forward regulations for considering negative impacts on biodiversity in land-use plans, and when giving concessions, licences or approvals to projects. These do not require developers to increase positive impacts or reduce negative impacts per se, but may include requirements on monitoring and mitigating negative environmental impacts (CBD, 2026). The Planning and Building Act §4-2, for one, mandates that all new regional and municipal plans for land use shall include a biodiversity impact assessment, while §§20-21 steer which activities require approval from the municipality, and when the municipality may refuse permits (CBD, 2026; Planning and Building Act, 2008). The Nature Diversity Act applies to all cases that can impact nature. From the perspective of a company, e.g. considerations of permits for aquaculture or the energy sector need to take §§8 to 12 in the Nature Diversity Act into account. These state that decisions related to biodiversity need to 1) be based on scientific knowledge, 2) follow the precautionary principle when scientific knowledge is not sufficient, 3) account for cumulative impacts on the ecosystem, 4) follow the “polluter pays”-principle in cases of negative impacts, and 5) apply best-practice technology when possible (Nature Diversity Act, 2009).

Also following up on the GBF, the Government published Meld. St. 35 (2023-2024) *Sustainable use and conservation of biodiversity*. This white paper outlines the new National Biodiversity Strategy and Action Plan (NBSAP), presenting Norway’s national targets, measures and policy instruments designed to meet the 23 targets of the GBF. For target 15, the government has set the following national goal: “By 2030 Norway has enabled businesses to efficiently develop and make available relevant and comparable reporting about nature risks and nature impacts.”¹ (Meld. St. 35 (2023–2024), 2024, p. 172). The government additionally encourages SMEs to voluntarily report on climate- and nature related information (NOU 2024:2).

3.2.1 The EEA Agreement

Many of the EU’s climate and environment regulations are implemented in Norwegian law, either as part of the Agreement on the European Economic Area (EEA) or due to general political cooperation on the area (NOU 2024:2; KLD, 2026). The EEA Agreement grants the non-EU states of Norway, Iceland and Lichtenstein access to the European internal market. As part of the agreement, EEA states have the right and duty to implement EU legislation that is deemed to be EEA-relevant by the EEA committee. Environmental legislation is part of the EEA agreement, and therefore most often deemed relevant (Miljødirektoratet, 2023). Approximately 80% of Norwegian policies on climate and environment are indeed based on EU policies (KLD, 2026). These include the REACH agreement, single-use plastics and EU emissions trading scheme. While EU legislation on biodiversity, agriculture and fisheries has been less covered by the EEA agreement so far, all new EU legislations are considered for full or partial implementation. Many regulations with implications for nature have been or will be implemented, such as the water framework directive, the environmental liability directive, the

¹ “Innen 2030 har Norge lagt til rette for at næringslivet effektivt kan utarbeide og tilgjengeliggjøre beslutningsrelevant og sammenlignbar rapportering om naturrisiko og naturpåvirkning.”

habitats directive and the CSRD (KLD, 2026; Miljødirektoratet, n.d.; NOU 2024:2). See table 3-1 for a more extensive overview of relevant global, regional, and national legislation.

	Global	Regional	National
Political targets and commitments related to nature	The UN SDGs The CBD / GBF The Nagoya Protocol	The EU Green Deal, incl. The EU biodiversity strategy for 2030	Meld. St. 35 (2023–2024) on Sustainable use and conservation of biodiversity, white paper presenting The Norwegian National Biodiversity Strategy and Action Plan (NBSAP)) (<i>Meld. St. 35 (2023–2024) Bærekraftig bruk og bevaring av natur: Norsk handlingsplan for naturmangfold</i>) Meld. St. 6 (2022–2023) Greener and more active state ownership: The State’s direct ownership of companies (<i>Meld. St. 6 (2022–2023) Et grønnere og mer aktivt statlig eierskap: Statens direkte eierskap i selskaper</i>)
Legislation related to nature		CSRD, SFDR, The EU Taxonomy and Due Diligence Directive, Environmental Impact Assessment Directive, Waste and Water Directives, WEEE, REACH, Habitat and Bird directives, The Ecodesign Directive, EU ETS, SUP	General regulations: The Nature Diversity Act (<i>Naturmangfoldsloven</i>), The Public Procurement Act (<i>Anskaffelsesloven</i>), The Transparency Act (<i>Åpenhetsloven</i>), The accounting Act, incl. CSRD (<i>Regnskapsloven</i>), The Plan and Building Act (<i>Plan-og bygningsloven</i>), The Pollution Control Law (<i>Forurensningsloven</i>), The Environmental Information Act (<i>Miljøinformasjonsloven</i>), The Svalbard Environmental Protection Act (<i>Svalbardmiljøloven</i>), Outdoor Recreation Act (<i>Friluftsløven</i>) Sector-specific regulations: The Marine Resources Act (<i>Havressursloven</i>), The Forestry Act (<i>Skogbruksloven</i>), The Land Act (<i>Jordloven</i>), The Reindeer Husbandry Act (<i>Reindriftsloven</i>), The Aquaculture Act (<i>Akvakulturløven</i>), The Energy Act (<i>Energiløven</i>), The Minerals Act (<i>Mineralloven</i>), The Water Resources Act (<i>Vannressursloven</i>)

Table 3-1: A non-exhaustive overview of political commitments, laws and regulations, and voluntary certifications related to nature. Loosely adapted from PwC & Sabima (2023), and elaborated on using NOU 2024:2, Meld. St. 35 (2023–2024), Zero et al. (2024), Miljødirektoratet (2023) and KLD (2026).

3.2.2 Public and private initiatives, and available resources

In 2024, the officially commissioned report NOU 2024:2 *In interaction with nature – Nature risk for industries, sectors and society at large in Norway*, was released. The Nature Risk Commission who authored the report had the mandate of evaluating how Norwegian industries and sectors are and can be affected by the loss of nature and biodiversity, and investigate how affected actors can best analyse and manage nature-related risks. They highlight the importance of industry-led initiatives and arenas as a tool for knowledge sharing and cooperation and further recommend that industry organisations develop general and specific guidelines and tools that are adjusted to regional contexts and the needs of SMEs (NOU 2024:2).

Norway has seen a number of private-led initiatives before and after the NOU. Some examples include the general guidance on nature-positive leadership, published in 2023 by Sabima and PwC, and the guidance on nature-related risks in the Norwegian finance sector by WWF, Finans Norge and Deloitte (2022) (Deloitte et al., 2022; PwC & Sabima, 2023). Another example is the development of project-specific ecosystem accounting, seeking to support companies in the renewables industry and other sectors to meet goals of land degradation neutrality and nature positivity in projects. The project is led by the industry organisation for electricity producers, suppliers and distributors, Renewables Norway (*Fornybar Norge*), and the three consultancy firms Asplan Viak, Rambøll and Multiconsult. The project group includes representatives from the

energy sector, with internal and external reference groups involving other key actors for ecosystem accounting. A test-version was published in 2025 (Fornybar Norge, 2025).

Looking at the initiatives from the public sector, Norway is bound by the EU regulation on environmental economic accounts, which was amended in 2025 to include ecosystem accounting and reporting. Following up on this regulation, the GBF, and national needs, public organs are developing national, regional, municipal, and project-specific ecosystem accounting systems (Randen & Grimsrud, 2025). As part of national efforts to reduce the loss of nature, a map of “grey areas” was published towards the end of 2025. “Grey” refers to areas heavily affected by human development activities such as housing, industry areas or roads, as opposed to “green” or “blue” areas such as forests, wetlands, agricultural land or lakes. This map is meant to function as a tool for urban and regional planning where “grey” areas are prioritised for new development projects (Miljødirektoratet, 2026). In terms of monetary enablers, it’s possible to apply for subsidies and loans e.g. for products and projects that support the green transition, from the state-funded Innovation Norway (*Innovasjon Norge*) (Innovasjon Norge, n.d.).

Ecolabels and environmental management schemes can also be tools for managing nature-related risks. The most commonly used systems in Norway are ISO14001, EMAS and the national scheme Eco Lighthouse (*Miljøfyrtårn*) (NHO, n.d.). It’s been pointed out that there are clear gaps in the nature and biodiversity-part of these schemes, and a need for them to include nature-related criteria to the same extent as CO₂ emissions and pollution (Fornybar Norge, 2025). Nonetheless, beyond the new version of ISO14001, ISO also published ISO17298 in 2025, which aligns with the GBF and provides a practical framework to integrate biodiversity in strategy and operations. A technical committee is currently developing more standards for monitoring, a genetic diversity assessment, and impacts of industries on ecosystems (ISO, n.d.). See table 3-2 for an overview of industry guidelines, tools and resources, and schemes and certifications that can aid a transition to more nature-positive practices.

Business guidelines	Nature-related risks in the Norwegian finance sector (<i>Naturrisiko i norsk finansnæring</i> (WWF, Deloitte & Finans Norge, 2022)), Nature-positive leadership (<i>Naturpositiv ledelse</i> (Sabima & PwC, 2023)), Sustainable transition: A guide to transition plans for Norwegian firms (<i>Barekraftig omstilling: En veiledning til omstillingsplaner for norske virksomheter</i> (UN Global Compact Norway, 2024)), Guide for reporting on nature-related risks (<i>Veileder for rapportering om naturrisiko</i> (Skift & Deloitte, 2024)), The fight for land: The trilemma of nature, climate and industrial developments (<i>Kampen om arealene: Trilemmaet natur, klima og næringsutvikling</i> (Zero, Sabima & PwC, 2024)), Development of method for project-based nature-accounts – test version (<i>Utvikling av metode for prosjektbasert naturregnskap- testversjon</i> (Fornybar Norge, Multiconsult, Asplan Viak & Ramboll, 2025))
Available tools and resources	The five step model for nature-positive leadership (<i>Femstegsmodellen for naturpositiv ledelse</i> (PwC & Sabima)), Hotspots for threatened species in Norway, <i>Hotspots for truede arter i Norge</i> (NINA), «Ecologic basis map», «Environmental status», the Nature Index and Water-net portal (<i>Økologisk grunnkart, Miljøstatus, Naturindeks og Vann-nett Portal</i> (Miljødirektoratet et al.)), «The Source» (<i>Kilden</i> (NIBIO)), «The Nature Battle» (<i>Naturkampen</i> (Sabima)), The Species database incl. The list of non-native species (<i>Artsdatabanken inkl. Fremmedartslista</i> (Artdatabanken)), <i>Map of grey areas</i> (<i>Kart over gråarealer</i> (Kartverket, Miljødirektoratet, NIBIO & SSB)), The Mitigation Hierarchy (<i>Tiltakshierarkiet</i> (Miljødirektoratet)).
Voluntary schemes and certifications	Global: ISO14001, ISO17298 & 17620, EMAS, B-Corp MSC, ASC, FSC, other ecolabels Regional: The Nordic Swan, EU Ecolabels National: Miljøfyrtårn (Eco Lighthouse), industry-specific certifications e.g. BREEAM-NOR

Table 3-2: A non-exhaustive overview of projects, initiatives, guidelines, tools and certifications seeking to support businesses transitioning to more nature-positive practices (translated from Norwegian, original titles in italics). Drawing on PwC & Sabima (2023), NOU 2024:2, and elaborated on by author.

3.3 Insights on Norwegian enterprises

Norwegian literature on the topic of how SMEs address nature and biodiversity is sparse, but insights from two surveys echo the general literature review. A survey conducted by SpareBank 1 in 2025 showed that out of 2273 companies, only 20% perceived loss of nature as a risk for their operations (SpareBank 1 Østlandet, 2025). As only 652 of the registered enterprises in Norway had more than 250 employees in 2023 (NHO, 2024), most of these respondents are logically SMEs. It’s however not possible to tell what share of responses came from SMEs with less than 100 or between 100 and 250 employees. The number of registered enterprises of this latter size was 1170 in 2023 (NHO, 2024). As found in the literature review, the same factors can function as both drivers and barriers, and on the question of major drivers for the general green transition, the surveyed companies listed profitability, customer demand, regulations and attitudes among the employees. The most frequently mentioned barrier was profitability (SpareBank 1 Østlandet, 2025).

Another survey, conducted by PwC & Sabima in 2023, investigated how the largest companies in Norway address nature-related risks. Out of 40 surveyed companies, 10,8% had less than 500 employees. Respondents represented retail, construction, energy, general industry, transport, finance and some other sectors. In contrast to the Sparebank1 survey, most respondents saw nature as a material topic. 65% of the respondents saw loss of nature and biodiversity as a material risk for their operations, and 75% for their value chain. So far, 40% of the companies had identified nature-related risks, and 50% of them had started assessing their risks (PwC & Sabima, 2023). The difference of risk perception between LSEs and SMEs in these surveys is striking, underlining the importance of not generalizing too much between the two groups. It’s also an interesting contrast to Wagner (2023) finding that SMEs perceive similar levels of risks tied to ecosystem services as larger firms (section 2.2.3).

Similar to SMEs, the surveyed LSEs pointed to lack of competence and good frameworks as major challenges, together with difficulties of quantifying risks, and lack of overview of risks in their value chains. Furthermore, there was a large variation in how knowledgeable the companies were of their dependencies and impacts. There was also variation in knowledge of Norway’s environmental targets, and how authorities are supporting businesses in meeting these targets. Nevertheless, most respondents indicated that the government is responsible for Norway meeting these targets (93%), and that the authorities should set clear targets and help simplify the topic. A majority saw the main driver for firms’ effort to this end as demands from the authorities related to nature- and land use (75%). Generally, the firms argued that authorities should provide a stricter, more comprehensive regulatory framework (PwC & Sabima). Yet, the most important factor for companies addressing their nature-related aspects, was pressure from customers or investors (98%). Summing up, these two surveys highlight that while both LSEs and some SMEs in Norway have started addressing the topic, stronger drivers and a more enabling environment is needed to scale up the implementation.

4. Theoretical and analytical framework

As the literature covering business, biodiversity, SMEs and sustainability spans over a wide array of disciplines, the theoretical approaches do as well. Herbert et al. (2023) lend from psychology, using the value-belief-norm theory to answer whether leaders' values and environmental concerns increase the likelihood of SMEs prioritising biodiversity. Torelli & Balluchi (2022) use systems thinking to analyse the main motivations behind SME owners' commitment to biodiversity and ecosystem protection. While not part of the mainstream organisational theories, increasing numbers of scholars are applying systems thinking and concepts like interconnectedness, feedback loops and adaptive capacity to understand sustainability in the context of management (Torelli & Balluchi, 2022). Wagner (2023) draws on institutional theory (INT) and the multilevel perspective on socio-technical transitions, together with perspectives on symbolic actions and tensions. He seeks to answer how firms limit biodiversity degradation and associated risks, when firms have adopted risk management tools, and whether there is heterogeneity across the firms (Wagner 2023). Panwar et al. (2023) and Yunusbayeva et al (2025) also apply INT. INT is a key framework in contemporary organisational research and one of the more widely applied lenses for studying CSR (Risi et al., 2023; Yunusbayeva et al., 2025). It has been identified in the reviewed literature both on business and biodiversity, and SMEs' implementation of sustainability practices.

Yunusbayeva et al. (2025) combine the INT with the resource-based view (RBV) and the resource dependency theory (RDT). The theoretical and analytical framework of this thesis will as well, as it believes that a firm's choices regarding adapting nature-positive practices is influenced by external (INT), internal (RBV) and inter-firm (RDT) factors who drive or hinder action. The following sub-sections will elaborate these, before the integrated framework is presented in section 4.4.

4.1 Institutional theory

INT stipulates that institutions, here understood as “*networks of established practices shaped by lasting, formalized, and rational beliefs that extend beyond individual organizations and specific circumstances (Lammers and Barbour, 2006.)*”, largely influence the decision-making and behaviours of organizations (Yunusbayeva et al., 2025, p. 9608). One key concept from the field of INT is isomorphism (Risi et al., 2023). The much-cited scholars DiMaggio & Powell (1983) argue that organisations facing the same environmental conditions become similar over time. This change process, that they refer to as institutional isomorphism, happens via three mechanisms: coercive, mimetic and normative isomorphism (DiMaggio & Powell, 1983).

Coercive isomorphism results from formal or informal pressures; organisations may change due to environmental regulations, or to seek legitimacy. Pressures include legal and technical requirements, like annual reporting or mandatory standards. Importantly, pressures might come in softer forms too, through persuasion or invitations (DiMaggio & Powell, 1983). Mimetic isomorphism derives from responses to uncertainty, whereas a normal response is that organisations copy other, more legitimate or successful organisations' models. These models can be diffused indirectly and unintentionally, through e.g. employee turnover, industry trade associations and consultancy firms. DiMaggio & Powell (1983) argue that normative pressures arise primarily from professionalisation, i.e. actors sharing educational backgrounds and professional networks seeking to establish a common, cognitive base and organisational norms. Professional trade associations are key vehicles for defining and spreading normative rules. Other key organisations may also serve as models, if their policies and structures are copied by the rest of the field (DiMaggio & Powell, 1983). Scott (2001) expands on this definition through including societal norms, values and expectations in the normative pillar of institutions. This thesis likewise applies a broader definition of normative pressures.

As such, examples of institutional pressures may be regulations, but also social norms, industry standards, market forces or supply chain dynamics (Hanna et al., 2023; Yunusbayeva et al., 2025). Yunusbayeva et al. (2025) use the INT to capture positive and negative institutional pressures affecting how SMEs contribute to the SDGs. Panwar et al. (2023), researching business strategies for biodiversity, applies the INT to consider the appropriateness of the different strategies, as social evaluations such as legitimacy, authenticity and reputation can impact the financial performance of the firm. They complement the INT with stakeholder theory to capture how and when demands from consumers, suppliers, investors and regulators lead to implementation of which biodiversity strategies (Panwar et al., 2023). Using stakeholder theory for the integrated framework was considered, but with this thesis’ interpretation of the INT, where pressures from stakeholders are accounted for, it was deemed redundant.

4.2 The resource-based view

The RBV is another prominent organisational theory, useful for shedding light on how organisations can leverage their unique internal resources and capabilities, to achieve and sustain its comparative advantage (Barney, 1991; van Mossel et al., 2018). Barney (1991) defines a firm’s resources as *“all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness”* (Barney, 1991, p. 101). He divides the resources into physical, human and organizational capital. Physical capital includes a firm’s plant and equipment, but also its access to raw materials, and geographic location. Human capital can be training, experience and insights of the employees, while organisational capital refers to e.g. coordinating systems and culture. These attributes may aid or prevent firms from implementing strategies, and must be valuable, rare, inimitable, and non-substitutable to lead to sustained comparative advantage (Barney, 1991). The firm must finally be capable of leveraging them (van Mossel et al., 2018).

The RBV provides a frame for explaining internal drivers and barriers for addressing nature-related risks. Degraded ecosystem services may reduce the raw material access, while plant and equipment may be more vulnerable to physical damages on properties, e.g. in the case of floods. Being well-prepared to face nature-related risks, e.g. through training and experience, or through coordination and reporting, may on the other hand reduce the firm’s vulnerability. Yunusbayeva et al. (2025) argue that a driver behind SMEs’ integration of sustainable practices is that they can help build competitive advantage. Branco & Rodrigues (2006), drawing on earlier literature on how CSR leads to competitive advantage for firms, identify the following internal benefits: Cost savings as a result of energy and material efficiency, innovation through e.g. circular design principles such as reuse and recycling, attracting investors, entering premium markets that require certifications such as ISO14001, better reputation and attracting talented employees. They further found that improving environmental management competencies fosters skills related to better management in general, such as identifying and solving problems, and encouraging employee involvement (Branco & Rodrigues, 2006). RBV is nevertheless criticised for being inward-looking, overlooking how the external factors such as political, social, cultural and legal rules, influence what a firm can and cannot do, and its degree of success (Branco & Rodrigues, 2006). This shortcoming can be addressed via integrating the INT, but RBV still fails to address how access to resources may be limited due to other external factors, such as inter-firm barriers, which is why Yunusbayeva et al. (2025) also draw on the RDT.

4.3 The resource-dependency theory

The RDT emphasizes how firms rely on external actors for survival, as they can never be fully self-sufficient in terms of critical resources (Yunusbayeva et al., 2025). Firms consequently strive to minimize the power that these other firms, who have their own goals, hold over them, through strategies allowing them to reduce environmental uncertainties and external

contingencies (van Mossel et al., 2018). Chand and Tarei (2021) draw on the RDT when mapping barriers for sustainable supply chain management. Seeking to capture how inter-firm relations influence the room for manoeuvre, they find asymmetric power relations, stakeholder oversight, and institutional distance to be important barriers (Chand & Tarei, 2021). Touboul et al., (2014) too, although not focusing explicitly on SMEs, find that suppliers more dependent on their buyers comply with sustainability requirements, as they have little choice to do otherwise. When the power lies with the supplier on the other hand, they find that suppliers are less likely to cater to buyers' sustainability requests (Touboul et al., 2014). Considering this likely limited bargaining power in the face of larger firms in the value chain, and the limited capacity of SMEs e.g. to actively engage with suppliers, this dependency on other firm's actions and decisions should be taken into account in the framework.

4.4 An integrated theoretical framework

As the research focuses on understanding the drivers and barriers to SMEs addressing nature and biodiversity, the theoretical framework was developed with an aim of capturing all of these. The literature review revealed internal and external drivers and barriers to SMEs adopting sustainability practices. Presuming that this thesis would find similar factors, the integrated theoretical framework combined inward-looking and externally focused theories. RBV is suitable for capturing how internal factors allow or hinder the uptake of nature-positive practices. The integrated theoretical framework borrows from RBV through using the categories of resources, physical, human and organisational capital. These allow for gathering accounts on how e.g. monetary resources, internal competence and organizational culture function as drivers or barriers. INT allows for capturing and explaining how pressures such as regulations and market dynamics lead SMEs to address nature and biodiversity. This thesis uses the typology of pressures to sort external factors into either coercive, mimetic or normative. Finally, the RDT captures the inter-firm aspects tied to securing their critical resources and mentions of power and transparency in the value chain are examples of factors that are linked to the RDT. In addition to functioning as a reference point throughout the analysis, the framework was used to guide the interview questions, and to develop a preliminary codebook.

Theory	Factors	Explanation/examples
INT	Coercive pressures	Regulations & enforcement (e.g. environmental impact assessments (EIA) reporting, technical requirements), incentives e.g. subsidies, customer & market demand, finance & investors, other stakeholder pressures.
	Mimetic pressures	Following competitor behaviour (e.g. adopting frameworks, guidance & certifications) due to uncertainties.
	Norm, pressures	Sector-specific norms and attitudes, societal norms and values.
RDT	V.c dynamics	Transparency of, & influence/power in value chain, availability of suppliers & buyers, distance from upstream & downstream actors.
RBV	Physical capital	Monetary resources, access to knowledge/expertise on the topic (if not internal), time pressures, data, methods for measurements and monitoring
	Human capital	Top management & leadership, individual trainings, experiences, skills & values (e.g. expertise on nature & biodiversity or seeing the "business case for nature").
	Org. capital	Internal structure (e.g. routines and coordination systems), organisational culture and strategy, the firm's relationship to external firms & actors (incl. reputation).

Table 4-1: Theoretical framework of this thesis (source: author).

5. Research design, materials and methods

5.1 Research design

As the research questions are explorative in nature, touching upon quite a new topic with a limited body of research, a qualitative research approach is well suited. A qualitative approach focuses on exploring and understanding participants’ perceptions, studying the context that they operate within (Cresswell & Cresswell, 2023). This thesis applies interviews to capture the different experiences and perspectives of SMEs and other stakeholders, with regards to how Norwegian SMEs are applying nature-positive practices and what’s needed to scale up this work.

5.2 Worldview and bias

The worldview of the researcher inevitably influences the nature of the research, leading to biases in most aspects. The researcher’s academic and professional position and personal values may especially influence the results of the study via the interpretation element (Creswell & Creswell, 2023). This thesis is guided by a social constructivist worldview, which usually entails a qualitative research design. Here, individuals are believed to develop subjective understandings of the world they live and work in, negotiated by interaction with others. Looking to capture the complexities of, and different perspectives on the situation, this approach highlights the value of posing broad, open-ended questions, and inductively developing patterns of meaning from these answers (Creswell & Creswell, 2023). The thesis also includes features of pragmatism, as it seeks to offer practical insights for problem solving. It’s not using a mixed-methods approach, which this worldview often leads to, but lends from the idea of liberally using methods based on what works best (Creswell & Creswell, 2023)

5.3 Methods for data collection

All RQs were answered based on primary data collected in semi-structured interviews with representatives from SMEs and ecosystem actors. In order to answer RQ 1, data gathering focused on *how* the SMEs understand impacts and activities tied to nature and biodiversity, and which actions they have put in place. RQ 2 was answered through seeking accounts on why the SMEs are or aren’t engaging in these specific activities (e.g. customer demands, compliance, risks, agreements/initiatives). Insights regarding what the interviewees see as important measures taken to support their scale-up of nature-positive actions, were used to answer RQ 3.

5.3.1 Selection of interviewees

Representatives from SMEs represent the largest group of interviewees in this thesis, as gathering their accounts is key. For this group, a minimum number of interviewees was set to five with one representative per SME. This minimum was set to ensure gathering enough data, while acknowledging that it may be challenging to secure more interviews. Perspectives from other actors in the system were gathered too, with the idea that they perceive the context from an outside-perspective and may therefore have a good overview and analyse it differently than the SMEs. The minimum number of interviewees in this category was also set to five.

The five SMEs in the sample were recruited through the UNGCN network via emails. These emails informed the potential participants amongst others about the thesis and its research aim, how findings would be used to enhance UNGCN’s support of their nature-related ambitions, and their rights as potential voluntary participants. As the research and interview questions focus on a complex sustainability topic that is less mainstreamed and addressed compared to e.g. climate, it was deemed beneficial to talk to businesses with a certain level of maturity in terms of sustainability. Respondents were therefore gathered from a network for responsible business practices. These SMEs might perform better on sustainability than the industry average and

provide a less generalizable picture of the situation as of today but however increased the likelihood of interviewees providing good insights on drivers, barriers and enablers. Relying on a purposive sampling approach, which is common in qualitative research (Bryman, 2012), the SMEs that were contacted fulfilled the following criteria: 1) Member of UN Global Compact Norway and 2) 100-250 employees.

The sample of interviewees from the wider ecosystem was selected through stakeholder mapping, allowing for purposive sampling, and then snowball sampling in which initial contacts referred the researcher to other potential interviewees (Bryman, 2012). The stakeholder mapping focused on ecosystem actors knowledgeable about and/or yielding influence on Norwegian SMEs' understanding of nature-related risks and opportunities, as identified via discussions during the process, the literature review or general research.

5.3.2 Qualitative semi-structured interviews

Semi-structured, digital (zoom) interviews were applied as the data collection method, whereas three of the interviews were conducted via phone calls due to technical issues (B1, E7, E8) and one via email due to time constraints (E9). The interviews suited the explorative non-normative approach of the research, allowing for open-ended questions and inviting in more factors and perspectives than those encountered in the literature search. As opposed to quantitative methods such as surveys, the interview setting allowed for follow-up questions and digging deeper where needed. There are limitations to interviews as a method: information might be biased and filtered through interviewees' views, and the presence of a researcher might also lead to biases (Cresswell & Cresswell, 2023). At the same time, the aim was to map perceptions, meaning that findings per definition were biased. To minimise bias due to the researcher's presence, the research aim was repeated in the beginning of interviews, emphasising how responses would be used to support SMEs seeking to become more nature-positive. To ensure a common understanding of the questions, interviewees got the option of receiving a recap of the TNFD definitions for nature-related dependencies, impacts, risks and opportunities.

Interview questions were informed by the literature review and theoretical framework. For instance, interviewees were asked about main drivers and barriers for addressing their nature-related impacts, dependencies, risks and opportunities today. On the theoretical side, questions were informed by the RBV, INT and RDT, who emphasize different internal, external and inter-firm factors. To ensure the reliability of the results, the interviews for SMEs followed the same interview protocol. Additional questions were however asked to prompt a discussion on regulations, in the cases where regulations were not brought up by the interviewees themselves. In case of time pressures, questions to be prioritised were marked with an * (appendix 2). Consequently, there is a varying amount of data on some of the less vital questions. The protocol was tested beforehand and adjusted according to feedback and observations in the test interview. An additional interview protocol was developed for interviews with ecosystem actors, through slightly adjusting the questions in the first protocol and adding interviewee-specific questions where relevant.

Finally, five interviews were conducted with representatives from SMEs in the HVAC, battery, brewery, fisheries/aquaculture industries and finance sector. These representatives were the contact points between the SMEs and UNGCN, holding positions such as sustainability advisor and sustainability manager. Nine interviews were conducted with eleven representatives from nine ecosystem actors. These included representatives from NGOs (1), authorities (1), consultancy firms focusing on the SME market and nature-related risks (3), certification schemes (2), academia (1), insurance (1). All interviews were conducted in Norwegian.

Code	Characteristics of respondent	Date of data coll.
B1	SME in the aquaculture/fisheries industry	05.03.2026
B2	SME in the finance sector	13.03.2026
B3	SME in the brewery industry	17.03.2026
B4	SME in the battery industry	23.03.2026
B5	SME in the HVAC industry	10.04.2026
E1	Consultancy firm focusing on the SME segment	10.03.2026
E2	Researcher	10.03.2026
E3	Consultancy firm focusing on the SME segment (2 rep., E3A and E3B)	11.03.2026
E4	Certification scheme	16.03.2026
E5	Consultancy firm focusing on the SME segment	23.03.2026
E6	Certification scheme (2 rep., E6A and E6B)	24.04.2026
E7	Insurance firm	09.04.2026
E8	Environmental NGO	09.04.2026
E9	Authorities	04.05.2025

Table 5-1: Overview of respondents, dates of data collection, and assigned codes in the thesis.

5.3.3 Methods used to process information

The collected data from the interviews was first transcribed, using the word transcription function. Transcripts were manually checked and adjusted by the researcher to “clean up” and correct potential deviations from the transcript before coding. To aid the coding process, the software NVivo was employed. The coding was conducted in Norwegian to preserve nuance, before the relevant content was manually translated. A mostly deductive, but also inductive, approach was used for the coding. A preliminary codebook was developed using the theoretical framework and literature review. Using this deductive set-up allowed for coherence among codes (Cresswell & Cresswell, 2023), and for entering the analysis process in a more structured manner. At the same time the codebook was developed in line with findings, with room new inductive codes. This isn’t an uncommon method for analysis, although the traditional one in social research is inductive (Cresswell & Cresswell, 2023). In line with the pragmatist worldview however, this mixed deductive-inductive approach was deemed more practical for the research. The thematic analysis looked for repetitions, similarities and differences, a common approach for deriving patterns from data (Bryman, 2012).

Codes for RQ1 were based on the IPBES report on business and biodiversity, with respect to the categorisation of different action levels and five major causes of biodiversity loss: land and sea use change, pollution, overextraction, invasive species and climate change. In creating this typology, it was difficult to place the sub codes within just one category. Circular economy efforts, for instance, can both be a means to an end to reduce CO₂ emissions, pollution and overextraction. While acknowledging this, circular economy and material efficiency were in the end coded as actions towards limiting land use change due to its strong link to e.g. mining and forestry (Ruokamo et al., 2023). For RQ2, the codes were based on categories of drivers and barriers identified via the INT, RBV, RDT and examples in the literature review. The codes for RQ 3 drew on IPBES’ identified enabling factors. Similarly to RQ1, it was challenging to draw the lines and place certain drivers, barriers and enablers in one main code or sub code. This codebook was therefore added onto and edited over the course of the data analysis process. As such, the approach allowed for a thematic analysis and mapping of patterns that was guided by the theoretical framework and literature review but incorporated unforeseen findings. The final codebook can be found in appendix 3.

6. Findings and Analysis

6.1 How Norwegian SMEs address their nature-related dependencies, impacts, risks and opportunities (RQ1)

6.1.1 Action across the drivers of biodiversity loss

6.1.1.1 Land and sea use change

Three of the companies (B1, B4 and B5) mentioned direct actions related to land use. B1 has put in place efforts to make sure that inputs like feed are not tied to deforestation. B5 explained that they are conscious of their upstream impact, and that steel producers and miners work in a careful manner “[...] *mining clearly interferes with nature. That’s why we cooperate with our supplier, which is one of the world’s largest producers and progressive in the field*”. B5 however adds that they haven’t yet taken action to restore nature in areas of extraction: “*It’s a bit outside of our sphere, as we buy the raw material that we use in our production*”. B4 sees the relevance, especially in mapping upstream nature-related risks tied to mining but does not think this will be a priority yet: “*That would be a natural step in the future. I think there’s other things we need to work on first. Circular economy for instance*”.

B5 prioritise climate and energy through placing solar panels rather than bee hives on their factory roof but adds: “*We chose to place the panels on our roof instead of the lawn next to the factory, or an area that would consume other nature*”. B4 explains that their firm made nature and biodiversity an important factor from the start, e.g. when choosing where to build their factory: “*One plot was high on our list but was close to a nature reserve. That’s an important reason to why we went with today’s location instead*”. Today’s location was a grey site that they expanded on. They also hired an ecologist to map the biodiversity in the area and aid the entrepreneur in taking this aspect into account. B5 adds: “*Some of the endangered species in our area are moths and beetles, so we have planted plants and trees that are useful for these species*”. The plans for their new factory include restoring a pond that was there before the plot became “grey”. Finally, the firm has set targets for land-use via the BREEAM framework: “*The first target in 2025 was to be BREEAM certified, meaning a 30% score within the land and ecology part of the BREEAM system. Next round, we want a 60% score. That means pushing the level of ambition, using ecologists, and focusing on the topic*”.

These findings rhyme well with E1’s experiences. E1 finds that most SMEs do nothing: “*I’ve often worked with businesses who left nature outside of their double materiality assessments, even if it’s obvious for me that it’s material. Especially if the materiality lies in the value chain, if they’re vulnerable to nature-related risks*”. Yet, that doesn’t go for all: “*Some customers are studying sites, using biologists etc, to measure and monitor species, and come up with restoration measures after they have e.g. built a power grid*” (E1). In E3A and E4’s experiences, actions taken vary from sector to sector, but are closely tied to the understanding of which impacts a firm feels like they can control. E4 argues that most do nothing, but that some seek to limit damage on and restore nature where possible.

Looking to the more indirect ways of addressing land use change, B2, B3 and B5 all see resource use and circular economy as important topics. B2 works with lowering resource use via insurance, while B3 problematised the use and reuse of plastics. B5 explained how they have, although without any clear targets, worked with reducing the amount of scrap metal and material use since they built a new factory 18 years ago: “*We use as much as possible of the materials. [...] We don’t use the materials before they’re needed by the market*”. They further focus on using a lot of recycled steel, to limit the amount of raw material extraction from the ground. In sum, three SMEs (B1, B4 and B5) mentioned direct actions related to land use in their value chains, tied to supplier selection and not risk management and restoration. Two SMEs (B4 and B5) mentioned direct actions in their own operations, whereas one mentioned nature as a trade-off they sought to

avoid, and the other had actively worked with nature and biodiversity in relation to routines and construction and expansion of their factory. Four firms (B2, B3, B4, B5) mentioned indirect actions in the form of circular practices. E1, E3A, and E4 saw that most SMEs do nothing, some do more, and that actions taken vary from sector to sector.

6.1.1.2 Overexploitation

B1 notes how they have little choice but to be mindful of the state of ecosystems and nature’s capacity to host aquaculture activities: *“We are in a value chain where harvesting the surplus of nature is the starting point”*. Similarly, B3’s most important input is water delivered by the municipality. B3 explains that the water source is a mountain lake with good capacity, and that they monitor the water levels to ensure they’re harvesting a surplus. Indeed, B3 adds, access to enough and good water is a large issue for the industry around the world, but their vulnerability assessment of the water came out with good results. They add that they follow the water framework directive and cooperate closely with the municipality with regards to water quality. Their malt supplier too, focuses on reducing their water use (B3). Other SMEs didn’t explicitly mention this category. E2 notes that some sectors, such as fisheries and forestry are more prone to nature-related risks, and have always cared, E2 argues: *“It’s an implicit part of the business model, which they never call nature-related risks or dependencies. But once your business model is to make money on natural resources, you are dependent, and then you will have to address it.”*. In sum, two SMEs (B1, B3) mention actions taken to limit overexploitation, which rhymes well with E2’s observation that businesses more dependent on natural resources will to a larger degree address physical risks.

6.1.1.3 Climate change

B1, B3 and B5 saw climate as one of their key impacts on nature and priorities going forward, seeking to reduce scope 1, 2 and 3 emissions. Actions taken include reducing transport emissions, placing the factory close to the market, sourcing locally/regionally, using environmental product declarations (EPDs), paying price premiums for inputs with lower carbon footprints and installing solar panels on the factory roof. B2’s main focus lies with climate, too. They follow sector-specific guidelines where assessing their climate-related risks is mandatory, whereas assessing nature-related risks is not. They add an observation with regards to the CSRD/ESRS: *“The reporting requirements especially for E1 Climate Change are clearer than for nature and biodiversity and risks etc, so we chose to focus our reporting on that, letting it indirectly affect nature and biodiversity.”*. B4 is seeking to decarbonise and is in contact with their suppliers regarding climate-related risks. The fact that climate is a key priority among SMEs aligns well with E5 and E9’s experiences. Few of E5’s clients have actively spoken about nature and biodiversity; most are focused on climate. E9 notes that *“SMEs generally seem more mature in their work with climate than with nature. Nature appears to be less operationalised and integrated in decision-making processes.”*. In sum, all interviewed SMEs work with climate, with the majority placing climate among their key priorities, which aligns with E5 and E9’s observations.

6.1.1.4 Pollution and Invasive Species

E2 sees an increased focus on pollution: *“Something has happened in terms of how we, and especially local communities, understand these impacts. This may be particularly for smaller enterprises”*. B1 and B3 both work with water bodies and have taken steps to monitor and address their pollution. B1 is involved in projects on land-based aquaculture, on recapturing nutrients in the waste from the fish, and avoiding overfertilization from aquaculture locations. B3 notes that all industries must report on water emissions to the authorities, and that they are closely followed up. Additionally, they have done extensive assessments with the help of a research institute: *“They tested the water at different altitudes, tested the seabed, filmed with submarines, and checked that everything looks fine. [...] there were no detected changes in the environment and in the sea and seabed.”*. This wasn’t surprising, B3 said, as their emissions are yeast leftovers, sugar, and caustic soda and vinegar acid. Before emission

the two latter go through water treatment. B5's potential pollutants, e.g. additives used for lacquering steel products are treated in compliance with directives. B4 argues that their most important measure for biodiversity has been to reduce light pollution: *"The most important measure we have taken, which everyone in the industry should pay more attention to, is our lighting and outside lighting. We have reduced lighting, especially during the night, which is very important for the species around us."*

Finally, B1 is the only SME to mention the introduction of invasive species. Whereas they saw the introduction of these as a potential nature-related risk, they had not addressed it yet. E4 experiences that many SMEs are interested in planting or re-planting using local species. They however point to the fact that: *"Many are unaware of challenges related to spreading non-native species."* and make the example of how moving soil in open trucks is a risk for spreading non-native species. In sum, four SMEs (B1, B3, B4, B5) are taking steps to address different forms of pollution, which corresponds with E2 seeing an increased focus on it. Only B1 mentions invasive species, which rhymes well with E4 noting a lack of knowledge on the topic.

6.1.2 Action across the different decision levels

6.1.2.1 Own operations

Many of the ecosystem actors (E1, E2, E3A, E5, E7, E9) had the impression that SMEs mostly address nature in their own operations. E2 argues that SMEs will focus on what affects their own economy: *"Externalities are called externalities because they don't directly affect your accounting. That's what they will be preoccupied with on a business level."* On a similar note, E5 sees that actions are often tied together with compliance e.g. with regulations on HMS and outer environment, without necessarily thinking about the link to nature. All businesses but B2 (B1, B3, B4, B5) listed actions taken in their own operations. B3 meant that the negative impact on nature of their in-house operations is limited, explaining that they operate in a dedicated industry area, where activities happen inside with limited air, smell and noise pollution. B1 felt they could do a lot in their operations, from choices on type of fish to breed, type of feed and location of operations. B5 thinks they are already addressing a lot of their own operation impacts, explaining that their production follows strict requirements. ISO standards (9001, 14001 and 50001) and environmental product declarations (EPDs) have also been taken into use as tools to map and work with negative impacts: *"We ISO to certify our factory regularly to make sure we have the lowest possible emissions level and lowest possible use of chemicals etc. Then we have EPDs on some products, allowing us to discover a lot we can do to lower the climate footprint of our factory."* In sum, all SMEs but B2 take actions in their own operations, and many ecosystem actors (E1, E2, E3A, E5, E7) had the impression that SMEs mostly address nature on this level.

6.1.2.2 Value chain

All interviewed SMEs have taken actions in their value chain. B1, highlighting their dependence on what nature has to offer, uses tools such as the MSC ecolabel to communicate a focus on nature to value chain actors, and assess e.g. suppliers via a third-party. B2 feels like it makes more sense to address nature on this level as they primarily see nature-related financial risks downstream in their value chain. B3 on the other hand highlights that it's limited how much their firm can do, as opposed to larger actors with more liquidity. They add: *"Scope 3 is most often outside of what the firm can do anything about, but you can choose the best options. But it has to be competitive, also in terms of price."* They're working closely with their upstream water and malt supplier, and in the case of their malt supplier, B3 says *"They have all these certifications, as they are rather large. We can't do much more than follow up on them. What we have found, through dialogue, visits, and revising documents, is that everything seems to be very much in order."* B4 and B5 also point to cooperations and dialogues with their suppliers. B4 is working with their suppliers on climate-related risks and sees nature-related risks as a natural next step they could take in the future. For B5, the choice of supplier

is a key factor for reducing their CO₂ emissions and negative impacts from mining: “*That’s why we cooperate with [the supplier], who’s one of the world’s largest suppliers and very advanced in their field.*”.

Other interviewees have mostly seen larger companies work on nature-related risks in the value chain, but also some SMEs (E1, E2, E3A, E7). From E3A’s perspective, “*It’s very rare that firms have a good understanding of value chain impacts and opportunities when it comes to nature. It is often more on humans [social sustainability] and climate.*”. In sum, all SMEs have taken actions for their value chain, although there are sentiments of having a limited impact. This observation collides with how other ecosystem actors perceive the situation; only four (E1, E2, E3A, E7) see some action in value chains but argue that it’s rarer that SMEs address actions in their value chain than own operations. These results however suggest that it’s the other way around.

6.1.2.3 Corporate/strategy and investments

E8 was the interviewee to feel most strongly that SMEs have started acting on the strategy level, in the sense that “*they write down on paper that they will work with it*”. What is further needed, E8 argues, is that they also pose demands to their supplier, with “*some procedures or principles for how the firm will minimise their nature-related impacts. Then it becomes an actual steering document in the firm and not just one of these internal sustainability strategies. [...] there needs to be actual goals and action plans.*”. E5 also notes that some companies, especially tech companies, have started incorporating nature into their strategies and missions, as these may have a positive social impact and imply business opportunities. In B5’s case, the CEO and two representatives from each country of the group have formed a sustainability group. While the group is small, the leadership is on board with, and the rest of the organisation is informed of, the ways in which the team works and their goals (B5). E3 underlines the importance of incorporating and seeing nature across different levels, holistically, for understanding and addressing the topic. They add: “*Specific regulations and things must be addressed in isolated ways. But there are more levels, and that’s why it’s important that nature exists across more levels. [...] It must be integrated and not just be an exercise in reporting on something difficult*”.

In terms of investments, B2 explains that they offer green loans to customers, whereas the loan-taker does something “green” that aligns with different frameworks or taxonomies. E8 and E7 also note that some banks are moving their investments to greener funds and stocks. E7 additionally notes that not only financial actors are moving their investments, but also some smaller companies. In sum, two ecosystem actors (E8, E6) see that nature is incorporated in strategies, E3 argues that incorporation in strategies is vital, and B5 mentions having worked with sustainability at a high level. B2, E8, and B2 bring up decisions on the investment level.

Land use	Over-expl.	Poll.	Inv. Spec.	Climate change	Own op.	Value chain	Corp.	Investments.
B2, B2, B3, B4, B5, E1, E2, E3	B1, B3, E2	B1, B3, B4, B5, E2	B1, E4	B1, B2, B3, B4, B5, E5, E9	B1, B3, B4, B5, E1, E2, E3A, E5, E7, E9	B1, B2, B3, B4, B5, E1, E2, E3A, E7	E8, E5, B5, E3A	B2, E8, E7

Table 6-1: overview of which actions and action levels are mentioned by which interviewees.

6.2 Perceived drivers and barriers for action (RQ2)

6.2.1 Coercive pressures

6.2.1.1 Regulations and enforcement

B2 was the only SME to argue that regulations are important drivers, primarily through the EU Capital Requirements Regulation. Assessing climate-related risks is part of this while nature-related risks are not. Regulations were also mentioned by B3 and B5, albeit not as primary drivers, whereas all ecosystem actors (E1, E2, E3AB, E4, E5, E6, E7, E8) see legislative requirements as important drivers or barriers. E6A and E7 argue that Norway is well regulated to some ends. E6 points to how biodiversity must be considered in the impact assessments of projects. The insurance sector is also well regulated, with the insurance duty limiting e.g. how the insurer can sanction customers. E7 explains: *“It takes a lot for insurers to say no to customers, if they operate legally. If a firm has obtained a licence, e.g. for a hydropower plant, we can’t override that evaluation because the nature-related risks are too large.”* (E7). On the other hand, E7 argues that firms getting away with not taking nature into account implies that the regulations aren’t good enough. E3AB highlight how regulations are important for the understanding of the topic and impacts: *“If you’re an entrepreneur and use excavators, you affect nature directly with everything you do. But the only understanding these firms have for their own impacts, is on parts that authorities have placed requirements on.”* (E3A). As mentioned by E5, most firms address impacts, e.g. handling chemicals, via regulations on HMS, outer environment and handling chemicals, without necessarily reflecting too much upon their nature-related dependencies and impacts. E6A says: *“SMEs care about complying to regulatory requirements, so beyond that, from what I have seen and read, there isn’t very much work with nature.”*

From B2 and E8’s understanding, the issue is not so much lack of regulations as it is clarity: *“Unclear rules, frameworks and guidance from the authorities, making it difficult to understand what is actually ‘need to’, and what is ‘nice to’.”* (E8). They stress that the field is generally not mature, across politics, law and academia, resulting in it becoming difficult to understand what “nature-positive”, “restoration” or “compensation” implies, and what works well. They further bring up the Nature Diversity Act: *“It’s easy to give dispensations. In the end, these are political decisions, where municipal boards can decide to construct wind power plants in reindeer herding areas. The regulations aren’t working as intended [...]. The municipalities use the regulatory framework differently”*. E1 mentions another regulation closely tied to public sector actors: the Public Procurement Act which requires public procurement to weight environmental considerations by 30%. In sum, all ecosystem actors (E1, E2, E3AB, E4, E5, E6A, E7, E8) argued that regulations are either major drivers or barriers for action and understanding, mentioning HMS, chemical regulations, the insurance duty, the Biodiversity Act and the Public Procurement act as examples. B2 was the only SME to argue the same, although B3 and B5 do name regulations as one of multiple drivers.

6.2.1.2 Government support, e.g. incentives and subsidies

For B3 and B4, support schemes have been important to overcome the barrier of costs. B3 however experiences the support system from Enova² as difficult to use. E2 and E6B challenge whether the support schemes from Innovation Norway and the Research council are well designed (elaborated on in section 6.3.2.1). The support schemes were mentioned by B4 too, who received funding from Siva³ when building their new factory. “Green” requirements from Siva nudged the firm towards BREEAM, although they underline that it aligned well with their firm’s own vision. E1, E2, E3A and E4 underlined the importance of incentives like public

² Enova is a state enterprise seeking to promote environmentally friendly production and energy.

³ Siva is a state enterprise seeking to stimulate industrial growth and innovation.

procurement demands, with E3A and E4 using the construction sector as an example of how explicit requirements can be valuable means: *“if the clients say knowledge and prioritisation of nature will be weighted, and ask for documentation on their work and competence towards this end, it has large effect in sectors that typically deliver public procurement.”*. For E3A, the effects are striking:

“A lot of firms with a 20 million turnover have an Eco Lighthouse certification, and/or ISO14001 and ISO9001. All firms directly or indirectly delivering on public procurement get a certification, because public procurements require it. Almost all actors in the construction sector end up getting a certification. That way regulations work well, because they create a value chain effect. Even the electrician at the corner gets an Eco Lighthouse certification to deliver to AF Gruppen, who delivers to Statsbygg.”

In sum, two of the SMEs (B3, B4) have used support schemes, with B4 having been nudged in a “greener” direction by the scheme, and B3 arguing that they could have been designed better, together with two ecosystem actors (E2, E6B). Four actors (E1, E2, E3A, E4) underline the importance of requirements in public procurement.

6.2.1.3 Customer, consumer and market demands

Customers were explicitly mentioned as important by all SMEs but B3 and B4, who approached the driver more implicitly. *“Being able to deliver more sustainable batteries to the European market than other suppliers”* is an important driver for B4. B3 treat wastewater beyond what the authorities require as part of a partnership agreement and fills out ESG evaluations from their customers. B2 explained that their customers were part of driving the focus towards nature, while B5 produced products with a higher share of recycled steel to meet the demand of one customer. An important detail is that their customer paid a price premium for these products. B1 explained that meeting demands and finding cost-cutting win-win-win solutions for them, their suppliers, and customers, is important. Yet, they problematised the notion that consumer behaviour is the silver bullet: *“We tend to say that consumers want sustainable products, but consumers respond to other things, such as their own wallet.”*, and conclude: *“These changes are driven by investors, boards. I won’t disregard consumer power, but the large changes are due to structures changing on a different level - and economic drivers”*.

Many of the other interviewees too noted how market expectations and demand is important. E1 explains that one firm’s actions may lead to more expectations towards competitors: *“In some cases one competitor has started doing something, and now that everyone sees that it’s possible, all customers start asking about it.”*. E8 makes the example of needing a sustainability report, ecosystem accounts, or evaluations of nature-related risks to be relevant to customers. E2 however underlines that competitive markets can also function as a barrier, making it difficult for firms to deviate from the status quo. E5 argues that the lack of sanctions from customers contributes to lowered risk perceptions: *“It’s one of many things on the risk register, but never the one with the largest direct consequence in terms of lost customers, taxes, or anything else that makes you feel the economic consequences enough to take action.”*. In sum, all SMEs either explicitly (B1, B2, B5) or implicitly (B3, B4) name customer demand as an important driver or barrier. So do most ecosystem actors (E1, E2, E3A, E5, E8).

6.2.1.4 Finance, insurance and investor pressures

B1, B4, E2, E3A, E6A and E7 named pressures from the finance sector. As mentioned above, B1 found these forces to be more impactful than mere consumer power, and B4 acquired the BREEAM certification partly because it was a requirement from their investor. E3A points to how many larger SMEs get acquired by private equity funds or venture capital funds. These have expectations as they aren’t necessarily willing to take a risk on a “bad investment”. They exemplify: *“If you’re operating in an area with red-list-species, it’s a large risk to buy your company to try to sell or list in five years, if it turns out no-one wants to invest, because their business model doesn’t work”*.

E2 and E6A bring in the role of banks and insurance firms, whereas E6A points to the fact that TNFD was developed because financial institutions saw the financial rationale for placing higher requirements on clients: *“They found out that they lose way too much money on firms that haven’t implemented proper measures”*. They further note that Norges Bank Investment Management (NBIM) recently published an expectation document for how portfolio companies in the Global Pension Fund should manage their nature-related risks. E3A similarly notes: *“There’s a reason why TNFD has become popular as a framework for business: the expectations are increasing”*. E7 explains that risk assessments are conducted for every customer, and that it is difficult to choose not to insure clients: *“in general it takes a lot for them to be outside of our risk appetite, as long as they have their licenses and operate within the Norwegian laws, also for nature.”*. They do however have the freedom to adjust prices according to their own risk perception, and provide two examples of when such considerations are made: *“If the property is close to a river where there’s been a lot of flooding, the insurance premium will increase over time as you get water damages on your property. Similarly, if red-listed species are discovered where you are constantly digging up the area, without knowing what you are doing, it can still lead to a mark-up in your insurance premium.”*. In sum, two SMEs (B1, B4) and four ecosystem actors (E2, E3A, E6A, E7) bring up pressures from the finance sector as important drivers for action.

6.2.1.5 Other stakeholder pressures

E2 argues for the importance of stakeholder pressures in many forms, whether as customers, financiers, employees or business partners, and add: *“How you make this powerful enough, is not easy to say. But it’s in its way the ultimate power to create change.”*. They also point to research on how some firms, especially smaller ones, care more about stakeholders in their local environment, and how their negative dependencies and impacts affect those close to them, whether they are inhabitants, municipalities, employees or customers. E2 and E3A also bring up civil society and environmental NGOs as forceful watchdogs of businesses activities and therefore drivers of action, although E3 argues that this applies mostly to firms with direct material impacts. E3A uses the mining industry as an example, while acknowledging that few of these are SMEs: *“When mining companies start operating in an area, you will have societal expectations, especially environmental NGOs. These companies often meet expectations, although they might not agree, because the more width, the more support, the more they can answer to the society, the better.”*. E7 points to how a growing societal consciousness and interest can make sustainable management of natural resources a commercial opportunity. B1 claims to be influenced by larger societal developments, such as today’s geopolitical situation: *“These answers would probably be different two years ago. The economic and political parts have a larger influence right now. Security politics, securing settlement and preparedness along the coast.”*. In sum, one SME (B1) and three ecosystem actors bring up pressures from other stakeholders (E2, E3A, E7), including the civil society and environmental NGOs, business partners and employees.

6.2.2 Mimetic and normative pressures

Multiple interviewees (E3AB, E7, E8) bring up how nature-related risks, and especially the transitional, impact what firms do and don’t. On one end, E3A argues that firms are driven to act due to reputational risks and interlinked value chain risks: *“You’re super afraid of the reputational risk, you’re afraid of a case, you’re afraid of your value chain loss. If there’s a sudden trade ban with critical raw materials from China because of human rights violations, Norwegian semiconductors will struggle.”*. E7’s argument is similar: *“If you’re provoking via your ways of harvesting from nature, or place locations in an area that is controversial in terms of land use, you will be vulnerable to reputational issues or stricter regulations at a point”*. On the other hand, E3B and E8 speak of how the lack of clear rules, frameworks and guidelines also becomes a barrier to act: *“New and evolving frameworks create confusion and insecurity, and no-one likes being confused and insecure. Then it’s better to wait”* (E3B).

Nonetheless, normative pressures have played a role in firms looking beyond regulatory insecurity, according to E3A and B4. Referring to the Transparency Act, E3A explains how

best-practice has become a norm in many industries: *“They could get away with only reporting on and disclosing the risks. No one is following up on what they’re actually doing. But it has become the industry standard to follow up.”*. Geographical location might also influence the norms. For E5’s case: *“Few of the SMEs I have worked with actively talk about nature, it’s more climate. But then I’m based in Stavanger, the oil capital of Norway. So, I would say the businesses here aren’t necessarily the most leading when it comes to sustainability.”*. B4 on the other hand, argues that they are driven towards more ambitious work with nature partly due to their host municipality. In sum, only three ecosystem actors (E3AB, E7, E8) bring up mimetic pressures as drivers or barriers, in the form of transitional nature-related risks and unclear frameworks. Two ecosystem actors (E3A, E5) and one SME (B4) bring in the role of normative pressures via industry best-practices and geographical locations.

6.2.3 Value chain dynamics (Resource dependency)

As explained in section 6.1.2.2, all interviewed SMEs work with upstream and downstream impacts. E8 argue that SMEs can pose demands to their supplier, whereas B3 and E1 argue that influence over value chains limits how much one SME can do. For B3, *“Scope 3, these things are usually outside of what the firm can do anything about. [...] a lot of it is outside of our direct decisions. We just have to adapt to the world around us, whether it’s transport, infrastructure or electricity”*, referring to e.g. access to enough electricity to scale up operations. E1 also problematises SMEs’ influence and room for manoeuvre: *“If you’re an SME, you might not have that many customers, so you might not be able to influence them either, if they have ten sub suppliers who do the same as you.”*. E3A argues that most firms haven’t yet understood their dependencies, exemplifying with a bark beetle crisis some years back that threatened 25% of the standing timber, making timber prices rise significantly: *“Had it been 80% of the timber, people would realise how dependent we are on nature for the whole value chain. Windows, materials for the construction industry, for building housing and industries in Oslo.”* and continue: *“But I don’t think many firms have completely grasped this. The crises are in a way necessary to realise this.”*

E3B adds: *“We’ve seen inflation in materials the past few years, and this inflation is due to more factors, but once the inflation arises because of lack of the extraction of the raw materials, one wakes up”*, but notes that some firms already act because they see that raw materials prices are increasing. In addition to increasing raw material prices, there is the transitional risk (section 6.2.2) that you will be banned from trading with your raw materials suppliers (E3) or stricter regulations e.g. for quotas and licenses limiting access to natural resources (E2). On a similar note, E9 argues that SMEs often address nature-related impacts as a response to value chain-related requirements. In sum, B3 and E1 deem influence over value chains as a barrier to action, while E9 sees requirements from the value chain as a driver. Understanding value chain dependencies is another barrier (E3AB), and transition risks in value chains a driver (E2 and E3AB).

6.2.5 Physical capital

6.2.5.1 Monetary resources

B1, B3 and B4 point to how capital and costs are constant considerations for SMEs. B1 notes that interest in scaling up their work towards more nature-positive practices is competing with other interests: *“We need capital, we need time to find the solution, and that takes resources. In today’s volatile world the focus lies elsewhere.”*. B3 too emphasises how investments always need to be considered in terms of the bottom line, and that transitions can’t happen overnight. They bring in the example of changing the packaging of a six pack of beers from plastic to paper: *“That will require you to invest in a machine that costs 12-13 million NOK, and down time you can’t really afford. Then you’ll have more waste, since that sixpack will be more prone to moisture-related damages when stored etc.”*.

Beyond large investments, B3 says that while they try to make nature-positive choices, it isn’t always possible: *“Where we can do something, we do it. But we aren’t the largest, so we also have to think about economic sustainability. We can’t implement all the best-practice measures, if it increases costs enormously.”*

Then we will have to close down next year.” B3 argues that this consideration is one that the public sector seems to mind less: *“It’s this balance I feel like not everyone working in the public sector understands, to constantly think about the bottom line.”* Taking the choice of suppliers as another example, B3 explains that they always seek to find the best alternatives and choose sustainable options when available and competitive. B5 having produced products with a higher content of recycled material however shows how these firms get more room to choose best-practice and be competitive when their customers are willing to take that extra cost. B4 likewise explains that they want to be ambitious, not only in terms of restoring nature and meeting ambitious BREEAM targets on their own plot, but also in restoring local nature elsewhere in cooperation with the municipality. This project is however on hold due to financial constraints.

Many other interviewees likewise bring up resources in terms of acquiring the necessary knowledge on the topic, data tools or methods (B2, E1, E2, E3A, E6AB, E8, E9). E8 and E9 problematise the access to standardised tools and guidelines: *“To have an overview over your land use, you need ecosystem accounting, but there isn’t any ecosystem accounting that fits all. The tool and the guidelines aren’t there yet, and what is already there is lacking a lot.”* (E8). E2 points to how documenting impacts and having competence on nature and risk management becomes a fixed cost just like other forms of competence. Compared to other competencies, the return on investment (ROI) is less reliable: *“It’s a competence you need, but that you might not immediately make money on, and then firms who are a bit on the margin will struggle to be able to afford the investment”*. E8 use ecosystem accounting as an example of this: *“If you make a nature budget, or do nature accounting for the firm’s scope 1, 2 and 3, and it costs 3 million NOK a year, you won’t be able to transfer those costs to your product.”* In sum, all SMEs (B1, B2, B3, B4, B5) and five ecosystem actors (E1, E2, E3A, E6AB, E8) note monetary resources as drivers and barriers, as investing in “greener” solutions, projects and sourcing and the necessary competence to address nature comes with costs and an uncertain ROI.

6.2.5.2 Time pressures

B2, B3, B5 and E1 note time as an important factor. For B5, the pandemic provided the time needed for an increased focus on sustainability: *“We have been working on this since our factory was new, but there’s been a significant increase since 2020 when the pandemic came. Then we finally had time to dive into these things.”* More specifically for nature, E1 highlights the capacity to monitor it: *“There’s a lot of measuring needed to acquire a real understanding, it’s very location specific. If it’s in the value chain, it might be even more complicated, difficult and time demanding.”* E1 underlines how: *“Those responsible for sustainability have a lot to follow up on, a lot of legal requirements to follow up. Often when I’m talking to firms, they want to look at a lot of things, also nature, they just don’t have the time or capacity”*, which rhymes well with B2, B3 and B5’s experiences. Within their firm, B2 is the only one working full time with sustainability, together with some colleagues that have sustainability as a part of their position. B3 doesn’t have a full position within sustainability but spends some allocated time working on it, without naming this as an issue. B5 points to how sustainability can’t be their main concern:

“It’s part of a firm’s activities and mission etc, but it’s not our main activity. [...] We want to produce and sell our products; that’s our main intention. We’ll of course do that as carefully as possible, but you can’t set aside three-four people working on sustainability. It’s next to the other things we do, as we have other jobs.”

In sum, two SMEs (B2, B5) and one ecosystem actor (E1) problematise the time needed to understand and address nature.

6.2.6 Human capital

6.2.6.1 Internal expertise on nature and biodiversity

B2, E1, E3AB, E4, E7, E8 and E9 bring up the complexity of the topic and the need for internal knowledge and competence of how to address it. E1 explains that unlike climate, nature-related

risks are usually context-specific and less generalisable: *‘For nature-related risks one has to look very closely at what will happen in that exact area, and in their own operations.’* In addition to time, they say, one needs competence or the money to hire it: *‘it really is about access to people who know enough about it and have the time to look at it. Or being able to use money to hire some biologists [...]’*.

Among the tools that are available to address nature, E3A argues that they, e.g. TNFD may be very complex for SMEs without internal resources: *‘Where one needs more academic understanding of biology and ecology, it will be more difficult, as one rarely has these resources internally. The more complicated, the less understanding for one’s own impacts, possibilities and dependencies.’* Like E1, both E3B and E7 say that nature needs to be approached in a different way than climate. While climate can easily be translated to CO₂ equivalents, there is no corresponding unit for nature, E3B explains. Nature is more complicated, fragmented, and difficult to base KPIs on (E3B). They also make the case for goals being more difficult to communicate: *‘For CO₂, we have the Paris Agreement, and everything we do to limit CO₂ emissions is rooted in it. It’s a global cooperation to limit global warming, and everyone understands that. The nature agreement [GBF] consists of some percentages of conservation and some restoration. It’s not as easy to communicate.’* E7 remarks something similar: *‘The discourse and framework for climate, you can’t have on nature. Nature demands a different kind of work, a more detailed understanding.’*

Beyond the complexity of nature, there’s the complexity of understanding and having an overview of the value chain. E1 notes how e.g. figuring out exactly where one’s raw materials come from and related upstream impacts may be complicated. E3 argues that the barrier is understanding of one’s place and vulnerabilities in the value chain, with the example of traders in the construction industry: *‘You may be trading goods for the construction industry, but not realise how incredibly dependent you are on ecosystem services for your deliveries, and then suddenly there’s a crisis and then you understand.’* E7 too notes that it’s quite demanding to follow up on suppliers, also for them. They themselves use tools like Ecovadis, code of conducts and steering documents for procurement, *‘[...] but these are demanding, and we see that it’s already challenging for SMEs to have a proper environmental management system, to be able to report in a way that can be tested and verified.’* (E7). Finally, once one has the overview and data, B2 and E3 problematise the importance of knowing how to use that data in a good way. For B2 the challenge lies with being able to make good decisions based on the data, and for the data they get access to, to work with their systems. E3B explains that *‘You can map and monitor, but you must be able to use it in the way that concerns you’*, adding that: *‘it’s specific to where your own operations are located, and where you source goods from or export goods to. It becomes specific in so many ways, while the data to base decisions on is much wider than only CO₂ emissions.’*

For issues that do not demand extensive monitoring and investments, but rather smaller changes, E4 argues that knowledge is the major barrier. Referring to the previously mentioned example of firms unknowingly spreading non-native species through open trucks, they argue: *‘If you don’t know about the issue, you don’t think about it, resulting in the lack of measures from firms that could have been interested in doing something. It’s not about bad will, it’s about knowledge’*. Beyond challenges related to topical understanding, E2 argues that one important competence is being able to grasp opportunities: *‘You have some cases where there are good solutions from SMEs who aren’t considered because they aren’t good enough at presenting them.’* In sum, one SME (B2) and five ecosystem actors (E1, E3AB, E4, E7, E8) problematise internal expertise on the topic as a barrier, both in terms of understanding one’s risks, in using tools, and in understanding how to use data well.

6.2.6.2 Interest and knowledge across the organisation

B1, B3 and B4 state that sustainability is a natural part of their strategies and rationales and thus contributes to a high level of interest across the organisation: *‘It isn’t just about business ethics, but how we want to be. That is how we get our energy and motivation’* (B1). B3 argues that *‘It’s part of our DNA [...] When you have grown up in the area, you know that its nature is unique [...] The ownership to this case is very prevalent in the business, all the way to the top.’* B5’s team has also made sure that their

sustainability work is anchored in the top management, and that the organisation is informed of how the sustainability group (in which the CEO participates) works and why. Finally, B2 finds that nature is more integrated in some parts of the organisation: the customer segments who get subsidies from the state for adopting good measures, the CFO under which ESG falls as a responsibility, and the CRO (chief risk officer). Although not all parts of the organisation are there yet: (*“those who work directly with customers here don’t necessarily have the knowledge to guide our customers in that direction.”* (B2)), B2 finds that the focus is increasing overall: *“Now that we have to report on risk, our top management is focusing on ESG and nature-related risks. It varies whether people see nature as ESG or part of the natural economy, but that’s not super important, since the end point is the same.”*

E3A and E5 sees that firms vary a lot in terms of understanding and interest across the organisation. As a general basis across all sectors and industries, they would both say that the sustainability manager is often alone in working with the topic: *“Often the sustainability manager ends up having to find a smart way to make a business case for it, to get other parts of the business on board. [...] But then you have cases of start-ups with an idea of what they want to achieve, which makes it easier”* (E5). E3A argues that sectors with the most visible direct impact, such as the mining industry, may find it more important. They bring in an example from the renewables sector, where they worked as a sustainability manager: *“I brought the CEO and COO out into the woods where we considered establishing solar PVs. We looked at the soil, the species, and nature, trying to figure out what we would impact. The COO found this super interesting.”* E3A continues: *“But this is an industry with an overall interest in the environment. I think it would be different getting a CFO in the textile sector to care about the cotton production impacts. But it’s very dependent on the people.”* Nonetheless, E3AB underline, other roles across the firm, e.g. CFOs understanding the links between nature and their business, is vital:

“Often CFOs see regulations and reporting as something that needs to be done, which they don’t really understand unless they’re interested on a personal level. It’s not part of their job: seeing costs, incomes, costs and surplus. And then they see half a million spent on sustainability reporting, but they don’t see it in increased surplus.” (E3A)

In sum, all five SMEs (B1, B2, B3, B4, B5) mention a level of interest across the organisation, although the extent to which it is integrated varies. The ecosystem actors (E3A, E5) stated that interest varies from sector to sector, and person to person, but that generally, it’s limited.

6.2.7 Organisational capital

6.2.7.1 Organisational culture and strategy

B1, B3 and B4 all see sustainability as a natural part of their strategies and rationales. B1’s organisation’s culture is closely tied to Norwegian culture and meeting global sustainability goals:

“Norway’s identity is closely tied to the ocean and what the ocean produces. The coast has always been a source of food, livelihoods and establishing communities. There’s a long-term sustainability perspective in that, and an identity that we bring with us [...]. We didn’t create this sector to make money, but to harness our access to a sustainably produced raw material that the world and the UN is asking for.”

They conclude: *“our drive [for implementing nature-positive practices] comes from the way we want to work, and board discussions.”* B3 ties their motivation to the DNA of the employees and the firm: *“It’s part of our DNA as a firm, part of our slogan, and part of our branding [...]. It’s also part of our genes, to live in balance with and take care of the vulnerable nature.”* For B5, the values of the organisation results in e.g. choosing to pay more for their steel: *“We have chosen to do it despite it making us more vulnerable in a competitive situation. We feel like it’s the right thing to do, and think that at one point, the market will be willing to pay for that.”*, concluding that *“the most important driver is overall to be able to make a difference,*

be a sustainable alternative.”. This rhymes well with E8’s perception that many SMEs start addressing nature as part of building an internal sustainability strategy.

E5 finds that the question of whether or not to do something may not only derive from understanding what’s in it for them, but also from general expectations: “*I feel like it’s about lack of understanding or consensus on what a role in society should be. It comes back to the discussion on whether they are here to create a financial surplus or do something more for the society.*” (E5). E1 argues that larger firms tend to be more compliance-focused than SMEs. While larger firms look at nature because they must, they find that SMEs to a larger extent work systematically with the topic and try new things. They add: “*I wouldn’t say this applies to many. At the same time, more are starting to look at it, so that’s interesting. Then they often begin with TNFD.*”. E1 notes that there are some more idealistic firms out there, such as small renewable power plants, addressing nature as having a positive impact is part of their values. Among those who have started, E5 sees a recurring trait: they see how documenting positive societal effects contribute to business value. E5 explains: “*It must be something that isn’t just good for the reputation, but also market share or differentiation. I think the key lies in opening the eyes for what it means for positioning and strategy.*”. Using morale is less efficient, E5 argues: “*If you’re using the “you should do it because it’s morally right”, it will be way more difficult to involve them, no matter how right you are.*”. Similarly, E3A points to the value of an organisation’s relationship to the public. Among those who haven’t started, E7 sees a lack of will to look ahead as a barrier.

Interviewees also note that nature, and even climate, are fairly new topics. E5’s customers are often in earlier stages of implementing sustainability, focusing on finding their material topics and climate accounting. They believe that nature often comes at a later stage: “*I think it has a lot to do with maturing. Many want to do the right thing but lack the organisational maturity.*”. E3B however believes the topic is slowly gaining traction “*It appears to me that the understanding for nature now is where it was for climate ten years ago. It’s a bit distant, but it’s approaching all the time.*”. In sum, sustainability is mentioned as part of the organisational culture in three of the SMEs (B1, B3, B4). Five ecosystem actors (E1, E3AB, E5, E7, E8) bring up culture, strategies, maturity, public relationships and interest in working on the issue as important motivations.

	Factors	Drivers	Barriers
INT	Coercive pressures	Reg. & enforcement (B2, B3, B5, E1, E2, E3AB, E4, E5, E6A, E7, E8) (e.g. EIA, HMS & chemicals), gov. support, e.g. incentives (B3, B4)(Enova, Siva), public procurement (E1, E2, E3A, E4), customer & market demand (B1, B2, B3, B4, B5, E1, E3A, E8), finance & investors (B1, B4, E2, E3A, E6A, E7), other stakeholders (B1, E2, E3A, E7).	Reg. & enforcement (E7, E8, B2) (e.g. insurance duty, lack of stringency, lack of clarity & stability), design of gov. support, e.g. support schemes (B3, E2, E6B) (e.g. Innovation Norway, Enova), lack of customer & market demand (E2, E5).
	Mimetic pressures	Following competitor behaviour (e.g. adopting frameworks, guidance and cert.) due to uncertainty (E3AB, E7)	Following competitor behaviour (e.g. adopting frameworks, guidance and cert.) due to uncertainty (E3AB, E8).
	Norm. pressures	Sector-specific norms & attitudes (best-practice for the Transparency Act (E3A)), societal norms & values (geography (B4))	Societal norms & values (geography (E5))
RDT	V.c dynamics	Transparency of, & influence/power in value chain (E8), value chain requirements (E9), understanding dependencies (E3B)	Transparency of, & influence/power in value chain (B3, E1), understanding dependencies for supply (E3AB)
RBV	Physical capital	Time (B5)	Monetary resources (B1, B3, B4), access to knowledge/expertise on the topic (if not internal) (B1, E1, E2, E3A, E6AB, E8, E9), time pressures (E1, B2, B5), data (available, accessible, specific) (B2), methods for

			measurements and monitoring (available, applicable) (E8).
	Human capital	Top management, leadership and interest across organisation (B1, B2, B3, B4, B5)	Top management, leadership & interest across organisation (E3, E5), individual training, experiences, skills & values (e.g. expertise on N&B or the "business case for nature") (B2, E1, E3AB, E4, E7, E8, E9).
	Org. capital	Org. culture and strategy (B1, B3, B4, E1, E5, E8), the firm's relationship to external firms and actors (E3A) (incl. reputation).	Org. culture and strategy (E7), org. maturity (E3B)

Table 6-2: overview of drivers and barriers identified through the interviews.

6.3 How external actors can enable action (RQ3)

6.3.1 Capacity and knowledge

B2, B3, B4, and B5 all named knowledge and guidance on how to work with the topic as an important requisite for them to take more action. In terms of how UNGC can contribute, they highlight the educational role of this and other organisations. Some specifically request stronger guidance and education from the authorities (E2, E4, E6B, E8): *"It's good if the authorities are there in the beginning, to evaluate which science-based measures contribute to making a difference, designing the measures, and provide support for them to work as well as possible."* (E6B). E1 suggests that the authorities can develop a location-specific guide for Norway: *"[the TNFD guidance] is quite elaborate and good, but it's not location specific and adjusted to any given conditions. So maybe making some evaluations of factors to factor out because we are in Norway would make it easier for firms to use it?"*.

E9 explains that the Environmental Agency (EA) is working on clarifying the topic. In 2026, they were asked to develop guidance for nature-related risks, with a tentative delivery by the end of 2026. The goal, E9, explains, is that the EA will define their own nature-related impacts, adopt a reporting structure in line with the VSME and ESRS, and develop guidance and recommendations to targets and KPIs that can help the organisation reduce its environmental impacts. Finally, they explain, *"The idea is that Miljødirektoratet's [EA's] report, together with data bases and information they have, may be relevant to share with businesses seeking to report on nature-related impacts."* The Ministry of Climate and Environment is also working to define what state-owned firms should report on with regards to "nature-related impacts" (E9). Finally, E9 explains that all state-owned firms in 2024 received a government-wide directive mandating that they work systematically and holistically to reduce their GHG emissions, energy use and nature footprint, and report annually on this. A report assessing this directive recommends that the authorities offers clearer expectations, concrete guides, examples and advice, especially for SMEs (E9).

Regarding UNGC, B2 mentioned the UNGC database, noting that: *"Some more explicit videos that can be used for internal education would be nice."* For B3, UNGC offers an appreciated non-commercial important means to understand the core of EU regulations: *"[...] for helping us orient the jungle of EU regulations that in my opinion are way too complicated. Much of what is decided is high-level and without practical considerations, passed and decided in Brussels."* There's however some untapped potential: B2 would like to see a general guide on measuring biodiversity and related risks, B4 requests stronger guidance on how to take nature into account in the value chain, and B5 better insights on feasible and effectful actions within their own operations, beyond supporting different projects financially: *"We're interested in the small, simple measures that can be done without taking too much time, resources or economy, but still contribute quite a bit to nature and biodiversity"*. B4 also requests more guidance on this and suggests that UNGC makes a campaign around light pollution: *"[...] which I think is a low hanging fruit. I think there is very little attention surrounding light*

pollution, and how positive it can be to limit the night lights.”. They further suggest that UNGC can support and front the BREEAM framework: “BREEAM is incredibly useful because the entrepreneurs know it so well. There’s a lot of resources there, so contributing to BREEAM being used by firms in construction activity [...] fronting it for the UNGC members could help push the agenda.”.

B2, E1, E2 and E6A note that UNGC, other organisations, or the authorities, can facilitate arenas for sharing knowledge, to avoid people working in silos. From UNGC, B2 requests: *“More cooperation on some specific topics. They already have these of course, but some more discussion arenas for specific challenges.”.* E1 suggests a discussion arena and knowledge sharing on risks: *“An arena for finding out where risks are, but also the measures, and how to work to reduce the negative environmental impacts.”.* They argue that it might be tricky to get competitors to cooperate on risks and negative impacts, but not impossible: *“Fornybar Norge [Renewables Norway] recently published a nature account for projects, and they worked with multiple competing firms to develop something that benefits all.”.* E2 underlines not only why it should be in the finance sector’s interest to manage their downstream nature-related risks though increased prices and requirements on their customers, but additionally how this sector may play an educational role via these measures.

In general, E4, E5 and E3B underline that it’s necessary that firms see their own relevance: *“It tends to become so large, so encompassing, and it doesn’t have to be. You just need to identify your own relevance. Everything isn’t a risk, everything isn’t as important for everyone, but your part of the importance.”.* (E3B). E3B argues that you always have to point at “what’s in it for me”, beyond compliance, when addressing firms and owners. They see connecting the dots between nature-related risks, raw material access, circular economy and the bottom line as a potentially valuable approach: *“You call it circular economy, but it’s really coming from nature becoming a financial risk if your company doesn’t have access to the secondary resources market. [...] It’s about that education, saying that nature-related risks lead to concrete economic results.”.* Similarly, while E1 points to how upstream risks might both be difficult to grasp and locate, E1, E3AB and E5 find that understanding the value chain risks and therefore business case is key. E5 adds: *“Sometimes I believe the challenge is to get people to realise new things. Not that nature is new, but that the board starts thinking in other ways. [...] If it’s just a legal demand, there will be resistance to doing more than the minimum.”.*

E8 argues that while it’s challenging to address nature-related impacts, e.g. the firm’s land use, one can focus on the most important: *“Getting an overview of how one impacts the land use might be the most important, and then starting to work with the mitigation hierarchy. [...] For instance, assessing whether it’s necessary to expand or construct that new building.”.* Similarly, E5 argues that firms with limited resources can “work smarter” by creating and integrating nature into systems they already have, while E6 argues that larger costs can be mitigated by starting with smaller projects: *“It doesn’t cost as much as doing it in the whole value chain, but then you have at least mapped that area.”.* In sum, four SMEs (B2, B3, B4, B5) named knowledge and guidance as important enablers for them to act, which was echoed by most ecosystem actors (E1, E2, E3AB, E4, E5, E6AB, E8, E9).

6.3.2 Economics and finance

6.3.2.1 Public finance and support mechanisms

B3 thinks the support systems could have been better and refers to Enova:

“It takes a long time to receive answers, and the support you get is often 20% of the investment you need to make. I think the support for investments should be better supported by the state. Then you would be able to complete more of the projects that makes the light go red for firms looking at the payback period.”.

On a similar note, E2 says: *“You could challenge whether the support schemes to the authorities, e.g. Innovation Norway or the Research council, are explicit enough [...] in terms of financing business models that*

are less dependent, and have less of a negative impact, on nature.” E6B echoes the importance of subsidies as it costs to conserve biodiversity, mentioning those of Innovation Norway. They also underline the importance of well-designed schemes that consider the long-term nature of biodiversity, noting that *“Many schemes are very short-term, max for five years. But then no one can invest in it, when you know it takes at least 30 years to get the investment back”*. Similarly, B3 says that *“In order to transition, we need promises and available options at a price that is manageable in terms of being able to run operations in a profitable manner. That’s a large $\times$ factor for all industrial firms”*. The support schemes were an enabler for B4, who received funding from Siva. In sum, support schemes have enabled two SMEs (B3, B4) to invest in “green” solutions, although B3 argues that it would be beneficial to redesign support, which is echoed by two ecosystem actors (E2, E6B).

6.3.2.2 Public procurement

B5, E1, E2, E3A, E4 bring up public procurement. B5 argues that incentives work better than sanctions and refer to the sustainability requirement in public procurement: *“It’s a large advantage that not only prices determine, but also factors such as knowing where the products come from”*. E2 explains that there are two ways public procurement can include nature: making clear, specific criteria for the evaluation of suppliers, or including the full value of nature when designing public projects and assessing macroeconomic profitability. E4 similarly suggests specific nature-related criteria so that nature doesn’t fall under the larger umbrella of “30% environmental considerations” (section 6.2.1.1). E2 underlines that authorities should be *“willing to take risk on SMEs and new actors that aren’t necessarily completely safe.”*, to stimulate more innovation. In sum, one SME (B5) and four ecosystem actors (E1, E2, E3A, E4) argue that incorporating (more specific) nature-related criteria in public procurement assessments would be an important enabler.

6.3.2.3 Finance, private investors and insurance

B1, B4, E2, E3A, E6A and E7 find the finance sector to be an important enabler, for instance through raising the bar via investor and insurance requirements or building the business case for nature. Beyond having acquired the BREEAM certification because their investor required it, B4 mentions having worked with a green financing framework, where firms use the EU taxonomy to get access to streams of capital from banks and other financial actors. B4 didn’t complete this work, but explain: *“If we would have, we would have to document our work on nature very carefully, even including how our energy supplier works with nature when building the power lines to us.”*. As elaborated on earlier, E6A points to TNFD having been developed due to expectations from financial institutions and NBIM’s expectation document for managing nature-related risks, and E3A argues that signals coming from NBIM have a strong effect: *“I think the oil fund [NBIM] actively removing companies with too many nature-related risks and looking at nature- and climate-related risks as a drawback [...] causes ripple effects. I think that in ten years we are heading somewhere.”*. While E7 explains that legislation makes it difficult to not insure actors, they do have the freedom to adjust prices according to their own risk perception, and have stopped insuring fossil fuel, adding: *“that also has to do with the transition risks in terms of stronger regulation on climate, and one could picture something similar for nature.”*. In sum, two SMEs (B1, B4) and four ecosystem actors (E2, E3A, E6A, E7) note how the finance sector can enable action.

6.3.3 Policy and legal

6.3.3.1 Political ambitions and targets

With regards to scaling up the work on nature, E6A calls for more ambitious, open-minded politics going towards 2030 and 2050: *“Nature can be conserved in a lot of different ways; it’s not like the only way is to create national parks.”* E8 speaks of a national target for land degradation neutrality (LDN) and setting a cap on areas available for land conversion. B4 suggests two measures the authorities can take, one of them being related to increased use of grey sites. They also think the

authorities can be a driver for firms’ regeneration efforts, both in terms of getting projects up and running, and in terms of developing a nature account that makes the topic more standardised and easier to work with. For B3, it’s important that regulations mirror the context in which Norwegian SMEs work, are tangible and feasible. They consider UNGC to have an important role to play here: *“We must implement a lot of things because they work in Germany and Spain. There I think the UNGC plays an important role for lobbying.”* They continue: *“We are very few people, with large distances, and special systems. The electricity we use is completely green.”* In sum, wider political ambitions and targets are mentioned by two SMEs (B3, B4), whereas B3 argues that UNGC has an important role to lobby for legislation taking the Norwegian context into account. Two ecosystem actors (E6A, E8) call for more ambitious politics, e.g. a national target for LDN.

6.3.3.2 General regulatory requirements

Interestingly, the SMEs and most other interviewees differed significantly in their view on implementing more regulatory requirements. Whereas E2 is more sceptical of adding onto their administrative burden, all other argue that more and “clearer” regulation would be beneficial if the goal is for SMEs to prioritise nature. E3, for instance, states that: *“Unfortunately, when it comes to making SMEs care about nature, I think regulation is needed, because it is expensive”*, while E1 says that legal demands are prioritised. E6B, discussing the uptake of standards for working with biodiversity says: *“Maybe someone needs to make the decision of what standard or what method we should use [...] It’s a bit like the fertiliser directive: it’s difficult, but easy, because it applies for all.”* E9, referring to the recommendations authorities received with regards to accommodating state-owned firms’ work with climate, nature and energy (section 6.3.1), also names sharper requirements while differentiating the expectations according to the size of the organisations. They add that state-owned firms will see an updated directive for how to work and report on nature in 2027.

Some interviewees have suggestions for regulatory requirements to implement or expand on: E1 points to how state-owned enterprises have been mandated to set science-based targets: *“This resulted in a snowballing effect, where these firms required the same from suppliers and sub-suppliers. I think something similar for nature would be very good.”* E4 suggests that marine ecosystems could benefit from stronger regulation of fisheries. E4, E7 and E8 point to how a lot of nature loss results from politics and municipal zoning plans, arguing that this needs to get better. “No go”-zones in vulnerable habitats and stricter prioritisation of land use are some of E8’s wishes. They’re also looking into possibilities for pricing land use change, hypothesising: *“What if the price one paid for land use change is to compensate it, and everyone must to document that they tried to follow the mitigation hierarchy and implement measures to compensate for unavoidable impacts?”*

It may be costly to start addressing these issues, E3B argues, but regulations might also lead to implementation of cost-saving measures. E3B and E5 argue for the value of building the infrastructure to meet regulations. E3B refers to structures and mechanisms that were built to comply with the Transparency Act. E5 sees an opportunity to work smarter, via integrating nature into already existing systems: *“I don’t think it has to be that complicated, if one manages to integrate it into continuous processes of improvement, or into quality systems. [...] challenging when establishing the system, but afterwards it can run without being a large burden.”* E3B further makes a point of the educational value of regulations, as they can contribute to ensuring a common language and understanding of a topic, also for actors more removed from the direct impacts and dependencies:

“With regulations, actors further from the direct extraction, such as energy companies, have to consider it in a relevant manner. That’s where I feel that we have a large challenge: Most actors producing and selling something are dependent on extracting from nature, but the closer you are to extraction, the more conscious you are in terms of your impacts and dependencies.”

B2 and B4 see the value of more regulations but think that their sector is regulated enough: *“I see the value as one is nudged in the right direction. But as an actor in the finance sector, I would say we are already rather over-regulated”* (B2). B2 would rather see more predictability. B4 states: *“I wouldn’t say that’s where the shoe pinches, at least not from the viewpoint of a firm.”*. They nonetheless argue that current regulations for the European market pose a challenge for attracting investors, but that *“the industrial acceleration act will be very helpful, but that’s in the 2030s.”*. E7 and E2 argue that some regulations even contribute to negative impacts. E2 uses the example of technical requirements for construction being erigorous, e.g. in terms of how deep one digs down water pipes: *“Going through these technical demands, and removing those who are unnecessarily demanding, also when it has consequences for the nature, I think is an important dimension”*. E7 finds a similar challenge with strict regulations. While they say Norway is well regulated in comparison to other countries, they see that some regulations incentivise risk-prone behaviour. They problematise the insurance duty for firms having received their licence to operate and how municipalities regulate areas: *“We have examples of properties in flood-prone areas that are completely damaged and get rebuilt in the same place, with the same or increasing flood damage risk. There’s even a supreme court verdict stating that insurance firms must continue insuring the property if the municipality approved the re-build.”*

In sum, general regulations are the enabler upon which the SMEs and most ecosystem actors completely disagree. B2, B4 and E2 are sceptical of it, while all other ecosystem actors (E1, E3AB, E4, E5, E6B, E7, E8) argue that more regulation, and a “clearer” regulatory framework, would be beneficial if the goal is for SMEs to prioritise nature.

6.3.3.3 Mandatory reporting and the Transparency Act

E1, E3AB, E5 and E7 believe mandatory reporting requirements are important to make SMEs address the topic. E1 and E3A see that reporting requires resources, but thinks an ideal would be less encompassing, more specific, reporting. E1 thinks the CSRD backlash came partly because the requirements were unrealistic and seemed to be designed by people used to data being readily available instead of having to search for or create it. They rather think that: *“had we given firms some points to report on, for instance land conversion or local, red-listed species, there would at least have been more mapping. Then hopefully there would be more firms working on reducing their footprint afterwards.”*. E9 adds that the Ministry of Finance is currently revising the Accounting Act to adjust to the Omnibus directive, and while they haven’t proposed any changes yet, they are looking at stakeholder inputs regarding whether there is need for regulatory reporting requirements for firms no longer in scope of the CSRD, and *“how such rules should be designed, whether legislation provides a larger economic benefit than voluntary reporting, cost implications for these firms, and if regulatory requirements will lead to more standardised and comparable information.”*

B2, B3, B4 and B5 on the other hand find that they report quite enough. B3’s reporting encompasses reporting to the UNGC, partners, customers, County Governor, the Environmental Agency and the municipality. They are considering implementing a climate reporting system that is partially sponsored by their bank, noting that this appears better than other systems: *“I think many systems out there haven’t been that good, there’s been a lot of numbers based on rough estimates.”*. B5 thinks reporting within limits of reason is sensible, but that it should be voluntary. They explain that Norwegian legal conditions already lead to high construction costs, which the sector is preoccupied with lowering *“[...] it’s significantly more expensive to build in Norway than e.g. Sweden. There’s a lot contributing to this, whereas regulatory and legal conditions pose way more requirements to buildings in Norway, than they do in Sweden or Europe in general.”*

E3AB argue that reporting can help discover one’s own relevance, especially for firms where the materiality lies in the value chain. E3B draws the link to the Transparency Act becoming an industry standard because it helped firms discover vulnerabilities, arguing that something similar would be useful for putting nature on the agenda: *“You have to start with a regulation that at least*

requires that these SMEs report on it, like with the Transparency Act. Many have done a lot in terms of value chain risks after the Transparency Act was implemented’’. They add that some best-practice SMEs even go on supplier visit to China despite “only” having a 150 million NOK turnover and conclude: “If you would have a similar regulation for reporting on nature impacts for SMEs with a 70 million NOK turnover, at the same threshold as the Transparency Act, you would have kickstarted a process.”.

E5 and E7 too, think it would be efficient to include nature-related topics in the Transparency Act. E7 does note that it would be demanding to follow up both for SMEs and authorities, and E9 notes that there are discussions surrounding an expansion on the Ministries-level. The Transparency Act was also brought up in relation to the VSME. E3A argues that the VSME fails to capture nature and Norwegian challenges: *“We don’t struggle with water use, but red-listed habitats [...]”*. They argue that the VSME should be expanded and made more relevant to Norway and hypothesise merging it with the Transparency Act. Although they write this off as an unlikely scenario given that the Norwegian government often follows the EU, who have gone back on sustainability regulations, they think that: *“if you had these specific parameters, you could make nature more specific in terms of which dependencies and impacts firms have, more than the VSME mandates. Then I think we would have a very complete law”*.

With regards to expanding the Transparency Act, which B3 and the rest of the SMEs are reporting on, B3 disagrees. They argue that there’s a lot of expansive reporting already, which could have been improved, and conclude *“I don’t think the reporting is going to help with anything.”*. B5 says they’re complying with the Transparency act as well as they can, having overviews of sub-suppliers and trying to influence them in a more environmentally conscious direction, but add: *“We don’t have a large department called climate and environment or nature, so this comes on top of everything else. I think the regulatory framework should be kept as simple as possible.”*. B4 also feels that while it’s good with a framework targeting the value chain, it would be unfortunate to expand the act. They explain: *“I think the Transparency Act needs to start working better, and I think this would rather trigger a backlash. I think it’s more important than anything else that the Transparency Act is consolidated the way it reads today.”*. E2 sees value in terms of directing the focus towards externalities in the value chain too, but underlines that the reporting must contribute to change and not disadvantage it. They make the example *“It’s more interesting that new firms come up with new solutions, with a lower impact, than firms with half good or bad solutions, but that have reported.”*. E2 argues that there are far more powerful mechanisms than reporting: *“If customers want nothing to do with you before you sort out your value chain, something happens. That’s a sort of commercial power I think is way more important, and more difficult to unleash, than the reporting in itself”*.

In sum, most SMEs (B2, B3, B4, B5) think they already report enough, and are sceptical of expanding the Transparency Act. Four ecosystem actors (E1, E3AB, E5, E7) argue that more reporting is important to make SMEs address the topic. Finally, E2 sees value in directing the focus towards value chains but underlines the importance of reporting contributing to change.

6.3.4 Technology and data

6.3.4.1 Data and tools

Data availability and tools are brought up by B2 as one issue in terms of lack of consistency, suggesting that: *“If everyone in Norway would use the same data source, it would be more comparable, and one would assess risks similarly. You’ll set your own boundaries, but at least all would have the same basis for decision-making.”*. From the authorities, they request *“a common way of assessing nature-related risks and translating the international assessment to the Norwegian context.”*. E1, E3B, E7, E8 and E9 mention available maps and data as important enablers, whereas E3B notes that the EA is working on mapping nature and making data publicly available. E9 mentions that the authorities have been advised to offer more concrete tools, which they too see as an important enabler, and the idea

of sharing databases related to the EA's own reporting (see section 6.3.1). E1 wishes for a centralized database gathering the necessary data, maps and information to avoid spending time searching via different sources. E5 notes that there are some maps available that they have used to make their own tools, such as maps over red-listed and vulnerable areas, which they used for clients when mapping nature-related impacts in the ocean. Nonetheless, they problematise the quality of these maps: *"They say that when biologists are out mapping red-listed species, they don't get enough time. So, you won't necessarily get all the important information from these maps"*.

Regarding what's already there, E9 explains that the EA did a mapping exercise in 2024, which was commissioned by the Ministries of Climate and Environment, and Finance: *"The project looked at how sharing of data from the public sector can make it easier for firms in scope of CSRD to meet the ERSR reporting requirements. This project found multiple sources of data from EA suitable to support the private sector's reporting"*. They list up some, including guidance for biodiversity impact assessments and evaluating the biodiversity values of areas, a mapping of the state of different ecosystems, and "Naturbase" which directly places data about nature on a map (E9). For the development of new tools, E5 underlines the potential for synergies, using circular economy and digital product passports (DPPs) as an example: *"There's a lot of stuff going on, a lot of committees, but there's a step from committee to action. You have all these working groups for DPP that aren't necessarily connected, but one could see what role has nature here."* In sum, one SME (B2) and five ecosystem actors (E1, E3B, E5, E8, E9) bring up the importance of data availability and tools to ease the process of working with impacts, and ensure more comparable, standardised grounds for decision-making.

6.3.4.2 Standards and certifications

For B4 and B5, the BREEAM framework and ISO standards were perceived as great resources. B3 however states that: *"We don't have any ISO 14001 certification and aren't planning on getting it."* They follow ISO 9001 and FSC 22000 on food safety etc and have built their quality and HSM systems around these and yearly revisions, but with regards to the EMS they explain: *"if it becomes a demand we will. But if it's actually going to contribute anything to the way we are working... The principles are the same either way, so it will just be another revision and paying 150 000 NOK."* Regarding the Eco Lighthouse, E3A notes that only firms having direct raw material or land use impacts in their own operations, have to answer nature-related questions to obtain a certification. E3A further argues that Eco Lighthouse addresses scope 3 climate impacts to a larger extent than nature, e.g. via disclosing emissions from business travels. They hypothesise whether a similar approach would be possible for nature: *"If you made a list of raw materials we know are very dependent on ecosystem services, like agricultural goods, timber and fish, and firms had check whether their business model depends on these and answer relevant questions, you would get many to think."* They however feel it would be difficult to make nature relevant for SMEs, without over-complicating it for firms far away from direct impacts: *"I think this becomes very distant for the 30 million NOK firm selling electrical equipment, who most likely doesn't have any idea of where the copper in the cables they buy from an importer comes from."*

Moving over to international certification schemes, E6AB note that the new ISO standards for biodiversity seek to shed light on how firms can address their nature-related dependencies, impacts and risks in a more standardised way. ISO17298, they note, focuses on how firms can work with biodiversity in their own operations, value chains, or at a strategic level, while ISO17620 focuses on projects. The standards require quite a lot though, E6B notes: *"If you have a larger project, you need an ecologist, or you need a project leader to follow this process, which takes a lot of money, meaning that firms follow the requirements that are there, and nothing more, because it costs."* In sum, the interviewees differ in their perceptions on the usefulness of standards and certifications. One SMEs and one ecosystem actor (B4, E6) find the BREEAM framework or ISO standards useful for addressing nature and biodiversity. Another SME (B3) and ecosystem actor (E3A) note that certifications do not contribute to anything, or that nature is not sufficiently covered by Eco Lighthouse but also difficult to include without overcomplicating it for SMEs.

5.3.4.3 Green technology and infrastructure

B1 and B3 argue that the availability of and access to green solutions hinders them from scaling up their work on nature. In B3’s case, one challenge lies with transport: “*Many places in Norway you don’t have a lot of options. So then fossil fuels dominate road transport. I know that things are happening in terms of transport, but it takes a long time.*”. They also argue that especially for transport across large distances, the infrastructure for alternative energy sources like charging or biogas is underdeveloped, making decarbonisation a less viable option. In sum, two SMEs (B1, B3) bring up the availability of green technology and infrastructure as important enablers.

6.3.5 Values and norms

Looking at how the UNGC, other organisations and authorities can better enable nature-positive business practices, E2 notes that work needs to be done on norms and attitudes. B5 thinks all incentives making it wise for firms to take nature into account would help. They add: “*Often one thinks that these incentives need to be economic, but that isn’t necessarily the case. Maybe the authorities could support the UNGC goals better, but maybe they are already doing that? If so it’s not very visible.*”. With regards to intra-firm incentives, E8 suggests: “*Finding incentives that make it easier for people within a firm to make good choices for the firm’s direct impacts.*”. B4 presents an interesting note with regards to how geographic norms and values can influence firms’ actions. B4’s discussions with the municipality about contributing to restoration other places in the area are partly influenced by the ambitious context of their host municipality: “*We’re situated in a municipality that has worked actively with nature, for instance making old industry plots into housing, so this is in a context of a municipality that has worked quite well with plans for land use.*”. In sum, values and norms are perceived as enablers by three ecosystem actors (E2, E8) and two SME (B4, B5).

A summary of all identified enablers across the five IPBES categories is provided in table 6-3.

Category	Identified enablers
Capacity & knowledge	Stronger guidance & education from authorities (E2, E4, E6B, E8, E9) (e.g. location-specific guidance for Norway, evaluating, designing & supporting measures), stronger guidance & education from UNGC (B1, B2, B4, B5) (e.g. videos for internal education, guidance on how to measure/work with biodiversity in value chains & own operations, advocating for helpful solutions and frameworks), UNGC working to ensure regulations adjusted to the Norwegian context (B3), div. organisations (UNGC, authorities, other) facilitating arenas for knowledge sharing and cooperation (B2, E1, E2, E6), making sure SMEs see the business relevance (E1, E3AB, E4, E5), guidance on how to “work smarter” (E5, E6A, E8).
Econ. & finance	Well-designed financial support systems with nature-related requirements (B3, B4, E2, E6B), incorporating nature-specific criteria in public procurement (B5, E1, E2, E3A, E4), financial actors posing requirements & pricing incl. nature-related risks (B1, B4, E2, E3A, E6A, E7).
Policy & legal	Widening political ambitions & targets for nature (B4, E6A, E8), more stringent & clear regulatory framework (E1, E3AB, E4, E5, E6B, E7, E8, E9), more reporting/expanding the Transparency Act (E1, E3AB, E5, E7).
Tech. & data	Available data & tools (e.g. national ecosystem account, publicly available & centralised database) (B2, E1, E3B, E5, E8, E9), certification schemes accounting for nature & biodiversity (B4, E6AB, E3), available green technology & infrastructure (B1, B3).
Norms & values	Societal norms & attitudes (E2), ambitious municipalities/geographies (B4), consensus on goals (B5), incentives to unlock intra-firm interest in lowering impacts (E8).

Table 6-3: identified enablers across the 5 IPBES categories.

7. Discussion

7.1 Results in light of reviewed literature and theories

7.1.1 How SMEs are addressing biodiversity (RQ1)

Reviewed literature reveals that most focus on nature and biodiversity has been tied to primary and extractive sectors with impacts in their own operations, and one could expect to find little focus on land use change and value chain impact in the results (Salmi et al., 2023; zu Ermgassen et al., 2022; Panwar et al., 2023; IPBES, 2026). Three ecosystem actors further argued that most SMEs do nothing with regards to nature and biodiversity, although some do more. Actions taken also vary from sector to sector as some are more risk-prone than others. Nonetheless, all interviewed firms mention actions related to land use change. Two SMEs took nature-related impacts into account when choosing suppliers and inputs, and one noted that mapping upstream nature-related risks tied to mining would be a natural next step although they have other priorities they want to address first. With respect to direct actions in their own operations, one SME saw nature as a trade-off they sought to avoid when placing solar PVs. Another had worked actively with nature and biodiversity in their routines, and in construction and expansion of their factory. This stands out as the most direct action related to land use change. Four firms address land use change indirectly, in the form of circular practices. The findings fit well with literature: upon mapping biodiversity-related activities, Wagner (2023) found that the most practiced were waste reduction, material use and recycling packaging, not biodiversity conservation, restoration or offsets. Herbert et al. (2023) similarly saw that fewer SMEs had implemented direct biodiversity-related actions (30%), than actions related to energy (77%), waste (70%) and materials (61%).

Looking at the other drivers of biodiversity loss (overexploitation, pollution, invasive species, climate change), all have been mentioned by the SMEs. Two take actions to limit overexploitation. It should be noted that one of these operates in an extractive sector with a higher level of physical nature-related risks (NOU 2024:2). One ecosystem actor underlines that firms like this one naturally have an interest in preserving the resources on which they depend. Four SMEs address different forms of pollution, and one ecosystem actor sees an increased focus on it. Only one SME mentions invasive species, and one ecosystem actor notes a lack of knowledge on the topic. Climate change is the driver most extensively covered by actions, also in comparison to land use change. All the interviewed SMEs work with climate, both in their own operations and value chains, with the majority placing the topic among their key priorities. Two ecosystem actors observe the same. This finding echoes the literature with regards to climate actions progressing more than “pure” biodiversity (zu Ermgassen et al., 2022).

All SMEs have taken actions in their value chain, although there are sentiments of having a limited impact. This observation collides with how other ecosystem actors perceive the situation. Five have the impression that SMEs mostly address nature on this level, only four see some action in value chains. This also collides with IPBES (2026), Salmi et al. (2023) and Zu Ermgassen (2022) finding that firms to a lesser degree address value chain impacts. It corresponds more with the Sparebank 1 survey where 75% of surveyed Norwegian LSEs saw loss of nature and biodiversity as a material risk for their value chain. It should nevertheless be noted that the SMEs working with upstream factors, especially for land use change, didn't explicitly argue that it was due to nature-related risks. Finally, two ecosystem actors argued that nature is incorporated in strategies, with another saying that incorporation in strategies is vital, and one SME mentions having worked with sustainability at a high level. One SME and two ecosystem actors bring up decisions on the investment level.

A takeaway for RQ1 therefore becomes that while things are evolving, SMEs are more preoccupied with measures linked to climate or circular economy. These are closely connected to nature and biodiversity, as a driver or important means to a nature-positive end, but they are not as direct entry points compared to e.g. addressing land use change tied to a firm’s actions. Further, actions taken in supply chains are mostly those less complex and time-consuming: choosing suppliers with certain certifications or those offering carbon-reduced steel. Actions that are more direct, such as mapping and monitor nature-related risks, are less common.

7.1.2 External and internal drivers and barriers (RQ2)

7.1.2.1 External drivers and barriers: Institutional pressures (INT)

INT stipulates that institutions largely influence the decision-making and behaviours of organizations, and that organisations facing the same environmental conditions become similar over time as they respond to coercive, mimetic and normative pressures (DiMaggio & Powell, 1983). Literature on drivers and barriers for SMEs sustainability practices revealed that external pressures include regulations and enforcement, customer demand, other forms of stakeholder pressures, social norms and reputation, competitor behaviour and competitiveness, governmental incentives like subsidies and loans. Most of these institutional pressures were identified in the interviews.

Among the coercive pressures, all ecosystem actors argued that regulations function as major drivers or barriers for action. The Nature Diversity Act, the insurance duty and the Public Procurement Act were mentioned as examples. Only one SME argued the same, although two other named regulations as one of multiple drivers. Indeed, “regulations and enforcement” is the factor mentioned by most (13 interviewees). This corresponds well with the fact that regulations historically have been the main driver of businesses managing their negative impacts on biodiversity (IPBES, 2026), and literature on general implementation of sustainability practices. Customer demand is the second most mentioned coercive pressure (9 interviewees). It’s mentioned by many ecosystem actors and all SMEs, which could also be expected with reference to the reviewed literature. It’s interesting that regulations appear to be the most important driver in the eyes of ecosystem actors, while SMEs perceive customer demand as more important. It does fit with the survey on LSEs, where the most important factor for companies addressing their nature-related aspects, was pressure from customers or investors (PwC & Sabima, 2023). What these differences entail with regards to levers for more action, will be further discussed in section 7.1.3 under policy and legal. With regards to the state acting as a customer: four ecosystem actors underlined the importance of requirements in public procurement, and this will be elaborated on in section 7.1.3 under economics and finance.

Public and private finance were important too, both in the literature and findings. Governmental incentives like “green” subsidies and loans were identified in the literature, and two SMEs used support schemes to overcome monetary barriers, with one having been driven in a “greener” direction by the scheme. The other SME and two ecosystem actors argue that the design currently functions as a barrier. It can be noted that the issue of large public subsidies directed at business activities that drive biodiversity loss, and function as barriers (IPBES, 2026), was identified in the literature without being reiterated in the findings. Two SMEs and four ecosystem actors see pressures from the finance sector (including investors, banks and insurance) as important drivers for action, which again finds support in the literature and survey by PwC & Sabima (2023). Literature also noted that biodiversity risk exposure raises borrowing costs for SMEs, and that investors have started revising valuations for firms with a higher level of nature-related risks or -impacts (Nguyen et al., 2025; Garel et al., 2024). Managing nature-related risks better on the other hand, lowers the credit risk (Nguyen et al., 2025). This was noted by ecosystem actors, although more as a potential enabler that can be scaled up, than

something already happening at a large scale. Interestingly, IPBES (2026) identified investor pressures e.g. ROI and quarterly earnings as misaligned with ecological cycles and a barrier for action. Investor pressures were however solely mentioned as drivers by the interviewees, which doesn't align fully with literature. Finally, other stakeholder pressures, including environmental NGOs, were drivers of action according to one SME and three ecosystem actors, indicating that while relevant, it's not a major factor.

Normative pressures, in the forms of industry- and societal norms (identified by two ecosystem actors and one SME), are covered as drivers in literature as well. The industry norms were however related to social sustainability and risks via the Transparency Act, and the societal norms via geographic contexts. These findings, and the fact that these factors are sparsely mentioned, indicate that the explicit concept of nature-related risks (beyond the implicit risks through "natural" dependencies for primary sectors) has not yet properly infiltrated most industrial and societal networks, but could function as a driver if it does. See section 7.1.3 for a further discussion on this.

Finally, three ecosystem actors bring up mimetic pressures in the form of transitional nature-related risks and unclear frameworks as barriers to action, although one ecosystem actor argues that the former should indeed be a driver. This suggests that lack of regulatory clarity leads to lack of (new) action, and not the adaptation of best-practice models and strategies in the face of uncertainty. This could for one indicate that the signals these SMEs are getting, is that e.g. regulation is not moving towards being stricter; that it's better to wait than prepare. IPBES (2026) and some ecosystem actors note that the lack of adequate penalties and rewards, and that most disclosure schemes are voluntary, is also rigging a context where a transition to nature-positive practices is not incentivized. It could also indicate a perceived lack of best-practice models and strategies, which will be elaborated on in section 7.1.3 on capacity and knowledge.

7.1.2.2 Inter-firm drivers and barriers: Resource dependency (RDT)

The RDT emphasizes how firms rely on external actors for survival, as they can never be fully self-sufficient in terms of critical resources (Yunusbayeva et al., 2025). Asymmetric power relations, stakeholder oversight, and institutional distance are barriers identified in the literature (Chand & Tarei, 2021). These are echoed in findings, where one SME and one ecosystem actor deem influence over value chains as a barrier to action, and another ecosystem actor adds understanding of value chain dependencies as another. Yet, all five SMEs work with value chain impacts, which can act as a counter argument to the RDT. Still, the extent of this work, and its connections to the land/sea use change driver, which is the main driver of biodiversity loss, varies strongly.

Actions connected to climate are undertaken to a larger extent, and SMEs experience that suppliers are cooperative to this end. This could suggest that value chain actors are more open to supplier demands with regards to climate. On the other hand, this could also be explained by the fact that the topic of climate is more mature and mainstreamed among businesses than nature, and that regulations and markets have pushed for action towards this end for a longer time. In one the case of one SME for instance, sector-specific legislation mandates reporting on climate, while nature is voluntary, echoing IPBES' (2026) point. Following this line, one SME states that they cooperate well with their suppliers and that mapping the nature-related risks in their value chains would be a natural next step, indicating that the main issue isn't upstream supply chain dynamics and power, but more a lack of downstream factors i.e. customer demand.

7.1.2.3 Internal drivers and barriers: Internal resources (RBV)

The RBV sheds light on how organisations can leverage their unique internal resources and capabilities, to achieve and sustain comparative advantage (Barney, 1991; van Mossel et al.,

2018), and Barney (1991) divides these resources into physical, human and organizational capital. Findings with regards to internal drivers and barriers spread out quite evenly across these. Starting with physical capital, all SMEs and five ecosystem actors bring up monetary resources as barriers, e.g. for investing in “green” solutions, projects, more sustainable sourcing and the competence to address nature. A less reliable ROI was also problematised. These are all echoed as barriers in the literature (Bakos et al., 2020; Moursellas et al., 2024; Yunusbayeva et al., 2025; Gjerde et al., 2025), together with the time needed to understand and address nature, which was mentioned by three SMEs and one ecosystem actor. IPBES (2026) also stresses that the available biodiversity assessment methods pose challenges for SMEs, as they require the resources for applying them. Moving over to human capital, one SME and five ecosystem actors see internal expertise on the topic as a barrier, which aligns with literature on both biodiversity and general sustainability (Bakos et al., 2020; zu Ermgassen et al., 2022; Moursellas et al., 2024; Yunusbayeva et al., 2025; Gjerde et al., 2025; IPBES, 2026). The implication of these findings will be further discussed in 7.1.3 under capacity and knowledge.

With regards to human capital across the organisation, all five SMEs see a level of interest and knowledge across the organisation, including top management, although the extent to which it is integrated varies. Especially some of the SMEs argued that their top management cares strongly about sustainability and want to “do the right thing”, which bodes well for pushing through more action to this end. Internal drivers and barriers identified in the literature review also include leadership and top management (Bakos et al., 2020; Moursellas et al., 2024; Yunusbayeva et al., 2025; Gjerde et al., 2025). It should however be noted that some interviewees speak mostly of climate, or general sustainability, and not explicitly “nature” or “biodiversity” in this context. Two ecosystem actors, explicitly referring to nature-related risks tied to land use change, stated that interest varies from sector to sector, and person to person, but that generally, it’s limited. Understanding across the organisation regarding how the state of nature impacts their operations and profit was also underlined as vital by one ecosystem actor.

Organization culture and individual values are covered by Bakos et al. (2020) in the literature review, and sustainability is named as part of the organisational culture in three of the SMEs, while five ecosystem actors bring up culture, strategies, maturity, public relationships and will to work on the issue of nature and biodiversity as important drivers.

7.1.3 How can external actors contribute to the scale-up of SMEs’ nature-positive practices? (RQ3)

IPBES (2026) presents five main categories through which business activities are shaped, and one can work to create an enabling environment. These are 1) capacities and knowledge policy, 2) economic and financial systems, 3) legal and regulatory frameworks, 4) technology and data, and 5) social values, norms and culture. Findings are evenly distributed across all but the latter (5), and most find support in the closely linked literature for drivers and barriers (section 7.1.3).

7.1.3.1 Capacity and knowledge

Four SMEs and nearly all ecosystem actors named knowledge and guidance as important enablers for action, e.g. via arenas for knowledge sharing, communicating “the business case”, UNGC providing guidance on measuring and addressing biodiversity and authorities developing guidance that is location-specific for Norway. Beyond falling under the wider umbrella of capacity and knowledge as an enabler, a finding reiterated by multiple ecosystem actors, is the importance of being able to understand the relevance, “the business case” and/or the risks. When something is seen as a risk, it will be addressed. This can be seen for SMEs and firms in the risk prone sectors where the business model depends on nature one of the ecosystem actors argues, although these actors don’t refer to this as “nature-related risks”. It

rhymes well with reviewed literature, where Wagner (2023) and Herbert et al., (2023) find that firms more concerned with risks pursue more activities directly targeted at biodiversity protection, and that framing nature and biodiversity in terms of “risk management”, will help in articulating the importance of the topic.

The fact that SMEs prioritise climate and circular economy above the more specific nature-related actions indicates that the risk perception with regards to nature isn't yet where it needs to be to spark the necessary level of action. This could be tied to the fact that some SMEs feel like they have little control over value chain impacts, according to one ecosystem actor who experiences that SMEs take actions when they feel like they can control an outcome. This underlines the potential value of organisations e.g. industry associations mapping and conveying typical nature-related risks for sectors or areas and how the firm's actions actually tie to them, making it easier to understand and address.

Generally, findings show that addressing the call for knowledge and guidance is an important lever. It was found that the authorities are currently working on guidance for how Norwegian firms can understand and address nature-related risks, and that there are other guidelines readily available. The SMEs and ecosystem actors' suggestions for further guidance to develop were presented in a more elaborate manner in section 6.3.1 and could be interesting to consult for actors seeking to help build capacity on working with nature and biodiversity.

7.1.3.2 Economics and finance

Looking to enablers from economics and finance, support schemes are mentioned by two SMEs and two ecosystem actors as important enablers to invest in “green” solutions, although three of these argue for redesigning the schemes to enable more activity. One SME and four ecosystem actors bring up the value of public procurement, with some arguing for the potential of more specific nature-related criteria in the assessments. The fact that SMEs are more driven by what their customers or financiers want, rather than regulations (7.1.2.1), underlines how leveraging the public sector's role as a customer can be very efficient. Two SMEs and four ecosystem actors bring up how the finance sector enables or can enable action through placing nature-related requirements on their customers and pricing according to nature-related risks. This rhymes well with the earlier mentioned literature (section 7.1.2) and provides some insights to how private and public actors can better enable nature-positive actions. Nonetheless, one could discuss whether more stringent requirements for public procurement, credit or insurance will push SMEs out of the competition in an already tough market - or if this transitional risk is needed to push more SMEs to prioritise nature.

7.1.3.3 Policy and legal

Increased political ambitions and targets are mentioned by two SMEs, whereas one argues for the importance of legislation taking the Norwegian context into account and the other suggests that the authorities contribute to increasing SMEs' restoration efforts. Two ecosystem actors additionally call for more ambitious targets, e.g. a national target for LDN.

General regulations are the enabler upon which the SMEs and most ecosystem actors completely disagree. Three SMEs are sceptical of it, while all other ecosystem actors argue that more regulation, and a “clearer” regulatory framework, would be beneficial to push SMEs to prioritise nature. More stringent regulation in the form of expanding the Transparency Act also separated the interviewees in two groups, with the SMEs on one side, four ecosystem actors on the other, and one in the middle. Most SMEs are sceptical of expanding the Transparency Act, arguing that they already report enough. Some question the value of reporting, while others find that stricter regulations is a less important enabler. Four ecosystem actors however argue that more reporting is important to make SMEs address the topic, also due to its educational aspect.

These findings are particularly interesting. For one, they diverge with what the survey on Norwegian LSEs found, where a stricter, more comprehensive regulatory framework was requested (PwC & Sabima, 2023). They don’t necessarily debunk the earlier finding of regulations being an important driver; interviewees opposing further regulatory requirements also state directly or indirectly that regulations steer what they can or cannot do. But, they showcase that SMEs have a different idea of what would enable action, than most ecosystem actors do. This shows the importance of taking SMEs’ resources and perspectives into account in considerations of expanding regulations, e.g. the Transparency Act.

Further, the discrepancies in what SMEs and ecosystem actors see as the most important enabler brings up the discussion of what would be the most efficient way to reach SMEs. The fact that SMEs are more driven by what their customers or financiers want, rather than regulations, could imply that it would be more efficient if stricter requirements were placed on the larger firms, and reached SMEs through customer demands. – Which was already happening to an extent before the omnibus on CSRD took away the right of downstream in-scope firms to ask for information not covered by the VSME. One question could therefore be if it’s worth looking into reversing this particular effect of the Omnibus via national legislation, in relation to the revision of the Accounting Act mentioned by E9 (section 6.3.3.3).

Another point presented by some interviewees was that certain regulations are shaped in a way that hinders practices that would conserve nature, e.g. how much an insurer can sanction customers with high levels of nature-related risks. These findings imply that it could be beneficial to revise some of the legal frameworks to better benefit nature and biodiversity.

7.1.3.4 Technology and data, Norms and values

One SME and four ecosystem actors talk of how available data and tools such as ecosystem accounts would ease the process of addressing nature-related risks while ensuring more comparable, standardised grounds for decision-making. The literature review identified initiatives towards this end, e.g. the development of national, regional, municipal, and project-specific ecosystem accounting systems (Randen & Grimsrud, 2025), and a map of “grey areas” (Miljødirektoratet, 2026), while one ecosystem actor named more databases and tools that can already be applied. As mentioned earlier in this chapter and in the literature, though, data in itself doesn’t enable action. It needs to be user friendly and account for limited resources. One suggestion from the findings towards this end, is to gather these in a centralised database, which takes away some of the time costs. With regards to ensuring the infrastructure that allows for action, two SMEs additionally bring up availability of green technology and infrastructure.

Interviewees differ in perception with regards to the usefulness of tools in the form of standards and certifications. One SME and one ecosystem actor find the BREEAM framework or ISO standards useful for addressing nature and biodiversity, while another SME argues that certifications do not contribute to anything but time spent answering questions. The latter perception differs from the reviewed literature, which sees certifications as enablers for action. It could however be explained by the RBV, where having the resources, time and capacity to use tools in a good way is important. This highlights the importance of tools being shaped in a way that enables SMEs to use them, which is identified in the literature as a current barrier. Similarly, another ecosystem actor argues that nature isn’t sufficiently covered by the Eco Lighthouse certification, but that it’s difficult to include without overcomplicating it for SMEs. Still, as the interviewees and literature note that public procurement and other customer demand for the Eco Lighthouse certification or ISO standards is a common driver, implementing more nature-specific criteria in these may be an efficient enabler.

Finally, work towards values and norms are perceived as enablers by three ecosystem actors and one SME. There are grounds for these results too, in the literature. This points to how work on norms, both within firms, industries and the wider society, might not be the largest enabler, but also shouldn't be underestimated. That following up on Transparency Act disclosures with action has become an industry standard even if firms would be able to get away with only reporting (6.2.2) point to the potential effect of e.g. industry associations pushing for action related to nature. With regards to the request for more ambitious politics, and one SMEs experience of being influenced by their municipality's ambition level, this shows that the trend of municipalities working with the topic and setting municipalities goals for LDN (Nyhus, 2023), may be a rather efficient means while waiting for a national target on LDN.

7.2 Reflecting on the results and limitations of the study

7.2.1 Methodological, theoretical and analytical choices

This thesis relied on a qualitative research design, and using semi-structured interviews as the data collection method. Interviews with both SMEs and ecosystem actors allowed for capturing a rich picture of the situation. There are however several limitations to this research design. For one, interviews rely on interviewees conveying a correct picture and are prone to unprecise or biased information. While the biased information doesn't need to be not problematic in itself, since the thesis sought to capture perspectives (who per definition are biased), the thesis has not addressed the preciseness of interviewees' accounts. One side of this is whether interviewees interpreted the questions similarly; the discrepancies in how ecosystem actors and SMEs answer in RQ1 could be due to differing understandings of what "working with nature" implies, and e.g. whether choosing more nature-positive suppliers means that the firm addresses the topic.

On another side, there is the factual preciseness. This could have been addressed through applying additional data collection methods, such as a case study, surveys where interviewees aren't directly in contact with the researcher and might feel freer to talk, discussion groups where interviewees can correct each other and build on collective knowledge, or a content analysis of diverse documents. A case study approach including a content analysis was originally considered but scrapped as the availability of reports on the topic are limited, and so are elaborate and comparable sustainability reports for SMEs. Analysing e.g. sustainability reports would also likely provide information more outdated than the information from interviewees. If a similar study should be done in the future, it could be beneficial to combine a survey with interviews. A survey was also briefly considered but scrapped due to concerns of enough responses.

Another limitation of the thesis is the amount of data collected and choice of scope. More interviews with both SMEs and ecosystem actors would be beneficial. A bit more than 20% of contacted potential interviewees agreed to participate, meaning that widening the scope to not only include SMEs that are members of UNGC, would likely increase the number of interviewees. This could also have limited the probability of not receiving enough survey responses, had that method been applied. One of the reasons for interviewing UNGC members was to ensure a certain maturity in terms of sustainability, but this could also have been achieved through screening potential non-UNGC SMEs. As mentioned in chapter 1 (1.3.4), this thesis could also benefit from focusing on a specific sector and geography. Nature and biodiversity is very sector and context-specific, a factor that was reiterated throughout the thesis. A narrower focus, e.g. on a sector, would likely allow for a more specific conclusion, and maybe also provide grounds for a sector-specific guidance that multiple interviewees request. The wide scope does however provide a general mapping and entry points for further research across sectors.

Looking at the theoretical choices, it was at times difficult to place literature and findings within either RBV, INT or RDT. These were used to look for and group factors, and for coding RQ2

in a manner that ended up being mostly deductive. For one, it’s not impossible that some factors have been overlooked because they didn’t fit into the theoretical bias. Secondly, many factors are overlapping and could very well have been interpreted differently by others. This has implications for the results and should be mentioned as a limitation. Other theories could have been interesting to apply as the theoretical framework, e.g. the MLP or stakeholder theory.

With regards to the analytical framework of RQ1 and RQ3, one could argue for similar challenges as for RQ2. Many actions and enablers could belong in multiple categories, a challenge that reoccurred multiple times during the data analysis. This limitation is one that can’t be completely avoided in qualitative research, but that could have been limited by asking peers to test the codebook and see if their coding aligned with the researcher’s. Nevertheless, this was not done, and results should therefore be interpreted with this in mind.

7.2.2 Legitimacy and Contribution

Throughout the interviews, the research questions appeared to be legitimate, although difficult to answer. If they would be more context-specific, e.g. asking how the aquaculture sector is addressing nature-related risks and opportunities, they would likely be easier to answer and provide more consistent results. There was some overlap between answers and analysis of RQ2 and RQ3, indicating that they could have been combined. That would however make the question rather large, a consideration that resulted in them staying separate. During the research, RQs were fully answered within the context of the 13 interviewees. This thesis doesn’t seek to find all the answers, but rather map the main factors and ideas, which arguably has been achieved. The answers contribute to the understanding of the context within which Norwegian SMEs are operating, how they understand and address the topic, and to mapping the drivers, barriers and enablers to accelerating their work on nature and biodiversity. Answers could be used to guide the design of capacity-building efforts, policies, tools and framework, although they should be interpreted taking the abovementioned limitations into account. Their largest contribution must be to serve as an entry point for further research and discussions on the topic.

7.2.3 Generalisability

As stated in chapter 1, the sample of interviewed SMEs is likely above average in terms of sustainability. Consequently, their actions taken and general perspectives might not be very generalisable. Ecosystem actors however reflect a wider range of perspectives. The interviewed consultants especially, mirror a wider range of SMEs. It cannot be claimed that the research is generalisable across borders, as Norway like other countries operates with country-specific challenges in terms of ecosystem conservation, industries, regulations and enforcement. But, as most of Norwegian legalisation on environmental considerations builds on EU legislation, some results can likely yield some generalisability. Especially seen in relation to other Nordic countries, with similar systems, and who Norway also cooperates closely with, some messages can likely be transferrable. Finally, also as mentioned in chapter 1, the temporal generalisability will likely be outdated quite quickly as this is a field in rapid development.

8. Conclusion

SMEs usually fall outside of the scope and spotlight when it comes to nature and biodiversity, but make up a substantial size of the Norwegian and EU economy and its environmental impact. This thesis investigated what actions Norwegian SMEs are taking to address the topic, perceived drivers and barriers for action, and enablers for scaling up their nature-positive practices.

8.1 Conclusions from the research

How do Norwegian SMEs address nature-related dependencies, impacts, risks and opportunities, across different decision-making levels?

RQ1 showed that all interviewed SMEs work with climate, both in value chains and own operations, with the majority placing the topic among their key priorities. All interviewed SMEs also mentioned actions related to land use change, which is the major driver of biodiversity loss. Two had put in place direct actions in their value chain via supplier selection, four addressed land use change indirectly in the form of circular practices, and two mentioned direct actions in their own operations. The latter had worked actively with nature and biodiversity in relation to routines, construction and expansion of their factory, which stands out as the most direct action related to land use change. These findings go against reviewed literature on the topic and ecosystem actors' perceptions. In their experience, most SMEs do nothing, some to more, and actions taken vary from sector to sector. All other drivers of biodiversity loss were mentioned by the SMEs. All SMEs but one take actions in their own operations. All SMEs had taken actions in their value chains, which collides with the reviewed literature and how other ecosystem actors perceive the situation. Still, it should be noted that the SMEs working with value chains do so to different extents, and none had or were planning to engage in e.g. restoration activities. Fewer SMEs have worked on the investment and strategy-levels.

What do SMEs and other ecosystem actors perceive as drivers and barriers for action?

A wide range of internal, external and inter-firm drivers and barriers for actions were identified via RQ2. The most frequently mentioned external and inter-firm factors were regulations and enforcement (11 mentions as driver, 3 mentions as barrier), customer and market demand (9 mentions as driver, 2 mentions as barrier), finance and investors (5 mentions as driver) and gov. support and incentives (2 mentions as driver, 3 as barriers (design of)). With regards to internal factors, the most frequent were access to knowledge/expertise on topic (6 mentions as barrier), individual training, experience, skills and values (6 mentions as barrier) and organisational culture and strategy (6 mentions as driver). These findings are mostly in line with reviewed literature on SMEs' implementation of sustainability practices and businesses' work with biodiversity. Interestingly, and importantly, SMEs and ecosystem actors differ somewhat in their views on drivers and barriers. For instance, SMEs saw customer and market demand as the major driver, while ecosystem actors perceived that it was regulations.

How can external actors enable a scale-up of SMEs' nature-positive practices?

Also for RQ3, SMEs and ecosystem actors differ somewhat in their answer. Mentions of enablers with respect to policy and legal are dominated by ecosystem actors, while SMEs are more represented in other categories. One important finding here, is that most ecosystem actors would welcome more stringent regulation, e.g. expanding the Transparency act. This suggestion is rejected by all SMEs, who feel like they are already over-regulated and have limited capacity to meet all requirements. Building capacity and knowledge, was the enabler most mentioned overall, whereas seeing the business case and risks related to nature was reiterated by many interviewees as an important. Further, stronger cooperation, context/geography-specific guidance and education from UNGC, the authorities and other organisations was requested. Other requests include guidance on how to best monitor and address nature and biodiversity in own operations and value chains in feasible manners, arenas for knowledge-sharing. Most actors

also brought up finance and economics as important enablers, for instance through financial actors posing demands and pricing according to nature-related risks. Data and technology were also brought forward by many, and beyond developing more and better tools, it was underlined that they should be easy to use. Finally, norms and values were mentioned by a few interviewees but shouldn’t be underestimated; one SME was influenced by their municipality’s ambitions. To conclude: 1) while more stringent regulations might push for more action, opposing views should be taken into account, 2) capacity and knowledge are the most sought-after enablers and 3) public and private finance can be important enablers going forward.

8.2 Implications for policy and practice

The findings of this study can have a number of practical implications for actors seeking to support SMEs’ scale-up of nature-positive practices. Starting with UNGC, NGOs, industry associations, other organisations and the authorities, findings reveal that SMEs need access to more context-specific knowledge and guidance, e.g. on how to address the topic in a feasible and efficient way across value chains and operations, and arenas for cooperation. Authorities and policy makers should further take into account the differences in viewpoints among SMEs and other ecosystem actors regarding stricter regulations and the potential expansion of the transparency act. Authorities should also aim to develop tools that are easy to use for SMEs with constrained capacity, e.g. through gathering data on a centralised platform. Public and private finance will be an important enabler going forward: findings show that public procurement posing demands work well, especially for sectors dependent on this customer. If the requirement for weighting environmental considerations 30% would specifically include nature-related requirements, that might possibly be an important enabler for action. Signals from the private finance sector, via e.g. investing in companies with lower nature-related risks, using investor power to influence firms in a “greener” direction”, pricing insurance with more nature-related risks higher and educating customers on the topic. With regards to industry associations, findings related to the Transparency act also revealed that promoting industry-best practice can be powerful. For certification schemes, it would be relevant to look into (more) nature-related requirements without it becoming too complicated, while showcasing a clear link e.g. between actions and value chain impacts. For SMEs interested in addressing nature, this thesis provides an overview of the topic, available tools and guidance, and relevant discussions. While acknowledging that resources to address nature and biodiversity may be sparse, the thesis also provides recommendations for taking action: identifying the most material risks (who are likely upstream), incorporating nature in existing systems (e.g. EMS), and starting small.

8.3 Recommendations for future research

Future research would benefit from going sector specific, enabling more concrete findings and recommendations. One could for instance investigate specific challenges, what best-practice is or should be, and whether and how SMEs are impacted by LSEs practices, and how best-practice SMEs navigate constraints. Taking a geography-specific approach, e.g. mapping how to translate recommendations to the Norwegian context or specific regions, could be valuable. It could also be interesting to investigate whether cooperations on data and risk mapping based on geographic proximity exist or could be worth trying. Another idea, considered in the scoping of this thesis, is to conduct a comparative analysis between e.g. Norway and Sweden, to map the and learn from differences e.g. in regulations or capacity building. Finally, this thesis emphasises that while impacts in Norway might be limited, nature-related risks in the supply chain are worth addressing, also for downstream sectors where these impacts aren’t necessarily as visible. Another study could map these impacts, e.g. for the Norwegian manufacturing sector and propose pathways for working with nature in value chains, to make sure that also “invisible” risks are addressed more going forward.

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Appendix

Appendix 1: Information sheet and consent form

INFORMATION SHEET

This information sheet and consent form is sent out to ensure that participants have received all necessary information about the thesis project with the tentative title *“Mange bekker små”: How do Norwegian SMEs address nature and biodiversity, and how can these efforts be scaled up?”*, data processing and can participate in the study voluntarily. If you have any questions about the research project, please contact me via contact information that has been provided per mail.

Research aim and audience

More SMEs are implementing sustainable practices, but action is lagging behind on nature and biodiversity. International nature- and biodiversity targets will not be met without SMEs, and this thesis therefore aims to support the speeding and scaling up of these implementation processes. It aims to do so through investigating how a sample of Norwegian SMEs understand and address nature impacts, dependencies and opportunities. It further seeks to map the perceived drivers and barriers for action, and perspectives on what changes are needed. These learnings can help identify areas of intervention, such as specific regulations, support mechanisms, government incentives or market dynamics. The research project is conducted in cooperation with UN Global Compact Norway (UNGCN). An additional aim is therefore to produce insights that UNGCN can use to better support their members’ endeavours to address the topic. In addition to UNGCN and its members, other audiences may be industry organisations, environmental NGOs, policy makers and academia.

Purpose of the interview

The purpose of the interview is to gather your insights and perspectives on the following:

- How your firm/Norwegian SMEs are addressing nature-related impacts, dependencies and opportunities.
- Drivers and barriers in this work.
- Support, resources and changes needed to scale up efforts.

You are free to respond to the questions in as much detail as you like, to not respond at all, or stop the interview at any time if you do not wish to continue. The interview will last 30-40 minutes. If you are comfortable with it, I would like to record the interview. This will allow me to transcribe information more accurately and remain more present in the conversation. If you do not wish to be recorded, I will be happy to take notes instead. The recorder can be turned off at any time during the interview. I would also like to request permission to use AI tools for the transcription and other relevant processing of the data. The exact tools have not been decided on yet, but only tools that ensure GDPR compliance and encryption will be used.

Data management and confidentiality

The collected empirical data will be pseudo-anonymized when transcribed, meaning that personal data and the name of your firm/organisation will be replaced by a code. The type of organisation and sector will be disclosed. Original recordings and/or notes from the interview will be stored on a password-protected data storage device and erased when the thesis has been published. If requested by the participant, data can be deleted at any time.

CONSENT FORM

This form is to ensure that you have been given information about the thesis project, and to give you an opportunity to confirm that you are willing to take part in this research. For all activities below, please indicate which applies to you (*checked box indicates consent*):

	I have been familiarised with the master thesis project, I have had the possibility to ask questions, and I have received satisfactory answers to my questions before being interviewed
	As a research participant, I am aware of my right to withdraw participation at any time
	I give my consent that the interview can be recorded in writing, translated and analysed
	I give my consent that the interview can be audio- or video-recorded, transcribed using a third party speech-to-text transcription application, translated (if necessary) and analysed
	I give my consent to be identified by my organization
	I understand that the results of the research will be presented so that no information can be traced to me personally / I have been informed that pseudonymity of participants will be ensured
	I give my consent that a record of my interview can be safely stored for future reference
	I have been informed who will benefit from the participation
	I have been informed how data will be destroyed at the end of the research
	I have been informed of the secondary use of data

Note: Your participation is voluntary. As an interviewee, you do not have to answer all the questions that are asked; you reserve the right to refuse or cease participation in the interview process without stating your reason and may request to keep certain materials confidential. In addition, you have the right to review any summary or synthesis of the interview at any time up until the data is actually published. There will be no monetary payment for participating in the research, but you will have contributed to a research project that generally aims to investigate how to support SMEs' efforts to address nature and biodiversity.

Please, sign below to confirm your consent – digital signatures are possible:

	Participant(s)	Researcher(s)
Name(s)		
Signature(s)		
Date(s)		

Appendix 2: Interview guide, SMEs

*The most important questions are marked with *. As interviews were semi-structured, most interviews included follow-up questions related to what the interviewees said (not included here). Where regulations were not brought up by interviewees themselves, the interviewer added questions to prompt a discussion (not included here).*

RQ1:

1. *Could you briefly describe how you address your nature-related impacts, dependencies risks and opportunities today? Examples?
2. IPBES lists 4 levels of decision-making in businesses, through which businesses can take action: corporate (overall, strategy), own operations, value chains and portfolio (investments). Which level(s) would you say you focus more on, and why?

RQ 2

3. *What are, or would be, the main drivers for your company addressing nature-related impacts, dependencies, risks and opportunities today? Examples? Would you say they are mainly internal or external?
4. *What would you say are the main barriers today, for scaling up your work related to nature-related impacts, dependencies, risks and opportunities? Examples? Would you say they are mainly internal or external?
5. *Do you experience that there’s a general understanding and interest for these nature-related aspects (or general environmental sustainability) internally and across your organisation? Where is it more or less, e.g. among the board, top management, CFO or other employees?

RQ3

6. *Following up the previous question - What do you need to scale up your work on nature?

... if you were to hand in wish-list to Norwegian authorities

...and UN Global Compact
7. Have you used any types of resources such as the TNFD, guidelines (e.g. from consultants / NGOs), ISO-standards or learning materials? Which ones, are these useful, and what other resources would you like to see?
8. If you feel comfortable sharing: What’s the next goal for your work on nature?
9. Do you see any challenges arising on the way to get there?
10. Is there anything you feel I should ask about, that I haven’t covered?

Appendix 3: Coding structure

Research questions	Codes	...including
RQ 1		
<i>How do norwegian SMEs address their nature-related dependencies, impacts, risks and opportunities...</i>	Land use change	<u>Direct</u> : Ecosystem conservation (avoidance), minimising impacts, restoration, offsets, net gain. <u>Indirect</u> : circular economy / material efficiency (e.g. reduce, reuse, recycle)
	Overexploitation	Water use, harvesting biological resources (e.g. fisheries, hunting, wild plants)
	Pollution	Air, water, noise and air pollution.
	Invasive species	
	Climate change	Energy efficiency, decarbonisation, transport
<i>...across different decision-making levels?</i>	Own operations	
	Value chain	
	Investments	
	Strategic/corporate	
RQ 2		
<i>What are the perceived main drivers and barriers for action?</i>	Coercive pressures	Regulations and enforcement (e.g. environmental impact assessments, reporting, technical requirements), incentives e.g. subsidies, customer & market demand, finance and investor pressures, other stakeholder pressures.
	Mimetic pressures	Following competitor behavior (e.g. adopting frameworks, guidances and certification schemes) due to uncertainty
	Normative pressures	Sector-specific norms and attitudes, societal norms and values
	Resource dependency	Transparency of, and influence/power in value chain, availability of "green" inputs, availability of suppliers & buyers, distance from upstream and downstream actors.
	Physical capital	Monetary resources, access to knowledge/expertise on the topic (if not internal), time pressures, data (available, accessible, context specific), methods for measurements and monitoring (available, applicable).
	Human capital	Top management & leadership, individual trainings, experiences, skills and values (e.g. expertise on nature and biodiversity or the "business case for nature").
	Organisational capital	Internal structure (e.g. routines, control and coordination systems), organisational culture and strategy, the firm's relationship to external firms and actors (incl. reputation).
RQ 3		
<i>How can external actors support the scale-up of SMEs' nature-positive practices? Types of enablers:</i>	Policy and legal	Laws and regulations,
	Economics and finance	Investments, subsidies, loans, insurance
	Values and norms	
	Technology and data	Maps,
	Capacity and knowledge	General and sector-specific guidelines, forums for knowledge exchange, ,

Appendix 4: Cooperation agreement UNGCN x LU

Avtale om samarbeid rundt masteroppgave

Denne avtalen bekrefter at Thomas Campbell v/ UN Global Compact Norge (heretter: UNGCN) og Sofie Bergset Janols (heretter: studenten) v/ IIEEE på Lunds Universitet skal samarbeide rundt masterprosjektet med arbeidstittel: *"Många bäckar små...": How and why do Norwegian SMEs address nature and biodiversity, and what are the perceived barriers?*. Prosjektet skal kartlegge hvordan norske SMBer med 100-250 ansatte (EU-definisjonen på "SMEs") jobber opp mot natur, og hva som oppfattes som drivere og barrierer for å skalere opp arbeidet. Prosjektet kan utvides til en komparativ analyse som setter Norge og Sverige opp mot hverandre på dette temaet.

Forventninger til studenten

- Studenten skal bruke funnene fra intervju og eventuelle tilganger/ressurser til å skrive masteroppgave om temaet definert ovenfor.
- Studenten skal utforme og følge etiske retningslinjer for prosjektet, samt rutiner for datainnsamling og behandling, for å sikre at deltakelse i prosjektet ikke blir til ulempe for medlemsselskapene.
- Interne notater og ressurser som studenter får tilgang til skal ikke deles videre.
- Studenten skal dele den ferdige masteroppgaven med UNGCN etter innlevering, og presentere funn muntlig om ønskelig.

Forventninger til UN Global Compact Norge

- UNGCN skal bistå med å kartlegge aktuelle intervjukandidater og medlemsselskaper, og deretter sette masterforfatteren i kontakt med disse.
- UNGCN skal innenfor rimelighetens grenser dele notater og ressurser som gir et bedre bilde på graden av modenhet i arbeid opp mot natur blant intervjukandidatene.
- UNGCN skal ikke legge føringer for utformingen og utføring av masterprosjektet, men være delaktig gjennom diskusjon av problemstillinger og faglig sparring dersom ønskelig.

Sofie Bergset Janols 5/2-26

Signatur og dato, student

Thomas Campbell 05.02.26

Signatur og dato, kontaktperson v/ UNGCN

Appendix 5: Declaration of Use of Generative AI (GAI) Tools

Project/Assignment title: ““Mange bekker små”: Scaling up Norwegian SMEs’ Actions Towards Nature and Biodiversity”

Did you use GAI tools for this work? ☒ Yes ☐ No

a) **Tools used:**

ChatGPT (free online version), ScopusAI, ConsensusAI

b) **What you used them for (check all that apply)**

☒ Brainstorming / idea generation

☐ Planning / structuring

☐ Language editing (grammar/clarity)

☐ Translation (non-sensitive content)

☐ Outline drafting

☐ Other (specify): Identifying articles and relevant sources of information, discussing theories or legal texts.

c) **How you used the tools (be specific). Describe prompts, steps taken, and how you revised the outputs:**

The AI tools were mainly used to identify key sources or different definitions to concepts. Beyond asking SCOPUS AI and ConsensusAI for “*articles at the intersection between SMEs and biodiversity or nature, preferably in Norway*” and similar prompts, other prompts used for ChatGPT were: “*can you explain the difference of organisational and human capital, and refer me to the key academic resources of these definitions?*” and “*what is the link between the Norwegian Nature Diversity Act and the Plan and Building act? Add references to relevant paragraphs*”

d) Your own contributions - What parts are entirely your original work?

I would argue that all parts are my original words. AI has not been used to generate any ideas, texts, translation or outlines, but to find sources of information in a faster manner than googling or traditional data base searches. The parts regarding Norwegian legal texts were verified with a friend knowledgeable in the field.

e) Verification and editing - How did you verify accuracy and edit AI output?

The parts that AI were used for were verified by reading the original sources myself and using other sources knowledgeable in the field.

Student signature: Sofie Bergset Janols Date: 15.05.2026