Creating an ESG Services Portfolio

Hani Mebar

Haaga-Helia University of Applied Sciences
Haaga-Helia Master's Degree
Degree Programme in Leading Business Transformation,
Strategic Management
Thesis
2024

Abstract

Author(s)
Hani, Mebar

Degree
Master of Business Administration

Report/thesis title
Creating an ESG Services Portfolio

Number of pages and appendix pages
69 + 10

This thesis examines the integration of Environmental, Social, and Governance (ESG) practices within the manufacturing sector, addressing the primary barriers, challenges, and solutions encountered while embedding ESG criteria into corporate operations. Given the increasing global focus on sustainable development and corporate responsibility, there is a growing need for service portfolios designed to effectively align industries with ESG objectives. This study aims to create an ESG Services Portfolio tailored to support manufacturing firms in achieving both sustainability and potential enhanced financial performance.

The theoretical framework was developed based on established ESG standards, including the United Nations Sustainable Development Goals (SDGs), the Global Reporting Initiative (GRI), and the Sustainability Accounting Standards Board (SASB). Methodologically, the research employed a mixed-methods approach comprising qualitative semi-structured interviews and surveys with industry stakeholders to gain comprehensive insights into current ESG practices. Additionally, secondary data analysis and thematic coding were used to interpret findings across environmental, social, and governance dimensions.

The results highlighted both the potential and complexity of ESG integration, emphasizing the role of strategic portfolio management in fostering sustainable and profitable business models. This study offers actionable guidelines and benchmarks tailored for the manufacturing sector, aiming to bridge the gap between ESG aspirations and practical implementation. The proposed ESG Services Portfolio framework provides a pathway toward operational excellence and sustainable growth for the manufacturing industry.

Keywords
ESG, Service Portfolio, Sustainable Development, Manufacturing Industry, Strategic Management, ESG Integration, Operational Excellence

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1 Introduction

Environmental sustainability and corporate responsibility are increasingly intersecting with business success (Hull, 2022, 4-5). The imperative for integrating Environmental, Social, and Governance (ESG) criteria into corporate operations has never been more pronounced. This evolving landscape is not only reshaping the way businesses operate but also redefining the core values and strategies that underpin long-term success. Amidst this shift, the demand for ESG expertise outpaces supply (Dodds, 2022), a trend that underscores the critical need for specialized knowledge and strategic implementation in this domain. As businesses grapple with the complexities of embedding ESG principles into their operations, the challenge extends beyond mere compliance to encompass a broader commitment to sustainable development and corporate responsibility (Young, 2024)

This thesis posits that the development of a Services Portfolio specifically tailored to assist the manufacturing industry in achieving its ESG targets represents a pivotal advancement in bridging the gap between aspiration and action. By focusing on the manufacturing sector—a critical pillar of the global economy—this research aims to highlight the pathways through which companies can not only comply with ESG standards but also leverage these practices to enhance their competitive advantage, operational efficiency, and corporate image. Since there is growing evidence of the tangible benefits associated with effective ESG integration (Arponen, Juvonen & Vanne, 2018, 24-26), including improved financial performance, enhanced brand loyalty, and increased attractiveness to investors.

However, the journey towards effective ESG integration is fraught with challenges. The risk of greenwashing (Aurand et al., 2018, 6), the scarcity of critical resources necessary for sustainable operations(Michaux, 2021, 8), and the tension between short-term financial pressures and long-term sustainability goals present formidable obstacles. Moreover, the relative novelty of comprehensive ESG standards and the lack of robust data on long-term impacts add layers of complexity to this endeavor. Despite these challenges, the potential for ESG initiatives to drive positive change is undeniable.

Through an exploration of current practices, challenges, and opportunities within the manufacturing industry, this thesis seeks to offer a granular understanding of the ESG landscape. By conducting interviews with persons who have a direct responsibility with sustainability actions, and surveying small to medium-sized enterprises in Finland, the research aims to capture a broad spectrum of insights and perspectives on ESG integration. The ultimate goal is to distill these findings into a pragmatic Services Portfolio that not only guides manufacturing firms towards effective ESG implementation but also serves as a benchmark for best practices in sustainable business operations.

The insights garnered from this thesis will attempt to contribute to catalyzing a shift towards more responsible and sustainable manufacturing practices. By navigating the intricacies of ESG integration and addressing the challenges that lie there, we will make the effort to contribute to a future where sustainable development and corporate success are inextricably linked.

This thesis follows a simplified Harvard citation style, applied through the Mendeley reference management tool. All sources are cited in-text using the author-date format, and a full reference list is provided at the end of the document. The Mendeley Cite tool has been used to ensure consistent formatting and ease of citation management

1.1 Objectives

This thesis aims to develop a practical strategy by enhancing sustainability and profitability for manufacturing companies through the implementation of sound environmental, social, and governance (ESG) practices. The centerpiece of this strategy is the creation of an ESG Services Portfolio. This portfolio is designed to guide these companies towards better environmental stewardship, and more effective corporate governance. The objective is to demonstrate that it's entirely possible for companies to be eco-friendly and economically successful simultaneously.

The expected outcomes of this thesis include a framework and a series of actionable guidelines tailored for the manufacturing sector. This framework will offer step-by-step guidance for companies seeking to integrate ESG principles into their operations. It aims to equip businesses with the necessary strategies and tools to initiate impactful environmental projects, and adhere to ethical business practices, thereby achieving sustainability while also enhancing their profitability.

In essence, the research tries to answer:

Q1: What are the main barriers and challenges manufacturing industries face in integrating Environmental, Social, and Governance (ESG) practices into their operations?

Q2: Can a Services Portfolio be designed to support them achieving their ESG targets effectively?

Q3: In what ways can the ESG Services Portfolio contribute to both sustainable development and improved financial performance?

1.2 Scope of Work

This thesis investigates how Environmental, Social, and Governance (ESG) practices can be effectively integrated into the manufacturing industry. The study focuses on creating a customized ESG Services Portfolio to support manufacturing companies in navigating the unique challenges that

arise in making their operations more sustainable. By examining the specific barriers that manufacturing companies face—such as balancing sustainability with profitability, handling limited resources, and avoiding misleading "greenwashing" practices—this research aims to identify practical ways to integrate ESG principles into the core of manufacturing operations.

The scope of this study is explicitly limited to the manufacturing industry, focusing primarily on medium to large enterprises that operate within or have ties to Finland. This delimitation ensures that the findings are relevant and directly applicable to manufacturers facing similar regulatory, economic, and operational conditions. The research does not cover small-scale manufacturers, purely digital product companies, or industries outside of manufacturing, as their ESG challenges and opportunities can differ significantly from those encountered by traditional manufacturers.

At the heart of this thesis is the development of a structured ESG Services Portfolio designed specifically for manufacturers. This portfolio includes tools, strategies, and guidelines that manufacturing companies can use to adopt ESG practices that align with their particular needs and operational constraints. The study further assesses how successfully applying ESG practices can help manufacturers enhance their sustainability efforts, improve operational efficiency, gain a competitive edge, and strengthen their financial performance.

To gather a well-rounded perspective, the research uses a combination of surveys, interviews, and analysis of existing data to collect insights from industry experts and stakeholders. These methods allow for a detailed look at current ESG practices in manufacturing and help to identify key areas where the proposed ESG Services Portfolio can make a meaningful impact.

While this study is tailored to the manufacturing sector and does not apply directly to other industries, the findings offer a practical model that manufacturers can use to bridge the gap between sustainable goals and actionable solutions that benefit both the business and the environment.

1.3 Key Concepts

This thesis involves several key concepts essential to understanding the integration of Environmental, Social, and Governance (ESG) practices within the manufacturing sector. These concepts provide a foundation for discussing how sustainable practices can be embedded into business operations and inform the development of the ESG Services Portfolio.

Environmental, Social, and Governance (ESG): ESG refers to a set of standards used to measure a company’s operations in terms of sustainability and social impact. Environmental factors address

how a company handles its ecological footprint, including waste management, carbon emissions, and resource use (Gartner, 2023; Ha, 2023). Social aspects focus on how a company manages relationships with employees, customers, and communities, while Governance covers how a company operates internally, including leadership, audits, and shareholder rights.

Service Portfolio: In the context of this thesis, a service portfolio is a comprehensive and organized collection of services that an organization provides to support ESG practices (Lucidchart, 2024). The ESG Services Portfolio is tailored specifically to the manufacturing sector, offering a range of strategies, tools, and solutions designed to help companies integrate sustainable practices into their operations.

Greenwashing: Greenwashing is a practice where companies present themselves as more environmentally friendly than they actually are. This concept is significant as it highlights the risks of misleading ESG efforts, which can undermine genuine sustainability goals and damage a company's reputation if not addressed transparently (Aurand et al., 2018, 12–13).

Sustainable Development Goals (SDGs): Established by the United Nations, the SDGs are a set of 17 global goals aimed at addressing social, environmental, and economic challenges (United Nations, 2023). The thesis references SDGs as a benchmark for companies striving to align their practices with broader sustainability objectives, helping to guide and evaluate the effectiveness of their ESG initiatives.

Global Reporting Initiative (GRI): The GRI is a widely recognized framework for reporting on ESG performance, setting standards for transparency and accountability in sustainable development (*GRI Standards Glossary*, 2023). The GRI framework helps companies communicate their impact on the environment, society, and governance clearly and consistently, which is integral to effective ESG integration (Global Reporting, 2023).

Sustainability Accounting Standards Board (SASB): The SASB provides guidelines for identifying, managing, and reporting on ESG-related risks and opportunities. Unlike the GRI, SASB focuses more directly on factors that may impact financial performance, helping companies understand which ESG issues are most material to their business (SASB, 2023).

These key concepts serve as foundational elements throughout the thesis, providing a common language and a set of standards for exploring ESG challenges and solutions within the manufacturing industry.

2 Foundation of the Theoretical Framework

This study builds its theoretical framework by combining several areas of expertise to better understand what makes Environmental, Social, and Governance (ESG) practices effective within businesses, particularly in the manufacturing sector. It will start by defining ESG through standards such as the United Nations Sustainable Development Goals (SDGs), the Global Reporting Initiative (GRI), and ISO 26000, which serve businesses worldwide that are aiming to achieve common environmental and social targets. The framework tries to ensure that the study is grounded in best practices that support sustainability and responsible corporate governance.

It also explores how these guidelines translate into practical application within the manufacturing sector. This is in order to identify both the strengths and challenges of current ESG measurement systems, and provide insights into how they can be adapted to align with individual company needs.

Building on this, the study examines business models employed by companies that adhere to and implement ESG practices, with a focus on value creation and competitive advantage. This includes a review of the core business strategies of companies that have adopted or are still adopting ESG integration, which will help inform the creation of a tailored ESG Services Portfolio. The portfolio will be designed to align with these business models, ensuring that the services provided support existing operational frameworks while facilitating ESG integration and bridging the gap between theory and practice.

It will also include an analysis of service portfolio models as a mechanism for delivering tailored ESG solutions. By drawing on both existing literature and established industry models, the study seeks to understand how external services can complement existing operations, helping companies meet their ESG targets and enhance their efficiency and maybe even market positioning.

The final component is a critical perspective on the theoretical basis of ESG, focusing on gaps that can be addressed through innovative service solutions. This aims to guide manufacturers in embedding ESG practices effectively into their operations.

2.1 Starting with the Basics: Business Models

The ever-evolving tool with which academics and business leaders use to advance corporate agendas, create value, improve EBITA, generate revenue and increase shareholder value, Business Models are the fundamental frameworks that outline how a company creates, delivers, and

captures value. They have evolved significantly over time through leaders with game-changing ideas, leading changes in market dynamics, guiding consumer preferences, and spearheading technological advancements(Osterwalder & Pigneur, 2010, 14–15).

Business models were often product-centric, focusing on mass production and standardization, as seen in Ford's assembly line approach (Pietrusza, 2023, 2). This model prioritized efficiency and scale, making products affordable and accessible to a larger market. However, as markets matured, people became increasingly worn out, and competition intensified, businesses began to shift towards more customer-centric models and the emergence of employee satisfaction, which started emphasizing customization and customer service. (Pietrusza, 2023, 3).

A simplified image of business models evolutions throughout the last 125 years can be seen in Figure 1 below.

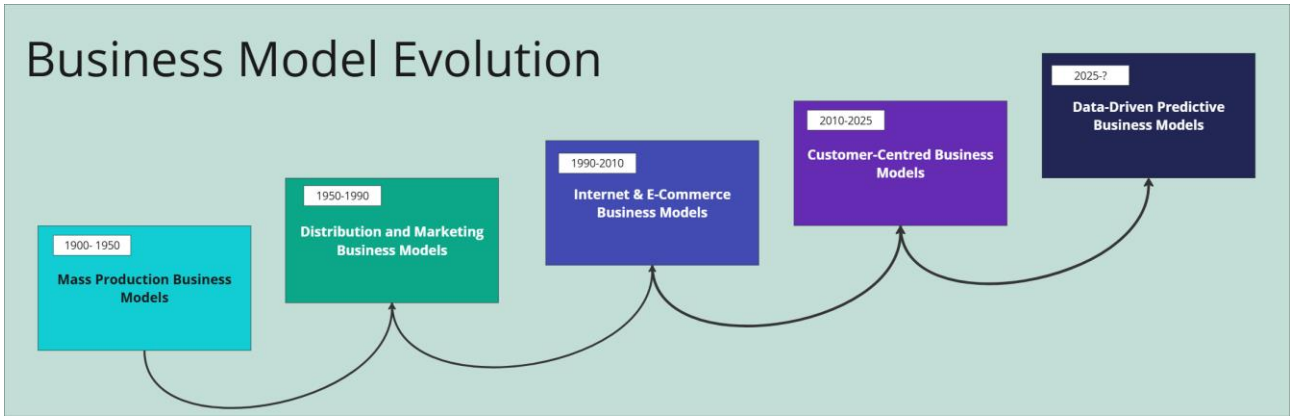


Figure 1: Business Model Evolution by Michal Dallos (Dallos, 2023)

By the late 20th century, the internet and digital technology marked a pivotal shift. E-commerce giants like Amazon revolutionized retail by combining vast selection, convenience, and competitive pricing. Companies like Netflix disrupted traditional media by offering subscription-based models (after first trying to rent DVDs from vending machines and DVD deliveries), providing unlimited access to a wide range of content. And most recently due to the acceleration of ESG and DSG principles concepts like the sharing economy and platform-based models have gained prominence. Companies like Uber and Airbnb don't own the assets (cars or homes) but provide a platform for service exchange, creating value through network effects. And as of writing this thesis, since late 2022, the rise of AI has led to models that leverage customer data for personalized services and predictive analytics. We cannot predict with accuracy where it all goes from there – even, ironically, if we utilize an AI predictive model - but we think it will likely be even more customer-centric, data-driven, responsible, and flexible, accommodating changing consumer needs and further technological advancements (if we do not blow ourselves up in the process).

2.2 Service Portfolio(s)

A service portfolio is commonly found in IT service providers and can be defined as a comprehensive and organized catalogue of all the services an organization offers (or plans to offer) or manages to its customers, both internal and external (Lucidchart, 2024). It typically includes three major parts: the service pipeline (services under development), the service catalogue (current service offerings), and retired services (services no longer offered). This thesis will consider similar practices but focus on business modelling but including a service portfolio of models, such as lean canvas (Osterwalder & Pigneur, 2010, 44–46) but one that focuses on a selection services. One goal, like in ITIL, would be to have a central repository for information about each service, including:

- Description: What the service entails
- Benefits: The intended value proposition for customers
- Business Outcomes: How the service aligns with the organization's goals
- Costs/Pricing: Associated financial information
- Lifecycle Status: Whether the service is active, under development, planned, or retired.

The study will focus on both tailoring to the customer's needs as well as utilizing a one-size-fits-all service for those who want something fast. This concept is similar to Toyota's approach to mass customization, where they initially aimed to provide a wide range of customizable options for each car model, allowing the customer to tailor features according to their preferences (Pine, Bart & Boynton, 1993, 109). However, Toyota faced challenges balancing the high level of customization with cost-efficiency, similar to offering ready-made, standard options for speed and affordability. Toyota's move to combine the flexibility of customization with the efficiency of mass production led them to scale back on the diversity of offerings to manage costs effectively (Pine, Bart & Boynton, 1993, 110–112)

In the context of service design, a tailored or bespoke service is meticulously crafted to meet the specific needs, preferences, and context of each customer, similar to Toyota's approach to mass customization. Toyota aimed to create customizable cars that addressed individual customer preferences, emphasizing flexibility and personal choice. This approach acknowledges the unique needs of each client, leading to higher satisfaction and an improved overall experience. Conversely, a one-size-fits-all service is akin to Toyota's eventual shift to a more streamlined set of product options—intended to serve a broader audience with reduced variety, offering efficiency but potentially compromising on addressing specific individual needs (Pine, Bart & Boynton, 1993, 109–110).

2.3 Creating and designing a Service Portfolio

Applying the way of thinking shared above allows for breaking down the drivers of the service portfolio model into the following categories:

Linking Customers with the Business: Service design is about crafting strategies that help a company achieve its goals while overcoming any hurdles (Reason, Flu & Løvlie, 2016, 20). It focuses on what customers need today and tomorrow, how the business will benefit, and what the organization must do to meet these needs. The goal is to balance solving customer problems with achieving business objectives and leveraging the organization's strengths.

Understanding Customers Better: By seeing things from the customers' perspective, businesses can pinpoint areas for improvement (Reason, Flu & Løvlie, 2016, 21). This involves recognizing customers' issues, understanding their feelings during interactions, and identifying moments where changes can make a big difference. The aim is to make customers happier, prevent service mishaps, and enhance relationships with them.

Benefits for the Business**:** Using service design, businesses can work smarter, keep customers coming back, and find new sales chances. This approach focuses on what customers really want, leading to smarter business moves and solutions that can be simple yet effective (Reason, Flu & Løvlie, 2016, 22).

Getting Everyone on the Same Page: It's important for all parts of a business to work together towards serving their customers well (Reason, Flu & Løvlie, 2016, 23). This might mean changing how things are done internally to ensure customers have a smooth experience. Encouraging everyone in the organization to focus on customers can lead to better decisions and a more agile business.

The basic ideas behind service design, as outlined by Reason, Flu, & Løvlie (2016), emphasize a range of approaches to enhance customer experiences. Thinking creatively involves using imagination and practical insights to solve problems in ways that resonate with customers. Resonating with customers translates into putting oneself in the customers' shoes to help guide better business decisions. Creative solutions are developed using visual tools and innovative methods to address business challenges, making it easier to deliver new and improved services. Learning from customers involves combining quantitative data with real-life insights to understand customer desires and behaviors, leading to services that truly connect with them. Visualizing ideas, such as through drawings or maps, simplifies complex issues and aligns everyone on improving services. Lastly, using a service blueprint helps visualize the service, align it with customer experiences, and make

strategic decisions to enhance the service, ensuring both customer satisfaction and business effectiveness (Reason, Flu & Løvlie, 2016, 12–13, 130)

In essence, designing a services portfolio with service design at its core would help in in-depth understanding of the customer, solving their problems in innovative ways, and ensuring the entire organization is aligned towards their strategies and goals. In theory this method would enhance the customer experience and drive business success.

2.4 Popular Models for Service Portfolio Creation

While previous section's steps outlined provide an approach to creating a service portfolio, several existing models can be used to help guide a process for this thesis, including:

ITIL Service Lifecycle: mentioned at the beginning of this section, though IT-focused, its principles of service strategy, design, transition, operation, and continuous improvement can be applied across industries (Lucidchart, 2024).

Service-Dominant Logic (S-D or SDL): SDL relative to Marketing, posits that the essence of marketing is not the exchange of goods but the application of competencies (skills and knowledge) for the benefit of another party. It emphasizes the importance of relationships, collaboration, and knowledge-sharing over mere transactions. Marketing, according to SDL, should move from a "market to" approach—where customers are merely targets for promotion—to a "market with" philosophy, where customers and partners are engaged as co-creators in the marketing process (Lusch & Vargo, 43–45)

Business Model Canvas: a strategic management tool for developing new or documenting existing business models. It is a visual chart with elements describing a firm's value proposition, infrastructure, customers, and finances, serving as a foundation for a company's strategy to bring products and services to the market and generate profits (Osterwalder & Pigneur, 2010, 14–16, 42–46)

Creating a service portfolio is a dynamic process that requires ongoing adjustment and refinement to align with changing market demands, technological advancements, and evolving ESG standards. The goal is to develop a portfolio that not only meets the current needs of the market but also anticipates future trends and challenges, ensuring long-term sustainability and success.

2.5 Service Portfolio Management

There is no universally established definition for "Service Portfolio Management," nor does it appear to have been formally defined by a single individual. However, the concept could follow the Information Technology Infrastructure Library (ITIL) framework discussed in IBM's page on the

definition of ITIL which states that it is a framework of best practices for managing and improving IT support with the objective being to get the most value out of the business (Susnjara & Smalley, 2024). Similarly, a service portfolio concept focusing on or being developed as part of a broader sustainability framework, could be adopted. This thesis is not focused on specific IT-related services but simply clarifies the origin of the term.

A review of scholarly articles revealed numerous references, theses, research papers, and case studies with sufficient mentions of Service Portfolios and their management to support creating a definition for the purpose of this thesis. This definition is primarily drawn from four key scholarly articles written by Zolnowski (2015, 37–38), Kohlborn et al. (2009, 5–6), Reason, Flu & Løvlie (2016, 88–92) and Kutsikos & Mentzas (2010, 5–6). These papers, and book, consider to various degrees various aspects of SPM, including service concepts, service-orientation, portfolio management history, and goals. They review different portfolio management models and methods, such as financial or economic models, scoring models, probabilistic financial models, behavioural approaches, mathematical optimization procedures, decision support systems, and mapping approaches.

A repeated theme from those studies could help define Service Portfolio Management (SPM) as a dynamic, ongoing process within an organization that involves regularly reviewing and adjusting a portfolio of services to stay aligned with strategic goals. This definition came from various written and highlighted notes from the afore mentioned ebooks, which were then fed to the AI language model in ChatGPT 3.5 which was prompted to concatenate the notes, and provide a summary that captures any repeating patterns, and then suggest a summary. The original summary was over 30 lines long but it was eventually whittled down to the above definition. This explanation was placed here as there would have been no other way to reference the definition which is a combination of various sources. Essentially however, the main purpose of SPM is to ensure that the organization’s services support its business objectives and are effectively managed.

For this thesis, an expanded approach called Environmental & Sustainable Service Portfolio Management (ES-SPM) is proposed. ES-SPM will be a comprehensive approach to managing an organization's services portfolio that not only aligns with business goals but also integrates principles of environmental sustainability, social responsibility, digital innovation, and strong governance. This approach aims to ensure that services contribute both to the company’s success and to broader environmental and social goals while embracing digital transformation and upholding high governance standards.

3 Environmental, Social and Governance Practices

3.1 Understanding ESG Practices: Defining ESG

To begin, the concept of Environmental, Social, and Governance (ESG) criteria can be explained by drawing parallels to a more established framework of sustainability objectives, namely the United Nations Sustainable Development Goals (UN SDGs). The United Nations Sustainable Development Goals (SDGs) are an agreed-upon attempt to call to action both developed and developing countries, to achieve peace and prosperity for all people and the planet, now and into the future (United Nations, 2023). These 17 goals interconnect strategies to eradicate poverty, enhance health and education, reduce inequality, drive economic growth, combat climate change, and protect our natural resources. Environmental, Social, and Governance (ESG) according to Gartner is defined as:

> A collection of corporate performance evaluation criteria that assess the robustness of a company's governance mechanisms and its ability to effectively manage its environmental and social impacts. Examples of ESG data include the quantification of a company's carbon emissions, water consumption or customer privacy breaches(Gartner, 2023).

Alignment of SDGs and ESGs is achieved through their shared focus on sustainability and ethical impact. Both frameworks are driven by a holistic understanding that long-term prosperity is fundamentally linked to social equity, environmental protection, and responsible governance. While SDGs are a set of 17 goals established by the United Nations to address global challenges such as poverty, inequality, climate change, and environmental degradation by 2030, ESG criteria are specific metrics used by businesses and investors to evaluate a company's ethical impact and sustainability practices. Both serve as compasses for organizations and governments aiming to achieve sustainable development. They emphasize the importance of balancing economic growth with social inclusion and environmental stewardship (Ha, 2023). Corporations often align their ESG initiatives with relevant SDGs to ensure that their business strategies contribute to broader global targets. The alignment also helps them communicate their sustainable practices and impact on society and the environment in a globally understood language. Consequently, the SDGs provide a strategic framework for companies to shape, guide, and report on their ESG efforts, enhancing their accountability and performance in contributing to global sustainability objectives.

3.2 Current ESG Standards

As a part of diving into the world of ESG, it is beneficial to understand the ever-evolving rules of the game—this means looking at the established guidelines that companies follow to be more responsible and sustainable. Think of these guidelines as the instruction manuals that help companies

figure out how to be good corporate citizens. There are several key sets of instructions available, some likely created by experts of their time, that many companies use.

For instance for this thesis, the Global Reporting Initiative (GRI) gives a list of what companies should share about their environmental and social actions. The GRI Standards provide a framework for organizations of all sizes and types to report their economic, environmental, and social impacts in a standardized and credible manner, enhancing transparency and accountability in sustainable development (*GRI Standards Glossary*, 2023). They are valuable to a broad range of stakeholders, including investors, policymakers, and civil society

Similarly, there is the Sustainability Accounting Standards Board (SASB), which helps businesses figure out which social or environmental issues they should be talking about in their financial reports. SASB Standards enable companies across 77 industries to provide investors with key sustainability information that could impact financial performance and investment decisions, highlighting risks, opportunities, and useful metrics for short to long-term considerations (SASB, 2023).

Alternatively, The Task Force on Climate-related Financial Disclosures (TCFD) focuses on how companies should be open about the risks and impacts they face from climate change. Like SASB, the TCFD posits that financial markets rely on precise and prompt company disclosures to price risk and guide efficient capital distribution. Inadequate information can result in asset mispricing and capital misallocation (Carney, 2017). Thus, to address this, the Financial Stability Board established the TCFD, which outlines the information companies should disclose to enable investors and financial institutions to accurately assess and price climate-related risks (FSB TCFD, 2023).

And finally, there is ISO 26000, which offers a broad sweep of goals for companies to hit on social responsibility. ISO 26000:2010 offers guidance for organizations to act responsibly towards society and the environment, seen as both ethical and a marker of sustainability commitment. This standard, which is not for certification, defines social responsibility, aids in converting principles into concrete actions, and shares global best practices. It targets all organizations, regardless of type, size, or location, and was developed through a five-year global consensus process with diverse stakeholders (ISO, 2023) .

The study will use relevant sections of these guides of which there are 100s if not 1000s since each sector has its own guidelines.

3.3 Environmental Goods and Services (EGS) in the Manufacturing Industry in Finland

According to Statistics Finland, the environmental goods and services sector plays a significant role in the manufacturing industry by focusing on pollution prevention and the conservation of natural resources. According to their site:

> Environmental goods and services sector involves production which is based on environmental pollution prevention or the saving of natural resources. Environmental technology is part of environmental goods and services sector. An enterprise which is included in the environmental goods and services sector may have environmental business activity as its main or secondary line of production. Environmental goods and services sector is not a specific sector of industry. Instead, production involves several different industry sectors (Hiltunen, 2024).

Thus the EGS sector plays a crucial role in supporting the integration of Environmental, Social, and Governance practices in Finland's manufacturing industry. This sector encompasses business activities focused on environmental protection and the conservation of natural resources. It includes the production of goods, services, and technologies aimed at preventing pollution and promoting sustainability. The available statistics on the EGS sector provide valuable insights into key economic indicators, such as turnover, value added, exports, and employment, which are important for understanding the economic contribution of ESG-focused initiatives, which in turn should help in guiding an ESG services portfolio.

The data from Figure 2 which was taken from Statistics Finland when tracking annual revenue from EGS are presented based on the EU-standard classification for environmental goods and services, along with the industrial classification used in national accounts. The data could be instrumental in analyzing how the manufacturing sector can leverage EGS for enhanced sustainability and competitiveness. Additionally, the statistics form part of the System of Environmental Economic Accounts (SEEA), providing a framework that monitors the interaction between economic activity and environmental sustainability. This linkage highlights how adopting environmental goods and

services can drive progress in ESG objectives while contributing to both economic and ecological outcomes.

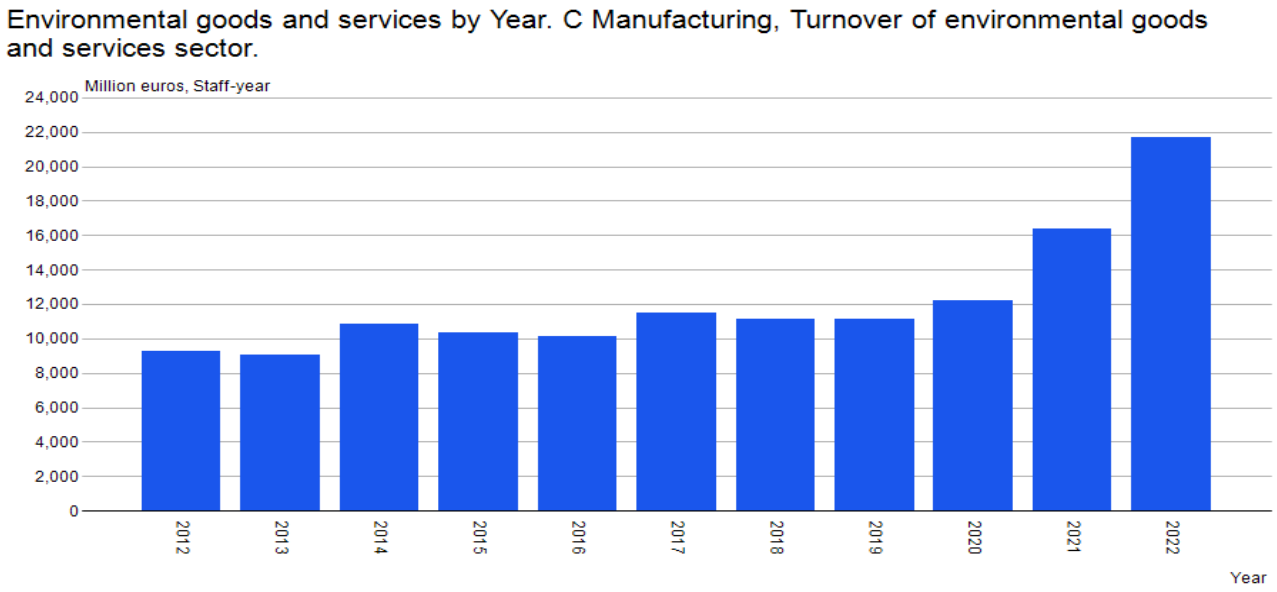


Figure 2: Statistics on the environmental goods and services sector describe business activities, practiced in Finland, which use less natural resources or pollute less the environment than conventional business activities (Statistics Finland, 2023)

The chart indicated that there has been a positive trend in revenue generation for the environmental sector in Finland, which could suggest a) a growing market and demand for environmentally-friendly products and services or b) increased policy support for sustainability, investments in renewable energy, and the general public's acceptance (or reduction in the alternative) on environmental issues, or perhaps even c) improved reporting and more sources. In all cases, there is a clear growing need that shows Finland at least is incorporating more environmentally-focused industries. And for this study, growth in this sector indicates promising opportunities for investment in clean technology, renewable energy, waste management, and thus services which could be provided from a portfolio to manage or guide and implement sustainable projects.

3.4 Barriers to Entry

Creating an ESG portfolio is not without its challenges, many of which stem from fundamental barriers to ESG adoption that businesses face. It is essential to acknowledge and understand these challenges for designing effective ESG services that assist companies in meeting sustainability goals while ensuring competitive, credible ESG performance. The barriers come from many

different areas, ranging from data inconsistencies and benchmarking issues to high costs, lack of expertise, and regulatory pressures etc.

A commonly referenced barrier to ESG adoption lies in the inconsistency of ESG data reporting. Even with the standards shared in chapter 3.2, they are still leading to disparate definitions, Interpretations, and units of measurement across companies. For example, companies often report metrics such as employee health and safety in varied ways, making direct comparisons difficult (Kotsantonis & Serafeim, 2019, 4–5). The difficulty of following standardized measurements not only complicates data interpretation but also undermines the reliability of ESG assessments, which hinders a company's ability to effectively communicate ESG performance to stakeholders (Kotsantonis & Serafeim, 2019, 6). Then there are challenges in ESG benchmarking to add on top of standarization, where the lack of transparency in peer group definitions among ESG data providers introduces further discrepancies. Companies may find themselves unfairly ranked when benchmarked against inappropriate peers, particularly when industry-specific differences in environmental impact are not fully accounted for, as observed in comparative studies of energy versus financial industries(Globerman, 2022, 10).

The financial costs associated with implementing comprehensive ESG practices also present substantial barriers. Introducing low-carbon technologies, waste management systems, and socially responsible labor practices frequently requires considerable investment. It is important to note however that capital lending institutions tend to offer more favorable borrowing terms to companies with robust ESG profiles in Europe at least (Eliwa, Aboud & Saleh, 2021, 5–7, 9–11). But getting back on track, while large corporations may have the resources to absorb these costs, smaller companies or those in resource-constrained sectors struggle to justify these expenses, especially when the returns on ESG investment remain uncertain (Liou, Liu & Huang, 2023, 8–9). This challenge is further exacerbated by a general shortage of trained ESG professionals, which limits companies' ability to implement, measure, and report on ESG initiatives accurately. The scarcity of expertise in this emerging field can make ESG adoption a daunting process for companies, leading to partial or inaccurate compliance (Liou, Liu & Huang, 2023, 3).

Transparency and completeness of data also hinder ESG adoption, particularly for companies lacking robust internal reporting structures. Collecting and organizing data to meet ESG reporting standards demands dedicated infrastructure, which many organizations lack or are discouraged from due to being small and starting up . Without comprehensive data, companies find it difficult to communicate their ESG efforts effectively, impacting investor and public trust in their commitments to sustainability (Gond et al., 2018, 8). Stakeholder pressure adds another layer of complexity, as companies are frequently urged by both internal and external parties to adopt ESG practices

quickly, often without clear or consistent regulatory guidelines. Navigating this environment is especially challenging for new entrants to ESG, who must keep pace with evolving expectations while managing the potential reputational risks associated with poor ESG performance (Globerman, 2022, 6)

The perception of ESG investments as potentially detrimental to profitability further complicates adoption efforts. Companies are often hesitant to engage fully with ESG, fearing that these initiatives may divert resources from core business operations or fail to yield immediate financial returns. This sentiment reflects a broader tension between long-term sustainability goals and short-term profitability, an issue commonly encountered among companies striving to balance financial performance with social responsibility (Kotsantonis & Serafeim, 2019, 3,7), (Gond et al., 2018, 9, 11). Additionally, the lack of a universally accepted standard for ESG metrics means that evaluations and ratings vary widely, which creates confusion and discourages companies from making substantial investments in ESG, as the potential benefits may be undercut by inconsistent assessments (Liou, Liu & Huang, 2023, 15)

Moreover, ESG assessment processes are often complex and administratively burdensome, with detailed compliance requirements that can be challenging to meet. Companies lacking the necessary resources or organizational structure to comply fully may find ESG standards overwhelming, which can delay or prevent effective adoption (Liou, Liu & Huang, 2023, 8). Limited government and financial support exacerbate these issues, as companies without sufficient external backing find it challenging to bear the full costs of ESG compliance on their own. Insufficient financial incentives and support structures, particularly in markets where regulatory frameworks are still developing, leave many companies struggling to justify the expense of implementing comprehensive ESG practices (Liou, Liu & Huang, 2023, 10).

These barriers highlight the difficulties that companies face in adopting ESG measures and underscore the importance of creating an ESG portfolio service that can address these challenges. By developing solutions that enhance data consistency, provide benchmarking guidance, reduce implementation costs, and support regulatory alignment, an ESG portfolio service could make sustainability practices more accessible and manageable for companies across various sectors.

4 ESG Practices: A Literature Overview

4.1 Is ESG Initiative a Vice or a Virtue?

This section aims to examine whether Environmental, Social, and Governance (ESG) initiatives can be considered beneficial or detrimental in the context of business operations and sustainable development. The analysis presented in this section draws on existing literature and empirical evidence to explore the dual perspectives of ESG implementation—whether it serves as a virtue contributing to long-term sustainability or a vice leading to potential inefficiencies or challenges. The article selected is in SSRN Electronic Journal · January 2017 “The ESG Initiative Industry; Vice or Virtue in the Adoption of Responsible Investment?” (Mooij, 2017)

Mooij addresses the growth and implications of ESG practices in contemporary business environments. Their study is centered around investigating the evolution and effectiveness of the ESG industry and its role as an intermediary in responsible investment. It is an important area of inquiry, considering the industry's substantial influence on corporate behavior and investment strategies, directly relevant to the thesis' focus on the efficacy of ESG practices.

It was observed that the research orientation of the study combined empirical data, collected through interviews, with theoretical insights, primarily utilizing the Industry Life Cycle Model (Macgahan, Argyres & Baum, 2004). This approach provides a strong framework for understanding the industry's progression but also aligns well with the practical aspects of the thesis. The theoretical base of the study, which comes from industrial economics and organizational theory, is integrated with empirical research. This integration offers a view of the industry's current state and its assumed trajectory.

As expected with such studies there are various literatures, including academic papers and industry reports, referenced and provide the backbone of this study. It includes diverse viewpoints, even those that present challenges and criticisms to the ESG industry which can in today’s society can be the catalyst for professional and academic ostracization. This approach ensures a balanced and thorough understanding of the subject matter, which is important for the objectives of this thesis.

The study design appears to use qualitative methodology for interviews with industry professionals and provides valuable practical insights. For example, the concept of "reporting fatigue" experienced by companies in response to the demands of the ESG initiative industry. The study reveals that companies receive a substantial number of requests from various ESG rating agencies and initiatives, which often results in a significant allocation of resources and time (Mooij, 2017, 24–25). Some companies reported needing to allocate the equivalent of half a full-time position just to

respond to these ESG-related inquiries. This insight is particularly relevant because it highlights a real-world challenge faced by businesses trying to engage with ESG practices.

This insight is not only critical in understanding the operational impacts of ESG initiatives on companies but also raises questions about the efficiency and effectiveness of such practices. It suggests that the current approach to ESG reporting may be creating an undue burden on companies, potentially diverting resources away from actual sustainable practices and improvements. This practical challenge directly informs my thesis, as it underscores the need to evaluate the cost-benefit balance of ESG practices and the potential benefits of outsourcing ESG responsibilities to specialized firms, which could alleviate reporting fatigue for companies.

However, the subjective nature of interviews may introduce biases, a limitation that must be considered for this thesis. Nevertheless, the real-world applicability and relevance of these insights cannot be understated.

Moving along, the argument structure of the study appears sound, or at least until someone or another study suggests a counterargument. It pushes the concept of systematically moving from defining the ESG industry and its development to discussing its current role and impact. This progression aids in understanding the complex dynamics within the ESG industry, although establishing clear cause-effect relationships in such a multifaceted field can be challenging.

In terms of strengths, the study had an adequate amount of analysis, combining theoretical and empirical methods, which were easy to follow and understand (Mooij, 2017, 23). However, the limitations typical of qualitative research, such as issues with generalizability and potential interviewee biases, are present. These factors will considered during the post-interview results and analysis for the thesis.

4.2 Service-Driven Approaches

This section analyzes the study conducted by Konstadinos Kutsikos and Gregoris Mentzas in their paper “A Service Portfolio Model for Value Creation in Networked Enterprise Systems” (Kutsikos & Mentzas, 2010) in addition to Thomas Kohlborn et al’s study “Towards a Service Portfolio Management Framework” (Kohlborn *et al.*, 2009). The reason for selecting two papers is their relationship to the same subject matter and because the former paper is much shorter.

In the analysis of the study on modeling value co-creation in service systems, particularly focusing on knowledge services, links were found to to the main aspects of this thesis. Kutsiko and Mentza’s study addresses the practical utilization of service systems-driven approaches in business environments, a topic that aligns with this thesis’s goals. It defines its central problem:

> The application and effectiveness of these approaches in real-world business settings, particularly in enhancing collaboration in virtual organizations (Kutsikos & Mentzas, 2010, 4–5).

While Kohlborn paper focuses on the holistic management of a set of services that address how individual parts of a service system can be used to effectively coordinate, or orchestrate, to enhance functionality (Kohlborn et al., 2009, 3). This problem statement aligns with this thesis's exploration of service management and value co-creation in the modern economy, however in this case it does not consider ESG targets. For now, the focus will be on the models and will later examine combining said models.

The relevance of both Kohlborn et al's Service Portfolio Management Framework (SPMF) (Kohlborn *et al.*, 2009) study and Kutsiko et al's Service Portfolio Management (SPM) model for value creation(Kutsikos &6 Mentzas, 2010) to this thesis, is that they offer some insights into the evolving domain of service management.

Kohlborn et al's SPMF study presents a framework for managing a diverse array of services within organizations. This framework's core revolves around a set of services and their dependencies, emphasizing the importance of strategic alignment, balance, and value maximization in service management (Kohlborn et al., 2009, 4). The practicality of this framework lies in its applicability across various service types, including business and software services, and its focus on both internal and external service environments. For this thesis, which explores the holistic management of services in business contexts and eventually focusing on ESG, the SPMF study could be particularly relevant. It provides a structured approach to managing services that aligns with the strategic objectives of an organization. This approach is potentially useful for understanding how services can be orchestrated effectively to enhance overall business performance.

On the other hand, Kutsiko et al's SPM model for value creation delves into the co-creation of value in service systems, particularly focusing on knowledge services. It introduces a model for clustering and profiling the value co-creation capabilities of service systems (Kutsikos & Mentzas, 2010, 4). This model is used in driving the development of a new service management framework and is validated through practical deployment in enhancing collaboration in virtual organizations. The study's emphasis on value co-creation, a key aspect of service-dominant logic, aligns with this thesis's focus on service management. It clarifies how service systems can be leveraged to create value, not just for the service provider but also for the users. This is useful for this study, as it can provide a tool, or at least guidance, to create a nuanced understanding of how value is generated and shared in service-oriented business models when I start including Value creation in ESG.

Both studies contribute to the body of knowledge in service management, each from a similar but distinct angle. The SPMF study offers a macro-level view of managing service portfolios within an organization, while the SPM model for value creation provides a micro-level understanding of value co-creation within individual service systems. Together, they present a comprehensive picture of service management, encompassing both the strategic management of service portfolios and the operational aspects of service delivery and value creation.

In the context of this thesis, these studies could be valuable, at least out of the 33 odd other papers which were also researched. The studies reinforced the theoretical foundations of service management but also offered practical frameworks and models that can be applied in real-world scenarios. Some of the insights from these studies will guide this research in exploring effective service management strategies and their impact on business performance especially when considering later the internal vs external resource question. The integration of strategic portfolio management with operational value creation in services provides a holistic approach to service management, which is precisely what this thesis aims to achieve.

4.3 Profiting from Sustainability

The last of readings which were found to be relevant to this thesis will consider the financial aspect, mainly if there is profitability in sustainable endeavors. As this thesis is exploring the creation of a services portfolio then this would be the most critical of the decision-making aspects.

The papers considered are Stephanie Hiss's 'The Politics of Financialization of Sustainability'(Hiss, 2013) and Inderpreet Singh's 'Integrating ESG Factors to Equity Valuation' (Singh & Ashford, 2022). Considering the integration of Environmental, Social, and Governance factors in investment or corporate decision-making, these papers aligned to some extent with the themes and findings presented in both authors' works. Singh's study delves into the intricate relationship between ESG factors and equity valuation, while Hiss's goes into a detailed examination of the politics involved in the financialization of sustainability. It sheds light on the role of political actors and processes in shaping this financialization, revealing how private governance, rather than state regulation, is increasingly driving the rules for sustainability accounting.

The studies were contrasted to provide a nuanced perspective on the integration of Environmental, Social, and Governance (ESG) factors in investment and corporate decision-making – in this case for profit and growth. Singh's Perspective on ESG Integration emphasizes the quantitative aspects of ESG integration into financial valuation. It discusses the growth of ESG investing and the drivers behind this trend, such as changes in fiduciary duty perceptions (Singh & Ashford, 2022, 11) and the financial "materiality" (Singh & Ashford, 2022, 23–29), from various integration costs, of ESG

factors. Singh establishes a structured framework for incorporating ESG considerations into the equity valuation process, based on three major tasks; Identifying the key business and company valuation drivers, Identifying the material ESG risks and opportunities, and Mapping all drivers, risks, and opportunities to relevant items of the financial statements or components of the financial mode (Singh & Ashford, 2022, 28–31). This framework involves systematically mapping ESG risks and opportunities to financial variables and adjusting the discounted cash flow models accordingly. The focus here is on tangible metrics and the direct financial impact of ESG factors on corporate performance.

In contrast, Hiss's research centers on the sociological aspects of ESG and CSR. Her work explored how these concepts are embedded within the corporate culture, their influence on stakeholder engagement, and the broader societal impacts. One example is the Emissions Trading System for carbon dioxide where there is now a large financial sector born from it, which influences the politics of carbon markets and their social construction (Stephan & Paterson, 2012, 549), Hiss's approach felt mostly qualitative, focusing on organizational behavior, the role of corporate actors in promoting sustainability, and the societal perception of CSR initiatives (Hiss, 2013, 4). Hence the perspective the thesis wishes to use to help in understanding the non-financial implications of ESG, such as brand reputation, employee morale, and customer loyalty which would further help businesses seeking growth and subsequently profitability.

Coming back to the context of this thesis, both Singh's and Hiss's perspectives provide complementary insights. If this thesis aims to develop or assess strategies for ESG integration in corporate or investment decision-making, then Singh's quantitative framework offers a practical tool for financial valuation which could be modified to suit the requests of the target business. It could allow for a clear demonstration of how ESG factors can be quantitatively integrated into financial analyses and corporate valuation models.

On the other hand, Hiss's qualitative approach can enrich this thesis by providing a deeper understanding of the sociological impact of ESG initiatives which would also play an important role in designing a model that suits a business from a different perspective. This perspective is crucial for comprehensively addressing the broader implications of ESG beyond just financial metrics, such as corporate reputation, stakeholder engagement, and ethical considerations in business practices.

The thesis will consider a synthesis of Singh's and Hiss's approaches and offer a holistic view of ESG integration into growth and profitable service portfolios. While Singh's framework enables the quantification of ESG factors in financial terms, Hiss's insights can guide the understanding of the broader societal and organizational impacts of these initiatives. Together, they provide a multi-

dimensional view of ESG, combining the practicality of financial assessment with the depth of sociological understanding.

The thesis stands to benefit from some form of integration of all the works from a finance-oriented approach to sociological perspective, as well as a touch of business model evolution. This combination can provide a more complete and nuanced understanding of ESG factors, their implementation, and their impacts, which is essential in today's increasingly sustainability-conscious business environment, and finally be able to provide a tailored profit-generating ESG model.

5 Methodology

5.1 Target Organisations and Company Selection Process

Initially, the focus of this study was to target organizations in Finland that operate both locally and globally, specifically those involved in manufacturing physical products, commonly referred to as “widgets.” This choice was motivated by the relevance of such products to the objectives of the thesis, as their environmental impact could be more directly traced through a linear lifecycle. While organizations producing digital products were also considered, their inclusion posed significant challenges due to the complexities involved in assessing their ESG impact.

The environmental footprint of digital products introduces multiple uncertainties into the discussion, given the diverse factors contributing to their impact. For instance, evaluating the carbon footprint of companies like Rovio or Supercell would require understanding a range of variables, such as their energy sources (including the proportion of renewable versus non-renewable energy), the emissions generated from IT hardware throughout its lifecycle, energy consumption associated with software development, and server overhead, which includes energy requirements for cooling and idle periods (Kennes, 2023, 2,4). These factors differ significantly from those associated with the manufacturing of physical products, which follow a more linear supply chain. In the case of physical products, raw materials can be tracked from origin to disposal, offering a clearer understanding of the environmental impact—e.g., “Raw material X was sourced from location A and ended up in landfill Y after disposal.”

Furthermore, digital products, while challenging to measure, can often serve as tools for manufacturers to reduce their carbon footprint; Figure 3 shared two of the major Manufacturing and Supply Chain improvement claims shared by the Global e-Sustainability Initiative #Smarter2030 . It is well-established that digital solutions are employed by manufacturing companies to optimize resource consumption, enhance efficiency throughout the supply chain, and improve production processes. For example, as noted in the UNFCCC’s #SMARTer2030 executive summary:

> ICT has the potential to enable a 20% reduction of global CO2e emissions by 2030, holding emissions at 2015 levels" (philippbuddemeier, 2015, 9).

By narrowing the focus to manufacturers of physical goods, the study ensures a more consistent and straightforward analysis of ESG impacts, aligning with the thesis’s intent to explore clear, traceable pathways for sustainable development within the manufacturing industry.

Figure 3 #SMARTer2030 specific sector improvement claims

It’s likely that the ESG service portfolio will utilize digital transformation as a potential solution and therefore it would add complexity to the paper.

The criteria was to engage with organisations who were

- Had 500+ Full-time Emloyees (FTE)
- Manufactured something physical or contributed to something physical, eg minerals
- Had a physical distribution network and established supply chain
- Nordic in Origin

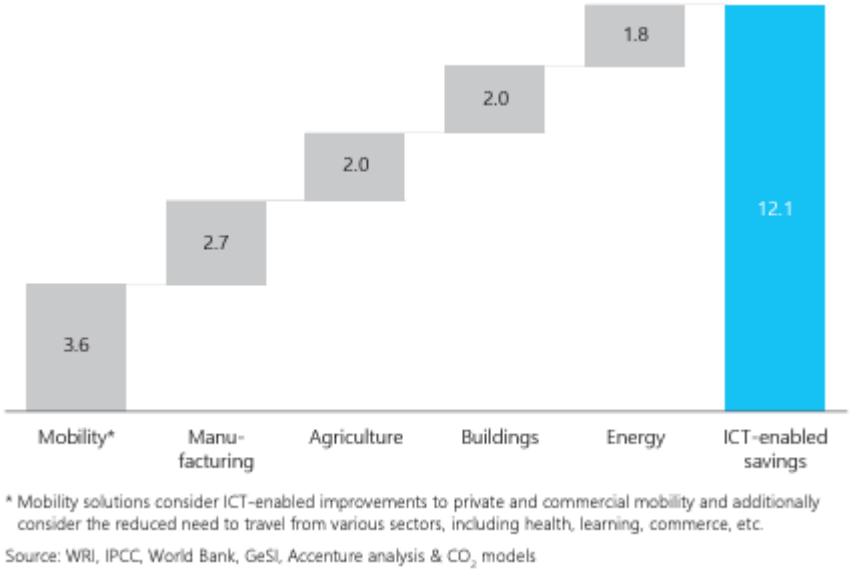


Figure 4 CO2 e-abatement potential by sector claim (2030)

It's likely that the ESG service portfolio will utilize digital transformation as a potential solution and therefore it would add complexity to the paper.

To identify suitable companies for analysis, the Nordic Nasdaq Stock Exchange was used as an initial point of reference. The filter was set to Helsinki, Sweden, Denmark, and Norway. Each company was reviewed based on the information available on their "About" pages to assess whether they met the remaining criteria for inclusion in the study.

This filtering process resulted in an initial list of companies that represented a diverse cross-section of the Finnish market, suitable for examining their practices in relation to ESG factors. The selection process was not limited by industry type or size, ensuring a broad perspective on ESG practices across different sectors. Then the filter was updated to other Nordic countries (Sweden, Norway, Denmark), and finally Germany simply because of one company that has a manufacturing site in Finland (Porsche).

The initial list of companies, compiled in no particular order, served as the foundation for further narrowing down those that would be approached for interviews and data collection.

- Metso
- Wärtsilä
- Neste
- Nokia

- Porsche (Germany, but manufacture in Finland)
- Stora Enso (Swedish)
- UPM Biofore (Swedish)
- FLSmidth (Danish)
- Rapala
- Volvo (Swedish)
- Electrolux (Swedish)

In the end, the companies that volunteered to be interviewed were Metso, FLSmidth, HMD Global, Nordic Nano Group, and Virtasalmen Viljatuote. Tables 1 – 5 shared below provide quick facts about each company.

Table 1 **Metso**, based on 2023 Business Overview (Metso, 2023; FLSmidth, 2024)

Category	Details
Overview	Global frontrunner in sustainable technologies, solutions, and services for aggregates, minerals, and metals refining. Focuses on energy & water efficiency, productivity, and reducing environmental risks.
Key Business Areas	1. Aggregates: Crushing and screening equipment for infrastructure and construction.
	2. Minerals: Solutions for minerals processing and metals refining.
	3. Metals: Metals refining and chemical processing.
	4. Services: Spare parts, repairs, and professional services for aggregates, mining, and metals.
Financial Highlights (2023)	- Sales: EUR 5.4 billion
	- Orders Received: EUR 5.25 billion
	- Adjusted EBITA: EUR 887 million (16.5% margin)
	- Planet Positive Sales: EUR 1.45 billion
Global Presence	Operating in ~50 countries with over 17,000 employees. Sales regions include:
	- North & Central America: 23%
	- Europe: 20%
	- Asia Pacific: 20%
	- South America: 21%
	- Africa, Middle East & India: 16%
Sustainability Commitment	- Net-zero emissions target: 2030
	- Planet Positive Portfolio grew by 18% in 2023
	- Innovations in battery black mass recycling and water-efficient solutions
Strategic Focus	1. Customer Success: Solutions that create value.
	2. Sustainability: Green technologies, particularly for mining and battery industries.
	3. Performance Culture: Strong culture with high employee engagement (eNPS score: 54).

Innovative Offering	- Electric and hybrid crushing solutions
	- Hydrogen-ready technologies for metals refining
	- Technologies for water-efficient minerals processing
Values & Vision	To be the number one choice for the sustainable use of Earth's resources, with a focus on urbanization, electrification, and sustainability trends.

Table 2 **FLSmidth**, Based on 2023 Annual Report (FLSmidth, 2024)

Category	Details
Overview	FLSmidth is a leading supplier of productivity and sustainability solutions for the global mining and cement industries. The company is transitioning towards service offerings and sustainability leadership.
Key Business Areas	1. **Mining**: Technologies and services supporting critical mineral supply for green transition.
	2. **Cement**: Portfolio pruning and focus on sustainable practices.
	3. **Non-Core Activities**: Accelerating exit for profitability and focus.
Financial Highlights (2023)	- **Revenue**: DKK 24.1 billion
	- **Order Intake**: DKK 21.4 billion
	- **EBITA Margin**: 6.0% (adj. 8.0%)
	- **Cash Flow from Operating Activities**: DKK 623 million
Global Presence	Operating in **150+ countries** with **9,377 employees**. Major revenue shares by region: **South America (25%)**, **North America (23%)**, **Asia & Australia (20%)**.
Sustainability Commitment	- **Net-zero emissions by 2030**.
	- **MissionZero Program**: Technology-driven sustainability to help clients reduce environmental impacts.
	- Increased renewable energy usage to **26%** in 2023.
Strategic Focus	1. **Transformation**: Pure play separation of Mining and Cement businesses.
	2. **Service-Led Business**: Shift towards high-margin, service-oriented offerings.
	3. **Innovation & Simplification**: Focused on sustainability, digitalization, and reducing operational risks.
Values & Vision	FLSmidth aims for "mining for a sustainable world" and "delivering solutions for tomorrow's mine." Core values: **Trust, Empowerment, Accountability, Collaboration, Honesty (TEACH)**.

Table 3 **HMD Global Oy** (Wikipedia, 2024)

Category	Details
Overview	HMD Global Oy, established in 2016, is a Finnish company known for manufacturing Nokia-branded mobile phones and tablets. The company has recently introduced its own brand and partnered with other brands.

Key Business Areas	1. **Devices**: Manufacturing Nokia-branded smartphones, feature phones, and tablets.
	2. **Services**: Offers warranty services and device insurance.
	3. **New Ventures**: Expanding into HMD-branded devices and multi-brand partnerships.
Financial Highlights (2023)	- **Revenue**: EUR 844 million (down from EUR 1,257 million in 2022)
	- **Operating Profit**: EUR 20.9 million (compared to EUR -76.9 million in 2022)
Global Presence	Headquartered in Espoo, Finland, with around **700 employees**. Shifts from Nokia-only devices to include a broader product portfolio.
Sustainability Commitment	Achieved **EcoVadis Platinum** status for sustainability for two consecutive years, indicating high standards in sustainable practices.
Strategic Focus	1. **Multi-Brand Strategy**: Transitioning from exclusively Nokia-branded devices to including HMD's own brand.
	2. **Cost Management**: Entered into multi-year purchasing agreements to secure cost-effective supply chains.
Values & Vision	Committed to sustainable manufacturing and providing reliable mobile communication solutions. Aims to maintain operational profitability and secure funding to continue operations despite ongoing financial challenges.

Table 4 **Nordic Nano Group** (NNG, 2024)

Category	Details
Overview	Nordic Nano Group provides advanced, environmentally friendly energy solutions for renewable energy, focusing on battery cells and solar energy coatings.
Key Business Areas	1. **Battery Cells**: Non-toxic solid electrode battery cells.
	2. **Solar Energy Coatings**: Solutions for efficient energy harvesting, even from scattered light.
Global Presence	Based in Imatra, Finland, with a broad global market focus on solar energy and battery solutions.
Innovative Offering	Cutting-edge nanoprinting technology, advanced coatings, and materials research to enhance sustainability.
Values & Vision	Committed to sustainability, innovation, and optimizing energy use in a responsible way.

Table 5 **Virtasalmen Viljatuote Oy** (Virtasalmen Viljatuote Oy, 2024)

Category	Details
Overview	Virtasalmen Viljatuote Oy is a Finnish family-owned company specializing in gluten-free products, including flours, flakes, and mixes. The company has over 20 years of experience in producing high-quality gluten-free foods.

Key Business Areas	1. **Products**: Gluten-free flours, flakes, muesli, and baking mixes.
	2. **Distribution**: Offers direct sales through an online store, known for fast and reliable delivery.
Financial Highlights (2023)	- **Revenue**: EUR 2.8 million
	- **Operating Loss**: EUR -0.2 million
	- **Equity Ratio**: 25%
Global Presence	Based in Virtasalmi, Finland, the company serves both domestic and international markets with a focus on sustainability and quality.
Strategic Focus	Focused on producing and distributing high-quality gluten-free products, maintaining operational efficiency, and improving its financial stability.
Values & Vision	Committed to providing healthy, gluten-free options with a customer-centric approach, ensuring quality, sustainability, and customer satisfaction.

Integrating Environmental, Social, and Governance (ESG) principles into the manufacturing sector will require a structured and understandable methodology. The chosen methodology attempts to make sure that the services developed are comprehensive, responsive, and aligned with the specific challenges and opportunities within the sector. This chapter provides the research design, data collection method, and data analysis procedures.

5.2 Research Design

A mixed-methods approach, using both qualitative and quantitative research techniques, was adopted. The mixed-methods design is selected to provide a comprehensive understanding of current ESG practices and to identify gaps that can be addressed through the development of new services. This approach is advantageous as it combines the depth of qualitative insights with the breadth of quantitative data, offering a holistic perspective on the research problem (Creswell and Plano Clark, 2018).

5.3 Data Collection Methods

5.3.1 Interviews

The interview guide (Appendix 1) formed a key part of the data collection process and was structured into five sections: General Information, Environmental Practices, Social Practices, Governance Practices, and Overall ESG Strategy. Each section was designed to elicit specific information to gain insights into current practices, identify gaps, and highlight areas for service enhancement.

The interviews were semi-structured and conducted with key stakeholders from willing participants of selected manufacturing companies. The interviewee role and relevance to the study can be found in Table 6 at the end of this subsection. Interviewees included individuals whose roles encompassed that of COO, CEO, Sustainability leads, GMs, and other personnel related to production processes, supply chains, and sustainability efforts. The interviews aimed to explore specific issues in greater depth, especially those identified through survey responses, described in the next section, providing qualitative insights that could not be captured through survey questions (Moilanen, Ojasalo & Ritalahti, 2022, 61–62).

The interview guide consisted of 26 questions, designed based on a review of existing literature and best practices in ESG reporting and assessment. It was intended to obtain more in-depth information from volunteers of the selected companies. The Global Reporting Initiative (Global Reporting, 2023) the Sustainability Accounting Standards Board (SASB, 2023) and the Task Force on Climate-related Financial Disclosures (FSB TCFD, 2023) were utilized in designing the interview questions, ensuring comprehensiveness and relevance. AI was used to review sections of SASB, TCFD, and GRI, assessing question relevance and reducing the original list of over 40+ interview questions.

Table 6 Participant's Relevance to the Study

Company	Position	Relevance to the Study
FLSmidth	Executive	Key leader in project to reduce CO2 from cement
Metso	Expert	Ensuring the business unit follows sustainability guidelines
Virtasalmen Viljatuote Oy	Executive	All decisions go through them
Nordic Nano Group	Executive	Heavily involved in setting up the factory operations
HMD Global oy	Expert	One of the main creators of the right to repair
HMD Global oy	Executive	Key responsible person for sustainability implementation

5.3.2 Survey

A survey (Appendix 2), conducted through Webpropol, was used as part of a prestudy to extract additional data and increase the sample size, allowing for better industry comparisons. The targeted group for this survey includes senior professionals and executives from various industries, such as manufacturing, technology, energy, financial services, pharmaceutical, and others. These individuals hold positions like Managing Director, CEO, COO, Vice President, and other leadership roles, with experience ranging from 1 to 25 years. The companies represented vary in size, from 100 to over 20,000 employees, and operate across multiple regions, including the Nordics, Western Europe, North America, and Asia-Pacific.

The survey complemented the interview guide by helping to capture broader data across multiple manufacturing companies. The survey questions were developed based on the same frameworks used for the interview guide—GRI, SASB, and TCFD—to ensure the consistency and comprehensiveness of data collected. Originally containing almost 100 questions, the survey was refined using AI, which helped assess relevance and streamline the questions.

The survey utilized Likert scales to gauge levels of agreement with statements related to ESG practices. Respondents chose from "Strongly Disagree," "Disagree," "Agree," "Strongly Agree," and "Not Sure." This helped in assessment of the depth of commitment to different practices, including environmental initiatives and social responsibility. Additionally, frequency scales were used to assess the regularity of specific activities: "Weekly," "Monthly," "Quarterly," "Half-Yearly," and "Yearly." These provided insights into the consistency of ESG-related actions, such as reporting on environmental performance and benchmarking ESG metrics against industry peers. Both types of scales were summarized with statistical metrics, including averages and medians, to provide a clear understanding of trends and common practices among the respondents.

5.4 Other Data Collection-Related Information

To gather qualitative data for this study, various outreach efforts were made. Initially, individuals in relevant roles were contacted through LinkedIn to participate in interviews. After two weeks of attempts without any responses, an alternative approach was used, which involved sharing a survey to provide further context on the type of information being sought. When this effort also failed to yield enough results, the focus shifted to exploring degrees of separation within existing professional networks in an attempt to establish indirect connections with the targeted individuals. However, these attempts also faced significant challenges.

Ultimately, the criteria and target companies were revised to include small and medium-sized enterprises (SMEs), particularly those relevant to the study and with decision-making authority or involvement in ESG matters. It took approximately six weeks to secure participants and organize the interviews, eventually resulting in responses from representatives of five different companies. The interviewees represented diverse organizations, ranging from startups and billion-euro, non-public companies to those listed on stock exchanges.

The interviews were conducted over a period of three weeks, each lasting approximately 50 to 90 minutes depending on the level of detail covered. Three interviews were carried out using Microsoft

Teams, while two were conducted in person. For those interviews conducted via Teams, the transcription feature was used to ensure focus on the discussion rather than note-taking. All interviewees requested that video and audio recordings not be made, a request which was respected. Furthermore, all interviewees asked to remain anonymous. It was however ok to mention the organisations that participated.

And for the survey, despite an outreach campaign that included over 500 individuals in my professional network, only 14 participants responded. Efforts to increase the response rate included sharing the survey on LinkedIn, updating posts every 2-3 days, using relevant hashtags, and distributing it in specialized groups focused on supply chain and manufacturing. Unfortunately, these efforts did not significantly increase participation.

5.5 Data Analysis Procedures

5.5.1 Qualitative Analysis

The qualitative analysis process began with an initial phase of familiarizing with the data, where interview transcripts and survey responses were reviewed multiple times to establish an overall sense of the content, patterns, and themes emerging from the text. Drawing on the guidelines provided by Daymon and Holloway (2010, 308). Notes were taken on recurring words, phrases, and notable insights that hinted at preliminary themes. For instance, terms related to “sustainability,” “carbon footprint,” and “employee well-being” were consistently noted, providing early indicators of the themes that would later become more developed in the thematic analysis.

Following this familiarization, the next phase involved coding the data to organize these preliminary insights into structured categories. The coding was both descriptive and interpretive; while some codes represented explicit terms used by participants, others captured underlying meanings that were contextually relevant to ESG integration. Codes such as “renewable energy initiatives” and “social responsibility practices” encapsulated key segments of the data that were directly linked to the research questions. This approach, which allowed for the continuous refinement of codes as more patterns emerged, provided flexibility to adjust or consolidate codes as the themes evolved. For example, references to environmental goals or community engagement initiatives were marked and assigned to their respective areas, but adjustments were made if these themes intersected with other areas, such as employee engagement or broader governance issues. (Daymon and Holloway, 2010, p. 308).

Once coding was completed, the data moved into a structured phase of theme identification and refinement. Codes with similar meanings were grouped to form broader themes, which were then aligned with the study's objectives. These initial groupings helped to distinguish between categories, with some overlap addressed during a subsequent round of coding and validation. Categories like "Social Practices," "Governance and Compliance," and "Environmental Practices" became evident, capturing the nuances across environmental, social, and governance domains within ESG practices. This iterative process of coding and categorization allowed for the continued adjustment of codes and themes, ensuring both coherence and accuracy in representing participant perspectives.

5.5.2 Thematic Analysis

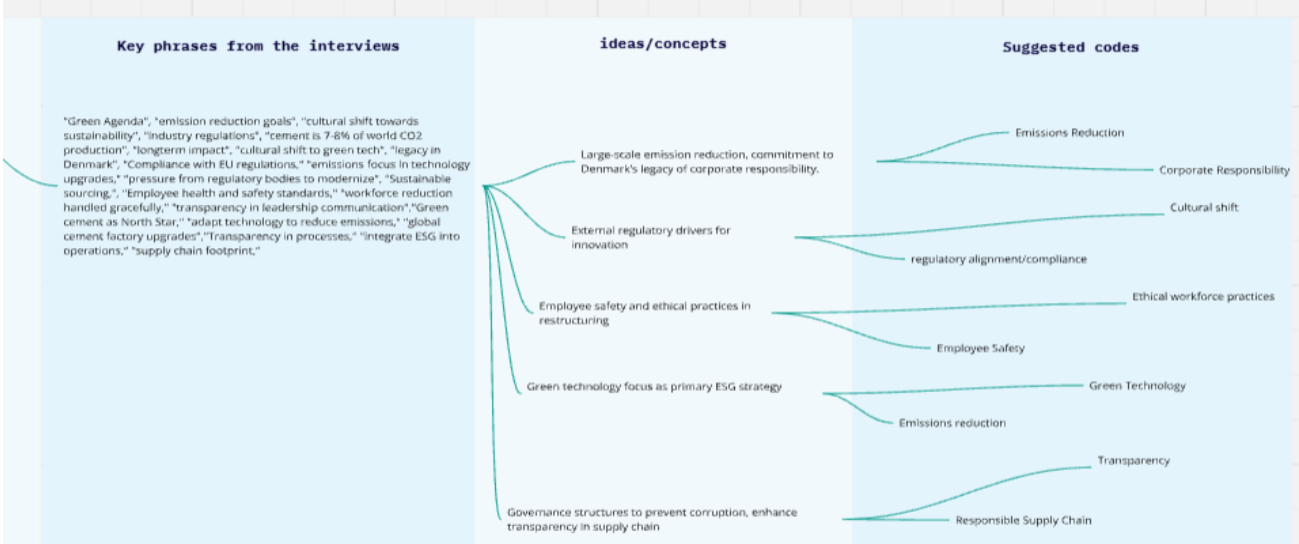
Then Braun and Clarke's six-phase approach to Thematic Analysis – Familiarization, Coding, Finding/Reviewing/Defining Themes, and Producing the Report (Braun & Clarke, 2006, 35) - in combination with Daymon and Holloway's qualitative analysis described above, helped since it was a structured process to gain insights into the main themes of Environmental, Social, and Governance (ESG) practices in the manufacturing sector.

Beginning with familiarization, the data underwent multiple readings to ensure a comprehensive understanding of key ideas and trends. This phase overlapped with the initial coding from qualitative analysis but was distinct in that it aimed to build deeper connections within the data through more focused and detailed codes, capturing both literal and contextual meanings (Braun & Clarke, 2006, 34). The codes were further refined and expanded during this phase to ensure that they captured the breadth of insights related to the research questions, aligning closely with both content and interpretive aspects of the data.

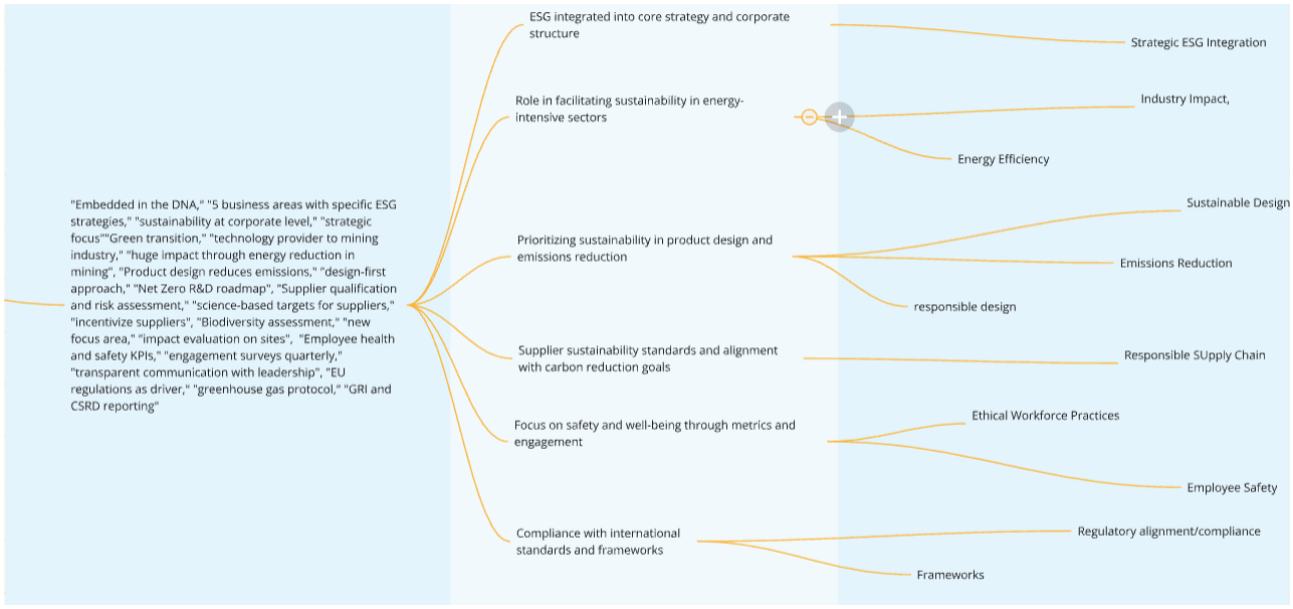
During the next phase of thematic mapping, codes sharing similar meanings were systematically clustered to form broader themes, with mind-mapping techniques used to visualize connections among these codes (see Figure 5 at the end of this section) (Braun & Clarke, 2006, 34). As the themes began to take shape, distinct categories were developed to encapsulate key ideas, with overarching themes such as "Environmental Practices," "Governance and Compliance," "Cultural Transformation," and "Strategic Alignment" emerging from the data. For instance, repeated references to "emissions reduction" or "renewable energy" in responses formed part of the "Environmental Practices" theme, while governance issues linked to leadership and compliance practices were captured under "Governance and Compliance." This categorization allowed for the visualization of relationships and interactions between themes, providing a coherent structure for further analysis (Braun & Clarke, 2006, 51).

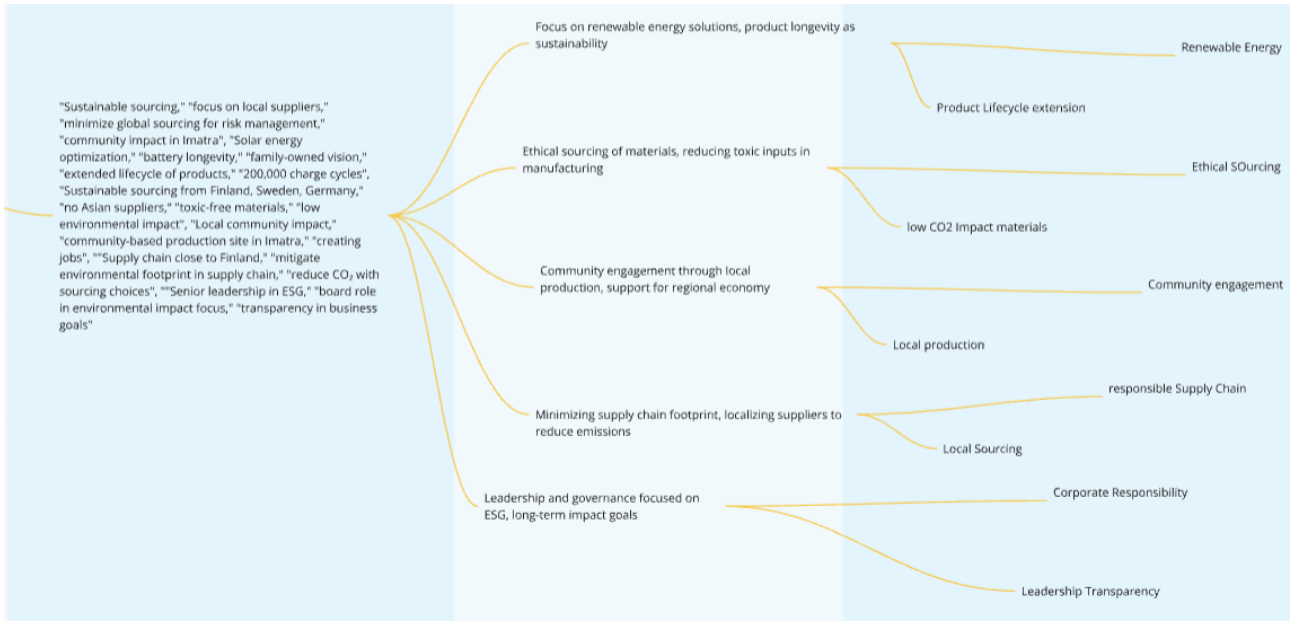
The refinement phase followed where each theme was reviewed in detail to maintain internal consistency and distinction from other themes. This refinement aimed to ensure that each theme accurately reflected distinct areas of ESG practices while aligning with the study's overarching objectives (Braun & Clarke, 2006, 51). For example, "Social Practices" captured areas related to community engagement and employee welfare without overlapping with "Governance and Compliance," which focused on leadership and regulatory adherence. This iterative refinement of themes was integral to achieving a coherent thematic structure, with each theme representing a distinct component of ESG integration.

Finally, each theme was named and defined to convey its core meaning, with themes such as "Environmental Practices," "Social Practices," "Governance and Compliance," "Cultural Transformation," and "Strategic Alignment" used to represent the key insights derived from the data (Braun & Clarke, 2006, 53). The final thematic framework offered a structured and nuanced understanding of ESG practices within the study's context, facilitating a more comprehensive analysis of the findings. The integration of these themes not only supported the research questions but also highlighted the multi-dimensional nature of ESG within the manufacturing sector.




"Solar power for manufacturing," "renewable heating sources," "mapped CO_2 footprint," "goal of carbon neutrality within five years", ""Extended health insurance," "weekly safety meetings," "employee bonuses for performance," "local health services contract", ""EU-based suppliers," "local sourcing when possible," "supply chain low environmental impact", ""Limited financial resources," "time constraints for ESG," "FSCC 22,000 framework limitations", "Pragmatic approach in governance," "owner-led board decisions on ESG," "external bookkeeper for oversight", ""Target to be CO_2 neutral," "time and knowledge gaps," "long-term goals within business strategy"
Employee well-being and safety focus, linking bonuses to performance
Employee Health
Safety pRactices
Renewable energy integration, carbon neutrality goal
Renewable Energ
Carbon Goals
Preference for local and EU suppliers to minimize supply chain footprint
Local Sourcing
Responsible Supply Chain
Resource limitations, constrained capacity for managing ESG initiatives
Resource Constraints
Frameworks
Simple governance structure, owner involvement, third-party financial oversight
Simplicity
Regulations
Aligning ESG goals with long-term business strategy, addressing knowledge gaps
Strategic ESG Integration


"Embedded in the DNA," "5 business areas with specific ESG strategies," "sustainability at corporate level," "strategic focus""Green transition," "technology provider to mining industry," "huge impact through energy reduction in mining", "Product design reduces emissions," "design-first approach," "Net Zero R&D roadmap", "Supplier qualification and risk assessment," "science-based targets for suppliers," "incentivize suppliers", "Biodiversity assessment," "new focus area," "impact evaluation on sites", "Employee health and safety KPIs," "engagement surveys quarterly," "transparent communication with leadership", "EU regulations as driver," "greenhouse gas protocol," "GRI and CSRD reporting"
ESG integrated into core strategy and corporate structure
Strategic ESG Integration
Role in facilitating sustainability in energy-intensive sectors
Industry Impact,
Energy Efficiency
Prioritizing sustainability in product design and emissions reduction
Sustainable Design
Emissions Reduction
responsible design
Supplier sustainability standards and alignment with carbon reduction goals
Responsible SUpply Chain
Focus on safety and well-being through metrics and engagement
Ethical Workforce Practices
Employee Safety
Compliance with international standards and frameworks
Regulatory alignment/compliance
Frameworks


"Sustainable sourcing," "focus on local suppliers," "minimize global sourcing for risk management," "community impact in Imatra", "Solar energy optimization," "battery longevity," "family-owned vision," "extended lifecycle of products," "200,000 charge cycles", "Sustainable sourcing from Finland, Sweden, Germany," "no Asian suppliers," "toxic-free materials," "low environmental impact", "Local community impact," "community-based production site in Imatra," "creating jobs", ""Supply chain close to Finland," "mitigate environmental footprint in supply chain," "reduce CO_2 with sourcing choices", ""Senior leadership in ESG," "board role in environmental impact focus," "transparency in business goals"
Focus on renewable energy solutions, product longevity as sustainability
Renewable Energy
Product Lifecycle extension
Ethical sourcing of materials, reducing toxic inputs in manufacturing
Ethical SOurcing
low CO2 Impact materials
Community engagement through local production, support for regional economy
Community engagement
Local production
Minimizing supply chain footprint, localizing suppliers to reduce emissions
responsible Supply Chain
Local Sourcing
Leadership and governance focused on ESG, long-term impact goals
Corporate Responsibility
Leadership Transparency

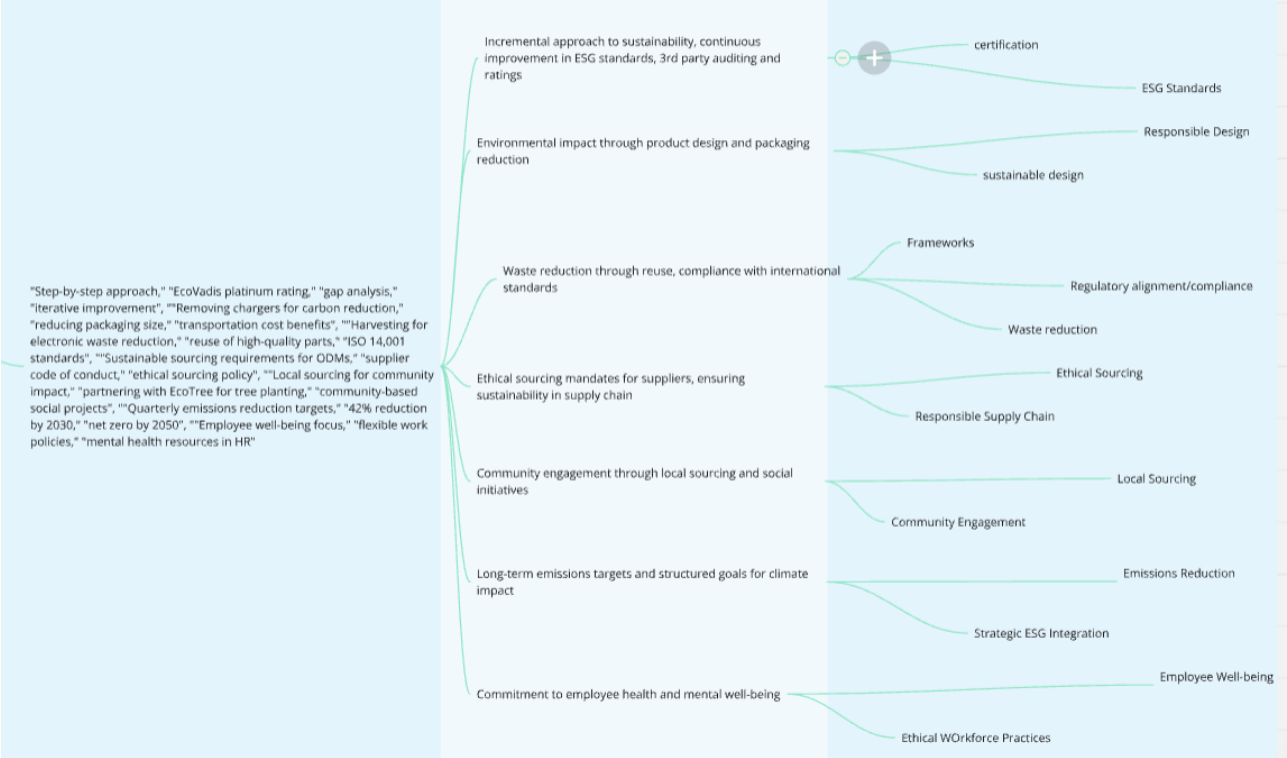


Figure 5 Mind Mapping for Code Creation

5.6 Reliability and Validity

While this study offers valuable insights into the integration of Environmental, Social, and Governance (ESG) practices within the manufacturing sector, certain limitations must be acknowledged to contextualize the findings accurately and mange their reliability. Recognizing these limitations is essential for understanding the scope, reliability and validity of the conclusions drawn and for guiding future research.

One key limitation lies in the use of thematic analysis, which, although flexible and effective for exploring qualitative data, involves *subjective* interpretation. The reliance on thematic analysis means that the patterns and themes identified are shaped by the researcher's perspective, potentially limiting the objectivity and generalizability of the results. Efforts were made to minimize bias by following Braun and Clarke's structured six-phase process; however, complete elimination of researcher influence is inherently challenging in qualitative studies.

Additionally, the sample size and scope presented big constraints (only 14 survey respondents, and 5 companies volunteered). Data was collected from a this group of stakeholders within the

manufacturing sector, which will not fully capture the diversity of ESG challenges and practices across different industries or geographic regions. As a result, the findings will not be wholly representative of manufacturing sectors or applicable to industries with significantly different operational priorities. The research also focuses specifically on ESG integration rather than covering the entire spectrum of sustainable practices, which will further narrow the applicability of the results.

Another limitation is that while qualitative insights provide a nuanced understanding of ESG integration challenges and opportunities, the absence of more advanced statistical analysis means that correlations and relationships between variables cannot be definitively established. Future research could incorporate mixed-methods approaches to address this gap to strengthen the validity and breadth of future findings.

Lastly, time and resource constraints impacted the depth of data collection and analysis. Given the complexity of ESG practices, more extended periods of observation and additional interviews with a broader set of industry experts could have enhanced the robustness of the findings. Constraints also affected the ability to explore longitudinal changes in ESG practices, which are often necessary to understand long-term impacts fully.

Despite these limitations, the study provides a strong foundation for understanding ESG integration within manufacturing. By acknowledging these constraints, this research aims to offer realistic insights while setting the stage for future studies that can build on these findings to deliver even more comprehensive and generalizable results.

5.7 Use of Artificial Intelligence in the Research Process

Artificial intelligence (AI) was utilized at several stages throughout the research and writing process of this thesis to enhance efficiency and ensure clarity. The primary applications of AI included constructing sentences, correcting notes, and addressing grammatical errors. These features helped with early drafting and improved the quality of writing.

AI also played a role in the research phase, particularly when navigating through a large volume of academic literature from resources such as 50+ page studies, e-books, and other documents some in Finnish language, from Haaga-Helia library and Google Scholar. When relevant information was identified within a study or article, the specific paragraphs were read out to MS word using dictation and then organized into notes. AI was then employed to consolidate these notes into more concise, bullet-point summaries, making the information more digestible and easier to work with.

It was then used interactively to prompt further critical thinking about the alignment between ESG topics and the thesis objectives. Specifically, AI was prompted to generate questions that helped guide the development of content by stimulating new insights or reinforcing existing ideas. Here is an example:

This is a point of interest from the referenced study by Mooij (2017, 24–27): The section was dealing with the reporting fatigue which is described above in the literature review. The note taken was ‘lots of data required to be created by each company; they need to follow initiative like those from DJSI.. points out that even with all this effort, in the end the data isn’t audited; so anyone can just put any data? ?’, AI was then fed this and other similar points relative to those pages and then prompted “Given these points, please provide me 5 questions to help with making a cohesive section that can contribute to the goal of how ESG services add value”. The questions that were considered were: How does the reporting frequency and variety of requests impact company resources and operational efficiency? What are the perceived costs and benefits of engaging with ESG practices from a company's perspective, and how do these align with actual outcomes? How do companies perceive the effectiveness of current ESG reporting methods in driving real sustainable change within their organization?

After drafting sections based on the responses and notes collected, the content was cross-checked against the guidelines provided by Haaga-Helia. The AI provided feedback on whether the key components were sufficiently covered, often suggesting minor adjustments for completeness and data management.

6 Findings

6.1 Overview of Key Themes

In this section, the core themes from the survey and interviews and analysis phases of the study are combined, providing a structured view of the results. It begins with survey results in chapter 6.2 highlighting ESG practices within the sample organizations and progresses to thematic insights in chapter 6.3 derived from interviews and coded qualitative data. Each subsection within addresses a specific aspect of ESG—environmental, social, governance, and technological practices—while identifying challenges and opportunities for integration.

The findings reveal a commitment to ESG principles across the participating organizations, particularly in manufacturing and technology sectors. Three primary themes emerged: the integration of ESG in product and service design, the role of strategic governance in fostering sustainability, and the operational challenges of adopting ESG practices. These themes encapsulate the motivations driving ESG adoption, the strategies implemented, and the barriers encountered.

6.2 Survey Results

All data can be viewed in the Appendix 1. The survey revealed mediocre efforts in environmental sustainability, with 8/14 of respondents indicating that their companies regularly measure their carbon footprint and 9/14 noting that renewable energy constitutes a significant portion of their energy consumption. However, there was some variability in specific practices; for instance, while 9/14 of respondents agreed that their environmental practices are regularly audited, only 5/14 reported that their initiatives to reduce single-use plastics are highly effective..

The survey highlighted excellent engagement in employee well-being as 13/14 of respondents expressed confidence in the effectiveness of their training and development programs. Additionally, 11/14 reported active community engagement. This could indicate that companies prioritize workforce development and community involvement, though fewer respondents (5/14) reported strong engagement in formal partnerships with educational institutions, suggesting potential growth areas in structured social responsibility initiatives.

Governance emerged as a positive area, with 10/14 of respondents noting the presence of a whistleblower policy, and 12/14 confirming that their companies have established risk management processes. Additionally, nearly 9/14 reported that their boards review ESG performance on a yearly basis. This means there is some form of structured approach to accountability coming from leadership, which is important for ethical oversight and in line with common ESG frameworks (Global Reporting 2023). However, only 6/14 of respondents benchmark their ESG performance against

industry peers, indicating that while internal governance is strong, external benchmarking remains an area for potential development.

The adoption of technology to enhance ESG practices shows mixed results; 9/14 of respondents agreed that digital tools play a role in governance and risk management, but only 4/14 indicated that their company proactively adopts new technologies to achieve social responsibility goals. There was no clear explanation from the survey, likely because it was short and did not share section to select a reason, however based on the interview results, it can be ascertained that this may have been cost-relate and lack of availability of tools.

6.3 Thematic Analysis of ESG Implementation

6.3.1 Environmental Practices

To respect the anonymity request, the companies will be referred to as Company 1, 2, 3, 4, 5

A common theme among Company 1, Company 2, and Company 4 was the emphasis on embedding ESG principles from the earliest stages of product and service design. This "design-first" approach is an important proactive strategy for them, where environmental and social impacts are evaluated at the concept phase rather than as post-production considerations. Interviewees from these companies explained that by prioritizing ESG from the design phase, they ensure sustainability is integral to the product's lifecycle, leading to better resource efficiency, reduced waste, and optimized energy usage.

Company 2’s approach emphasized that sustainability considerations are embedded within the R&D phase of new product development, particularly in reducing emissions and energy consumption in their machinery designed for mining and aggregate processing. The product development teams are tasked with analyzing potential environmental impacts, aiming to achieve significant energy reductions across product lifecycles. Their energy-efficient design allows to reduce the operational carbon footprints for their customers. Interviewees mentioned that every new product undergoes an environmental impact assessment, which guides material selection and component sourcing to ensure minimal environmental impact.

As a startup focused on emerging technology, Company 4 incorporates environmental design principles into its solar and battery technology products. The products are developed with the objective of increasing energy efficiency and longevity, thus promoting sustainable energy use for the end-user. The company’s research and development team is constantly exploring new materials and technology solutions that maximize energy retention and reduce the need for frequent replacements, making sustainability a core component of its product innovation.

Company 1 highlighted their "design for sustainability" approach, which guides decisions around materials, product lifecycle, and end-of-life recyclability. For example, one practice involves removing unnecessary components (e.g., chargers for certain products), minimizing packaging, and streamlining supply chains to reduce emissions. Company 1's design phase is marked by close collaboration between R&D and sustainability teams to assess the environmental impact of each product, which aligns with their internal carbon reduction goals and compliance with international sustainability standards.

Outside of the design phase, all companies reported a focus on using renewable energy and maximizing resource efficiency. Company 5, for instance, has implemented solar energy in their manufacturing process and is working toward full carbon neutrality by offsetting emissions where possible. Similarly, Company 2 has integrated renewable energy sources across its operations, emphasizing their role in minimizing the environmental impact of energy-intensive industrial activities.

Resource efficiency and waste management are practices adopted across the companies interviewed. For example minimizing water use, reducing raw material waste, and recycling byproducts where possible. Company 1 has implemented a resource efficiency strategy that focuses on minimizing materials in product packaging, reducing electronic waste (eg removal of chargers), and offering repair and recycling services, and implementing lean manufacturing principles to reduce excess. Their strategy also includes, and has always done so as part of their customer care policies, initiatives like refurbishing devices and repurposing components, which supports their commitment to reduce electronic waste and having a circular economy. Company 3 has adopted numerous waste reduction practices. For example, the company reuses water in production processes and implements strict controls on raw material use to avoid waste. Company 3's waste management also extends to byproduct recycling, where they repurpose certain waste materials for secondary applications, reducing landfill contributions.

All the companies have some or many projects ongoing to reduce their carbon emissions. Reducing carbon emissions is in-fact central to their environmental practices, with initiatives ranging from energy-efficient processes to carbon offset programs. As a startup in sustainable technology, Company 4's carbon reduction efforts are literally what their products provide. They contribute to broader carbon reduction goals by supporting renewable energy storage and optimizing solar power usage. Internally, Company 4 has begun tracking and analyzing their operational carbon footprint to identify areas for further improvement. The company also plans to establish a formal carbon offset strategy in the coming years as their operations scale up. For Company 5, their focus is on achieving full carbon neutrality, which is an ambitious goal supported by their use of renewable energy and a forthcoming plan to offset residual emissions. This decision was the result after

conducting a carbon footprint assessment to identify the most significant emissions sources, guiding their decision to implement targeted carbon reduction and offset initiatives.

Company 1 and Company 2 emphasize sustainable sourcing as part of their environmental governance, and are making efforts to ensure that their suppliers meet high standards for environmental responsibility. For example Company 2's sustainable sourcing strategy involves partnering with suppliers who adhere to stringent environmental and ethical standards. This includes regular supplier audits to assess compliance with Company 2's environmental guidelines, which cover aspects like resource use, emissions, and waste management. Through these partnerships, Company 2 aims to reduce its indirect environmental impact, ensuring that the entire supply chain aligns with their sustainability objectives. Company 1 applies strict environmental standards to its suppliers, prioritizing those that use environmentally responsible practices. For example, they favor suppliers who minimize resource usage and implement sustainable packaging.

Emphasizing the circular economy, companies like Company 1 and Company 5 focus on recycling and product lifecycle management as part of their environmental strategy. Company 1 has taken concrete steps toward a circular economy by offering trade-in and recycling programs for their devices. This program enables consumers to return old devices for recycling or refurbishment, which not only reduces electronic waste but also aligns with their sustainability goals. Company 1's recycling initiatives include partnerships with third-party recycling facilities that specialize in environmentally sound disposal of electronic components. For Company 5, they focus on recycling and waste repurposing for their sustainability approach. In addition to using renewable energy, the company has implemented waste recycling processes that minimize landfill contributions, ensuring that manufacturing byproducts are either recycled or repurposed in secondary applications.

6.3.2 Social Practices

For Social responsibility the companies shared about taking deliberate steps to foster equitable and safe working environments. The interviews revealed a variety of social initiatives tailored to each firm.

Interviewees across the interviewed companies pointed to a common theme which is employee welfare within their ESG frameworks. For example, Company 1 implemented comprehensive well-being programs, providing employees with access to extended health benefits, mental health resources, and structured channels for feedback and grievances. They emphasized the importance of creating a supportive workplace so employees feel their well-being is prioritized, which they view as foundational to maintaining productivity and engagement.

Similarly, Company 5 offers enhanced health services, including a partnership with healthcare providers and supplementary health insurance for employees. This indicated that they are committed to having a safe and healthy work environment, which the interviewee noted as being both "business-driven and morally supported”. This endeavor serves immediate employee needs and also could reinforce the company’s reputation as an employer that values and cares for its staff.

Diversity and inclusivity were prominent in the social practices of Company 1 and Company 4, where DEI initiatives are not just seen as regulatory compliance but as part of the corporate culture. Company 1 has established a set of clear policies aimed at promoting gender and cultural diversity, with active measures to create an inclusive workplace where all employees, regardless of background, have equitable opportunities for growth. According to interviewees, this includes regular training on inclusivity, unconscious bias workshops, and mentorship programs for underrepresented groups.

Additionally at Company 4, inclusivity is woven into the recruitment process, with the firm focusing on bringing diverse talent into the organization to enhance creativity and innovation. They feel this is especially relevant in their technology-oriented field, where varied perspectives can drive innovation in product development and problem-solving. Also the company’s DEI strategy includes flexible work policies and adaptability to diverse cultural and personal needs, which attracts a broader talent pool.

All shared a strong sense of responsibility toward the communities in which they operate. For instance, Company 2 actively contributes to local community development, through sponsorships and partnerships with local organizations that support education and environmental initiatives. This outreach is viewed as a way to build positive relationships with the surrounding community and is an important part of Company 2's identity as a responsible corporate citizen. Company 3, operating in an environmentally impactful industry, integrates social initiatives within its community support efforts. By investing in educational programs focused on sustainability and environmental awareness, they aim to raise awareness among local stakeholders about the importance of sustainable practices, particularly in regions where their operations have a large environmental footprint.

Company 1 and Company 5 have structured opportunities for employees to participate directly in ESG initiatives as a way of fostering an internal culture of shared responsibility. Company 1 encourages employees to be part of sustainability projects, to have a sense of ownership and alignment with the company’s ESG values. For example, employees are given the opportunity to volunteer in community service projects or contribute to internal committees focused on social responsibility goals. Company 5 has taken a similar approach, allowing employees to contribute ideas to

their sustainability agenda which has been effective in not only generating new ideas but also building a strong team culture around ESG principles

When it came to ethical labor practices, Company 3 and Company 2 both operate in industries where rigorous labor standards are essential due to the nature of the work and the regions in which they operate. Both companies have established codes of conduct that strictly adhere to international labor standards, including fair wages, safe working conditions, and protections against forced or child labor**.** Company 3 also invests in workforce development programs that provide employees with upskilling opportunities, helping them adapt to new technologies and sustainable practices, which is particularly valuable given the evolving landscape of the manufacturing industry.

Some of the interviewees mentioned that their companies extend their social practices into their supply chains by prioritizing suppliers who adhere to ESG criteria. Mainly, Company 1, Company 2 and Company 4 ensure that suppliers of raw materials, and even services, meet ethical and environmental standards, thereby extending their social responsibility beyond their own operations. This includes regular audits and partnerships with suppliers to ensure and encourage transparency and align sustainability goals across the supply chains.

6.3.3 Governance Practices

The interviews revealed how the companies use governance to lead their ESG strategies from the top, ensure there is accountability, and align their corporate policies with regulatory standards. ESG initiatives and corporate strategy came up on most of the interviews as a fundamental governance practice across companies. For example, Company 3 views ESG as integral to its business strategy, with the "Green Agenda" established as the company's north star. This agenda is in line with Company 3’s primary business strategy, and they use it in driving both external communications and internal motivation. As they are considered a heavy industry company with a substantial carbon footprint (they did not provide a number exactly but according to their estimates the cement industry which they are a part of account for 7-8% of global CO2 emmissions), Company 3's leadership leverages ESG to transform the company from being a traditional industrial player to a "clean, green tech company," underscoring how governance, and perhaps good marketing and messaging, can redefine organizational identity.

Company 1 also has governance structures that prioritize ESG integration at the strategic level. They have established a governance committee to oversee ESG progress, reporting directly to the board and upper management. This top-down commitment resulted in sustainability metrics to be continuously monitored, with regular updates to executives who are ultimately accountable for

progress toward ESG goals. Interviewees noted that this structure creates a corporate culture where sustainability is seen not merely as a project but as an ongoing strategic priority.

Establishing measurable Key Performance Indicators (KPIs) for ESG initiatives was cited as a best practice for maintaining accountability. All companies highlighted the use of KPIs that align with ESG goals, which include metrics on energy consumption, emission reductions, lifecycle extension, and social impact. For instance, Company 2 has developed KPIs that reflect environmental impact in product usage and the efficiency of their mining equipment, which are then linked to performance reviews at multiple levels within the organization. While at Company 1, accountability is driven by annual ESG assessments, where business units are evaluated on their ESG contributions. This assessment includes metrics from carbon footprint calculations to the diversity of leadership roles. The objective of these assessments is to ensure the team performance reviews and leadership evaluations are directly linked to governance practices which are also linked to organizational incentives.

Company 3 adheres strictly to ethical standards, partly due to the regulatory environment in Denmark, where corporate responsibility is highly regulated. They have implemented comprehensive compliance frameworks, including regular audits and third-party evaluations to ensure that practices across their supply chain align with global ethical standards. Similarly, Company 4, since being a growing company in the sustainable technology sector, emphasizes proactive compliance within its governance framework, particularly in sourcing materials and managing supplier relationships. For them, this includes prioritizing suppliers that align with their environmental and ethical standards. They rely on a third-party verification to assess supplier practices, which ensures alignment with their internal standards and so alleviate any risk of falling short of industry best practice. Company 4's governance framework also includes regular risk assessments to identify any potential gaps in compliance.

Transparent reporting is another key governance practice that Company 2, Company 1, Company 4 and Company 3 prioritize. Company 2 regularly publishes detailed sustainability reports that cover their progress on ESG targets. The reports are publicly available, providing transparency to stakeholders and enabling external accountability. The reports cover both achievements and areas for improvement, which, according to Company 2's ESG team, reinforces their commitment to transparency and continuous improvement. Company 3 has a similar approach, incorporating transparent reporting into its governance model to build trust with investors, clients, and regulators. They release annual sustainability reports that highlight ESG successes, improvement needs and challenges, which gives a balanced view of their sustainability journey. Updates on ESG

performance are shared with employees, which are intended to build a culture of openness and responsibility.

Beyond internal operations, some of the interviewees shared that they extend their governance practices to the entire product lifecycle and supply chain. Company 3 and Company 2, for example, apply rigorous environmental and social standards to their suppliers and require documentation on responsible sourcing and waste management. They use a supplier code of conduct that outlines their expectations around environmental impact, fair labor practices, and ethical governance. This code is mandatory for all suppliers, ensuring that governance practices extend through the entire value chain.

Company 1 has a similar approach, pushing compliance standards for suppliers to minimize environmental risks and ensure ethical labor practices. They engage in regular audits and encourage supplier partnerships that support their ESG objectives. This goes into product lifecycle management, where Company 1 designs products for longevity and recyclability, reducing environmental impact and aligning with their governance priorities. Whether a supplier complies or follows the guidance is not readily measured, and in all cases the interviewees still need to make sure that their operations continue without stopping to ensure revenue generation.

6.3.4 Motivations for ESG Adoption

The motivations behind adopting ESG practices varied, ranging from regulatory requirements and market pressures to intrinsic corporate values and long-term strategic goals. Regulatory compliance was a major driver across most interviewed companies, particularly those operating in sectors with strict environmental and social regulations. Compliance with both local and international standards ensures not only that companies avoid legal repercussions but also that they maintain credibility and competitiveness in highly regulated markets, especially in the EU and Finland.

As a company in the construction material industry, which is under constant environmental scrutiny, Company 3 is heavily motivated by regulatory demands. The high carbon compliance essential, and Company 3’s Green Agenda aligns with their Nordic country’s strict environmental policies. According to the interviewee, adhering to these regulations is vital for maintaining Company 3's license to operate, but it also provides a framework for the company’s environmental strategy. For Company 1, compliance with environmental regulations—particularly in Europe where e-waste and product lifecycle legislation is strict—serves as a foundation for their ESG efforts. Company 1’s adherence to regulations around electronic waste disposal, recycling, and product sustainability not only ensures compliance but also reinforces the company’s environmental image, a significant factor in a consumer-driven market.

The rise in conscientious consumer expectations and competitive pressures also drive their ESG adoption. The interviewees mentioned that sustainability is increasingly valued by customers and investors, thus ESG initiatives can provide a competitive advantage.

For Company 2, the slow but steady rise in demand for sustainable products from clients in the mining and aggregate sectors, likely also spurred by regulations, serves as an effective motivator. As their customers look to minimize their own environmental footprints, they also seek suppliers who offer energy-efficient and environmentally responsible machinery. Company 2's decision to commit to sustainable design and renewable energy in their products meets this demand but also enhances their reputation as a forward-thinking supplier, potentially positioning them advantageously in a competitive market. Company 4's entire business model is driven by the goal of providing products that contribute to renewable energy adoption. The market demand for sustainable battery technology and efficient solar solutions reinforces Company 4's commitment to ESG. This market orientation toward sustainability enables Company 4 to position itself as a niche leader, appealing to environmentally conscious customers who value innovation in renewable energy.

It's not just compliance and market demands, but the shared values and corporate responsibility were frequently cited as motivators for ESG. The interviewed companies view their ESG efforts as a reflection of their ethical commitments, reflecting their organizational culture as one that prioritizes responsibility and long-term sustainability. Company 5's approach to ESG is rooted in its corporate values, and has a strong focus on community impact and ethical responsibility. Their renewable energy initiatives and emphasis on sustainable manufacturing practices align with an internal commitment to corporate social responsibility (CSR), which the interviewee noted as being "morally driven" as well as "good for business". Company 1's motivations are also influenced by corporate values that emphasize ethical responsibility and social impact. Company 1's DEI initiatives and community engagement, like with their 'Better Phones Project' reflect an ethical commitment to inclusivity and societal well-being. They feel this ensures that they are going beyond just the physical sustainability and not just as a regulatory requirement, but as a foundational aspect of Company 1's identity.

Engaging employees and satisfying stakeholder expectations are further motivators for ESG adoption. It was shared that when their employees feel aligned with their organization's sustainability goals, it positively impacts both employee satisfaction and productivity – no data was provided to share this link so there is no possibility to confirm this statement. This alignment then "strengthens relationships with investors, suppliers, and community members". Both Company 2 and Company 3 shared that they use ESG to enhance employee engagement, and have seen the positive

correlation between sustainability initiatives and workforce motivation. Because by involving employees in their sustainability projects and integrating ESG goals into performance evaluations, they create a culture of shared responsibility, which interviewees noted as fostering a more committed and proactive workforce; having a common goal beyond shareholder value add.

Also, most interviewees mentioned that ESG initiatives are a means of future-proofing their operations and enhancing strategic resilience, as well as potentially extending their own 'exisitence'. Investing in sustainable practices today, they aim to mitigate risks associated with climate change, resource scarcity, and evolving consumer expectations. Like with Company 4's and Company 2's commitment to environmental design and renewable energy storage aligning with a long-term view of resilience. They aim to not only fulfil current demand for sustainable technology but also anticipate future requirements for energy efficiency and environmental impact, positioning themselves as a resilient player in a rapidly changing market. Or Company 1's continued efforts in reducing packaging and focusing product lifecycle management, both initiatives are part of a broader risk mitigation strategy that prepares the company for stricter future regulations and shifting consumer expectations. This looking-into-the-future enables Company 1 to be agile in response to regulatory changes, and ensures their business model remains resilient and adaptable in a more and more sustainability-focused future.

Finally for this section, the companies were motivated by the desire to make a positive impact both globally and within their local communities. Particularly those firms that operate in industries with significant environmental footprints ie Company 1, Company 2, and Company 3, where minimizing global impact aligns with both regulatory expectations and ethical imperatives.

6.3.5 Challenges and Barriers to ESG Implementation

Despite strong commitments to sustainable practices, every one of the interviewed companies faced and continue to considerable challenges in embedding ESG principles into their operations. There are several to issues to mention but the focus will be the most repetitive: financial constraints, resource limitations, lack of reporting software and/or services, some cultural resistance, and mostly regulatory complexities.

A challenge shared by the small to mid-sized ones, is the high cost associated with ESG practices. For businesses like Company 5, the expense of adopting renewable energy and green technologies can be prohibitive. As noted by the interviewee, while they have made strides in implementing solar power and other renewable sources, more extensive initiatives may need to wait until cost-effective options are accessible, slowing their progress toward carbon neutrality. Similarly, Company 3 and 2, in the construction materials industry, face high upfront costs in developing lower-

emission technologies. The substantial investment required for these initiatives, combined with a gradual return on investment, creates a tension between financial goals and environmental progress.

Another barrier is resource limitations, mainly referring to personnel and technical expertise. For a global company like Company 1, operating in diverse markets with complex supply chains, it can be challenging to implement standardized ESG practices consistently across regions. The absence of a centralized ESG team in some areas has led to uneven application of sustainability practices. Similarly, Company 2 encounters hurdles in embedding sustainability into heavy manufacturing operations, where the need for technical adjustments and logistical resources is high. Without additional capacity or dedicated ESG specialists, companies like Company 2 struggle to expand sustainable practices on a larger scale.

Cultural resistance within organizations also complicates ESG integration. Many employees and leaders accustomed to traditional practices can be reluctant to embrace new sustainability initiatives, especially when they require changes in performance metrics or standard workflows. At Company 3, some employees expressed skepticism about the impact of sustainability goals on production efficiency and job security, which slowed the adoption of green practices. Company 2 faces similar resistance, particularly from departments focused on efficiency and cost-effectiveness. To foster cultural alignment, Company 2 has invested in training and workshops to cultivate a sustainability-focused mindset, though this transformation requires time and effort.

In addition to internal challenges, companies encounter complex regulatory requirements, particularly when operating across multiple regions. For instance, Company 1 must navigate a landscape of diverse and evolving regulations, from e-waste laws in the EU to environmental standards in North America and Asia. Meeting these regulatory demands involves extensive administrative support and regional coordination, adding layers of complexity that can slow progress. Company 3, due to its involvement in cement production, faces some of the strictest environmental regulations globally. Continuous investment in compliance monitoring, process adjustments, and legal documentation is essential, yet it presents an ongoing challenge given the dynamic regulatory landscape.

Supply chain sustainability also presents considerable challenges, especially for companies reliant on raw materials or global suppliers. Ensuring that suppliers meet environmental and social standards requires meticulous oversight. At Company 2, which sources materials for the mining industry, sustainable sourcing demands regular audits and, at times, supplier adjustments, which can disrupt operations and strain resources. Company 4 faces similar challenges in the renewable energy

sector, where maintaining control over the environmental impact of its supply chain is critical but complex, given the limited leverage smaller companies have over suppliers.

Finally, and probably the barrier that has the biggest potential to improve many companies' struggles, is with data collection and measuring the impact of their ESG initiatives. Every one of the interviwees shared that without comprehensive data, tracking progress and demonstrating the return on investment of sustainability efforts becomes difficult. Company 5, for example, finds it challenging to evaluate the full impact of their initiatives due to limited data collection resources, which impedes their ability to make data-driven improvements. Company 1, with a global footprint, encounters logistical barriers in gathering consistent ESG data across regions. Implementing standardized reporting tools across different markets is complex and has restricted their ability to accurately report on ESG outcomes, which limits effective communication of their progress to stakeholders.

And so the journey to embed ESG practices within, and around, an organization is a complex field of challenges despite the positive impacts they could potentially have on the environment

6.4 Creating the Categories or Themes

The process of creating categories was more challenging than expected, mainly because the categories and themes have been preordained and part of the study since the title page: the 3-letter acronym: (E)nvironmental,(S)ocial and (G)overnance. However, from the coded data involved and after analysis of the recurring themes, it was the shared industry trends that allowed for outside thinking. Each category was thus developed by grouping similar and repeating codes, which represented specific areas of environmental, social, and governance practices, and creating more overarching themes that provided a view of how the interviewed companies approach and implement their sustainability goals. Three 'new' categories, including the E, S and G, were made. The table in Figure 6 shows the categories

Table 7 Table of Category Creation

Company	Codes	Category/Themes
Company 3	Emissions Reduction	Environmental Practices
Company 3	Corporate Responsibility	Cultural and Organizational Transformation

Company 3	Cultural Shift	Cultural and Organizational Transformation
Company 3	Regulatory Alignment/Compliance	Governance & Compliance
Company 3	Ethical Workforce Practices	Social Practices
Company 3	Employee Safety	Social Practices
Company 3	Green Technology	Environmental Practices
Company 3	Emissions Reduction	Environmental Practices
Company 3	Transparency	Governance & Compliance
Company 3	Responsible Supply Chain	Stakeholder and Supply Chain Transformation
Company 5	Employee Health	Social Practices
Company 5	Safety Practices	Social Practices
Company 5	Renewable Energy	Environmental Practices
Company 5	Carbon Goals	Strategic Alignment and Impact Measurement
Company 5	Local Sourcing	Stakeholder and Supply Chain Transformation
Company 5	Responsible Supply Chain	Stakeholder and Supply Chain Transformation
Company 5	Resource Constraints	Environmental Practices
Company 5	Frameworks	Strategic Alignment and Impact Measurement
Company 5	Simplicity	Cultural and Organizational Transformation
Company 5	Regulatory Alignment/Compliance	Governance & Compliance
Company 5	Strategic ESG Integration	Strategic Alignment and Impact Measurement
Company 2	Strategic ESG Integration	Strategic Alignment and Impact Measurement
Company 2	Industry Impact	Strategic Alignment and Impact Measurement
Company 2	Energy Efficiency	Environmental Practices
Company 2	Sustainable Design	Environmental Practices
Company 2	Emissions Reduction	Strategic Alignment and Impact Measurement
Company 2	Responsible Design	Environmental Practices
Company 2	Responsible Supply Chain	Stakeholder and Supply Chain Transformation
Company 2	Ethical Workforce Practices	Social Practices
Company 2	Employee Safety	Social Practices
Company 2	Regulatory Alignment/Compliance	Governance & Compliance
Company 2	Frameworks	Strategic Alignment and Impact Measurement
Company 4	Renewable Energy	Environmental Practices
Company 4	Product Lifecycle Extension	Strategic Alignment and Impact Measurement
Company 4	Ethical Sourcing	Stakeholder and Supply Chain Transformation
Company 4	Low CO2 impact materials	Strategic Alignment and Impact Measurement
Company 4	Community Engagement	Social Practices
Company 4	Local Production	Stakeholder and Supply Chain Transformation
Company 4	Responsible Supply Chain	Stakeholder and Supply Chain Transformation
Company 4	Local Sourcing	Stakeholder and Supply Chain Transformation
Company 4	Corporate Responsibility	Cultural and Organizational Transformation
Company 4	Leadership Transparancy	Cultural and Organizational Transformation
Company 1	Certification	Governance & Compliance
Company 1	ESG Standards	Governance & Compliance
Company 1	Responsible Design	Environmental Practices
Company 1	Frameworks	Strategic Alignment and Impact Measurement
Company 1	Regulatory Alignment/Compliance	Governance & Compliance
Company 1	Waste Reduction	Environmental Practices

Company 1	Ethical Sourcing	Stakeholder and Supply Chain Transformation
Company 1	Responsible Supply Chain	Stakeholder and Supply Chain Transformation
Company 1	Local Sourcing	Stakeholder and Supply Chain Transformation
Company 1	Community Engagement	Social Practices
Company 1	Emissions Reduction	Strategic Alignment and Impact Measurement
Company 1	Strategic ESG Integration	Strategic Alignment and Impact Measurement
Company 1	Employee Well-being	Social Practices
Company 1	Ethical Workforce Practices	Social Practices

Figure 6 Table of Category Creation

The themes or categories created were:

- Environmental Practices
- Cultural and Organisational Transformation
- Governance and Compliance
- Social Practices
- Stakeholder and Supply Chain Transformation
- Strategic Alignment and Impact Measure

6.5 Category Reasoning

All the interviewed companies repeatedly cited initiatives around renewable energy integration and emissions control and adjusting sources to reduce waste. Even though there is no real single definition of what 'Environmental Practices' entailed, various literature did encompass many aspects that aligned with these concepts. For example

> Source reduction programs for operational processes1 have been major initiatives in environmentally oriented practices since the early integration of TQM-like environmental programs such as total quality environmental management (TQEM) programs (Kitazawa and Sarkis, 2000). Similar to TQMprograms that focus on prevention and source reduction in quality problems, TQEMprograms can also benefit from the reduction and prevention of waste" (Sarkis, Gonzalez-Torre & Adenso-Diaz, 2010, 166–167)

Hence codes like "Emissions Reduction," "Energy Efficiency," "sustainable/responsible design", "Green tech", "Renewable Energy", and "Waste Reduction." as a shared commitment across the companies to reduce the physical environmental impact through sustainable energy sources, product lifecycle management, and emissions reduction strategies aligned under Environmental Practices.

Similarly, Social Practices as a category was developed by grouping codes related to workforce engagement and community impact, such as "Ethical Workforce Practices", "Employee Health and

Safety," "Community Engagement," and "Employee Well-being." All interviewed companies frequently mentioned when asked about their employee-focused programs, that they have ensured the support of mental health, employee safety, and added about their community-based projects a of social responsibility.

The Governance and Compliance category focused on those aspects such accountability, transparency, and adherence to industry standards, such as "Transparency," "ESG Standards" and "Regulatory Alignment/Compliance." Essentially, anything that was to be driven by EU, or ISO, or SEEA or EcoVadis etc as well as internal senior management oversight fell under this category; literally the category of quality control and hence Governance and Compliance.

After the well-established ESG categories, a recurring theme emerged: the focus on internal company values aimed at nurturing an idea until it becomes a shared mindset. This evolving identity resembles cultural pride found in societies worldwide. It's not an existing culture, but one in the process of transformation—being shaped and constructed from its current state. Thus, Cultural and Organizational Transformation was formed from codes like "Cultural Shift," "Corporate Responsibility", "Simplicity" and 'Leadership Transparency". There were frequent mentions of 'overcoming resistance', 'changing the mindset' and creating alignment with ESG goals through progressive, incremental improvements. This category highlights internal efforts companies go through when they make any transformation be it from post-merger & acquisition integration or cultivate a sustainability-oriented corporate culture.

The additional categories of Strategic Alignment and Impact Measurement and Stakeholder and Supply Chain Transformation come from codes that addressed long-term planning, impact tracking, and external engagement. Codes such as "Strategic ESG Integration," "Industry Impact", "Frameworks" and "carbon goals", pointed to a focus on integrating ESG into core strategies and measuring its outcomes. Similarly, codes like "Ethical Sourcing", "Responsible Supply Chain", "Local Production" and "Local Sourcing" were very clear in reflecting a change in how supply chains should be operated if they were to become cleaner and less impactful on the environment.

6.6 Analysis of the Categories

The ESG practices across the interviewed companies helped in understanding effective strategies, challenges, and best practices for sustainable corporate growth, which tie, to certain degree, with this thesis. One of the categories' purpose would be to illustrate that while companies often share similar goals, each organization's specific practices reflect unique challenges, operations, and strategic priorities; there is clearly no 'one shoe fits all'.

For example, renewable energy and emissions goals directly support broader environmental objectives and regulatory compliance while also contributing to Net Zero goals. This is in line with the Global Reporting Initiative (GRI) Standards on emissions and sustainability impact reporting, which emphasize the importance of managing emissions within the broader framework of responsible corporate behaviour (Global Reporting, 2023). From the thesis's goal point of view this showcases sustainability as a strategic imperative, with long-term value add, especially within energy-intensive industries.

Then for Social practices which include programs like employee well-being and community engagement highlight companies' commitment to corporate social responsibility (CSR), which is an important part of sustainable growth and stakeholder trust. Social responsibility involves meeting ethical, economic, philanthropic and legal expectations while also providing social value, particularly within the local communities in which companies operate (Carroll, 1991). So employee well-being and community engagement supports the thesis's objective of exploring holistic ESG strategies that could extend beyond just environmental metrics.

As for governance and compliance, it was observed in Company 2, Company 3, and Company 4 and Company 1, the importance of accountability, transparency, and risk management. These also align with the GRI Section 102 which states that the organization shall:

> describe the role of the highest governance body in overseeing the organization's due diligence processes to identify and manage impacts on the economy, environment, and people, including

after which point it adds the roll of committees and outcomes of processes. It was also important to note that smaller businesses, while having governance structures, adapted them to suit their size and capacity for oversight. This supports the idea that, even at the governance level, costs can influence the structure and approach to governance.

The remaining categories that reflect change or transformation, cultural and organizational transformation, and stakeholder and supply chain Transformation, reflect that the companies are trying to embed ESG principles in their operations as well as company culture. Significant cultural alignment is necessary to sustain change, especially when driving initiatives like ESG that require gradual organizational transformation, and this is best achieved when the leaders, as seen in the interviewed companies, are onboard as it creates a powerful coalition (Kotter, Kim and Mauborgne Renee A., 2011, pp. 7–8). Another diver is for example Company 1's iterative approach where they gradually integrated initiatives like reduced packaging, then removing chargers etc. or Company 3's rebranding as a "clean tech" company as part of their internal messaging, supports the

concept of having the culture and the organization transform towards more sustainable values. This supports the thesis's exploration of how cultural alignment can enhance ESG effectiveness.

Table 8 Theme Analysis Table

Category or Theme	Key Insights	Example Statements from Interviews
Environmental Practices	Actively integrating renewable energy sources and focusing on product design to reduce environmental impact. ESG is prioritized in product lifecycles.	- "Using solar power to meet our manufacturing needs." (Company 5)
Environmental Practices	Emission reduction goals are central, with Net Zero and other sustainability targets guiding R&D and operational strategies.	- "Net Zero by 2050…our R&D roadmap aims for 100% energy-efficient machinery." (Company 2)
Environmental Practices	Waste reduction efforts emphasize sustainable material sourcing, recycling, and reducing electronic waste.	- "Packaging reduction and reuse are part of our lifecycle strategy." (Company 1)
Social Practices	Health, safety, and well-being are prioritized, with robust employee support and community engagement reflecting a focus on social sustainability.	- "Employee safety and support are core to our social goals." (Company 5 & 1)
Social Practices	DEI practices are integral to fostering an inclusive culture and supporting employee diversity through training and policies.	- "We prioritize inclusivity through regular DEI workshops." (Company 1)
Governance and Compliance	Governance structures ensure transparency and accountability, with codes of conduct and whistleblower policies emphasizing ethical operations.	- "Our code of conduct ensures transparency across departments." (Company 3)
Governance and Compliance	Supplier compliance is enforced through codes of conduct, with a preference for local, EU-based sourcing to meet sustainability goals.	- "Our sourcing policy prioritizes EU suppliers to reduce environmental impact." (Company 4)

Governance and Compliance	Cross-functional governance teams support comprehensive ESG oversight, with senior leadership directly involved in sustainable practices.	- "Our governance team includes senior ESG advocates across all departments." (Company 2)
Cultural and Organizational Transformation	Organizational change is essential for ESG adoption, with initiatives aimed at aligning workforce mindset with sustainability goals.	- "We are fostering a cultural shift towards green tech as part of our brand." (Company 3)
Cultural and Organizational Transformation	Change management efforts often include training and iterative improvements, addressing resistance by encouraging gradual adoption of ESG practices.	- "Employee workshops and step-by-step improvements help us maintain ESG momentum." (Company 1)
Strategic Alignment and Impact Measurement	Long-term strategies include specific sustainability goals, like emission reductions by 2030 or Net Zero targets by 2050, aligning ESG with corporate vision.	- "Our goals are embedded within our strategic roadmap toward 2050." (Company 1 & 3)
Strategic Alignment and Impact Measurement	Comprehensive impact measurement through KPIs and regular assessments ensures tangible progress in ESG.	- "KPIs on employee engagement, emissions tracking, and community impact guide our strategy." (Company 2)
Stakeholder and Supply Chain Transformation	Supplier standards are strict, with sustainable sourcing codes prioritizing ethical practices and local suppliers for lower environmental impact.	- "Our suppliers follow a strict code of conduct to ensure sustainability." (Company 1 & 2)
Stakeholder and Supply Chain Transformation	Stakeholder transparency and community engagement are essential, with local sourcing and community-focused initiatives reinforcing ESG alignment.	- "We partner with local communities to support local economy and minimize environmental footprint." Company 4 & 5)

6.7 Results: Creating the ESG Services Portfolio

Based on the findings captured through coding and categorizing ESG initiatives for each company, the next step was the creation of an ESG portfolio. This portfolio acts as a structured guide, identifying key components that align with sustainable practices across various sectors. By organizing these components into a portfolio, it provides actionable frameworks that other companies can

replicate or adapt. This structured portfolio helps in translating the observed ESG efforts into standardized, scalable models.

The ESG portfolio would consist of different elements, each representing a section of the Environmental, Social, and Governance domains, for example as resource efficiency, community engagement, employee welfare, and transparency in operations. The portfolio can be used as both a benchmark and a tool for strategic planning, allowing companies to identify areas of improvement and opportunities for sustainable growth.

Table 9 Proposed ESG Services Portfolio

ESG Area	Initiative	Description
Environmental	Renewable Energy Integration	Implementing renewable energy sources, such as solar power, to reduce reliance on fossil fuels and minimize carbon emissions.
	Emissions Reduction Goals	Setting long-term emissions reduction targets, including carbon neutrality and Net Zero, with structured roadmaps for reaching these goals.
	Sustainable Product Design	Designing products with sustainability in mind, reducing waste, optimizing materials, and improving recyclability.
	Waste Reduction and Recycling	Focusing on waste reduction through recycling programs and efficient resource use, especially in product design and end-of-life management.
	Biodiversity Impact Assessment	Assessing and managing the impact of operations on local biodiversity, including environmental impact assessments.
Social	Employee Health and Well-being	Providing extensive health benefits, safety training, and mental health resources to promote a supportive work environment.
	Diversity, Equity, and Inclusion (DEI)	Implementing DEI policies, training, and inclusive practices to ensure a diverse and equitable workplace culture.
	Community Engagement	Engaging with local communities through sourcing, job creation, and community-based projects that contribute to regional welfare.
	Stakeholder Transparency	Maintaining open communication with stakeholders, including employees, suppliers, and communities, on ESG goals and progress.
Governance	Governance Transparency and Accountability	Establishing clear governance structures, including whistleblower policies and codes of conduct, to ensure transparency and ethical conduct.
	Supplier Standards and Compliance	Requiring suppliers to adhere to sustainability standards through codes of conduct and supplier risk assessments to align with company ESG goals.

	Cross-functional Governance Teams	Creating dedicated ESG or cross-functional teams that oversee sustainability initiatives and ensure alignment across departments.
	Regulatory and Compliance Monitoring	Ensuring that operations meet local and international standards, with regular audits and adjustments to stay aligned with changing regulations.
Strategic Alignment	Long-term ESG Strategy	Defining long-term ESG goals as part of the company's strategic roadmap, aligning sustainability objectives with corporate vision.
	Impact Assessment and Metrics	Using KPIs and metrics to measure the impact of ESG initiatives, enabling transparent reporting and continuous improvement.

7 Discussion

This research explored the integration of Environmental, Social, and Governance (ESG) practices within the manufacturing sector, focusing on the critical themes of environmental impact, social responsibility, and corporate governance. Findings reveal that while companies in this sector recognize the importance of ESG, they face unique challenges in balancing sustainability goals with operational and financial constraints. The companies are actively working towards reducing emissions and enhancing renewable energy usage, supported by frameworks like the Global Reporting Initiative (GRI) and UN Sustainable Development Goals (SDGs). However, the effectiveness of these initiatives varies significantly based on organizational priorities and sector-specific challenges.

7.1 Key Results and Conclusions

The survey and interviews revealed that while these companies have a growing interest in adopting ESG practices, they also faced challenges due to the lack of well-defined metrics and benchmarks. Without such metrics, it becomes difficult for companies to gauge progress or identify areas for improvement, which in turn affects their ability to make informed strategic decisions. This gap presents an opportunity for further refining the ESG Services Portfolio to provide more sector-specific guidelines and support. Another key finding was the evident motivation among companies to comply with ESG standards, driven by both regulatory pressures and an internal push for sustainable development. Whether enforcing this through regulations is a good thing or not will only be clear as time goes by and further research is made. The ESG Services Portfolio, thus, emerges as a potentially valuable tool for bridging the gap between aspiration and action.

The conclusions drawn from this research align with previous studies on the topic, emphasizing the role of strategic management and targeted initiatives in fostering sustainability. Moreover, the role of leadership in driving these initiatives cannot be overstated; effective leadership is often the driver and motivator that enables the successful adoption of ESG practices. The potential of ESG initiatives to contribute to improved financial performance and enhanced brand reputation also reinforces the relevance of ESG integration as a driver for business success. Companies that integrate ESG principles meet regulatory expectations might also create stronger connections with consumers and investors who value sustainability.

7.2 Evaluation of Methods Used

Thematic analysis was used to interpret qualitative data, which helped in identifying patterns and themes. However, a more detailed approach could have provided deeper insights into the changes

over time in ESG integration practices. For example to reveal trends and shifts in attitudes and practices that are not immediately apparent. Despite these limitations, the chosen methodology allowed for a broad understanding of the challenges and opportunities associated with ESG in manufacturing. A more diverse sample could be a valuable addition for future studies to enhance the reliability and depth of findings. Expanding the research to include perspectives from different regions or industries could also help to generalize the findings and provide a more holistic view of ESG practices.

The research could have also benefited from incorporating some respondent verification, or checking, where preliminary findings were shared with participants to ensure more relevance with their experiences. This would have added another layer of credibility to the data, as it would have provided an opportunity for participants to clarify or expand on their earlier. This addition would have helped to mitigate the risk of misinterpretation and ensured that the findings genuinely reflected participants' perspectives.

7.3 Framework Used and Further Research

The importance of using established frameworks like the SDGs and GRI is highlighted in existing literature (e.g., Global Reporting Initiative, 2023), which stresses the value of standardized approaches for ensuring transparency and consistency in ESG reporting. These frameworks provide a foundation for assessing ESG performance but they also help companies communicate their sustainability efforts to stakeholders in a credible manner.

Further research could explore the application of this framework in different sectors beyond manufacturing, such as the service industry or digital technology firms. Perhaps more work is needed to refine the framework's ability to adapt to the changing and evolving regulations and environmental standards. On the other hand, it can also be argued that research would never cease because of this evolution and adding more regulation only makes the applying ESG principles and processes impossible. Integrating more quantitative measures and exploring partnerships with regulatory bodies could also enhance the practicality and adoption of the framework. Collaboration with stakeholders, including policymakers and industry groups, could help ensure that the framework remains relevant and responsive to evolving sustainability challenges.

7.4 Conclusion

This study contributes to the growing body of knowledge on ESG practices in the manufacturing industry by presenting a tailored ESG Services Portfolio. The portfolio offers actionable steps for companies looking to align their operations with sustainability goals. Despite the challenges faced, the potential for positive impact—both environmentally and financially— could be achievable.

Effective ESG integration not only meets regulatory requirements but also creates value for companies in the form of improved reputation, operational efficiency, and financial performance. The ability of ESG initiatives to attract environmentally conscious investors and customers further adds to the business case for sustainability, making it a strategic imperative rather than just a compliance exercise.

7.5 Reflections on Learning

It was initially expected that this would be a fairly straightforward thesis, and for the most part, it proved to be so. The amount of information available online was staggering, which is understandable considering the importance of this topic. The articles, books, journals, and other information that were used in the study served to highlight and support the ideas presented here. The only surprise, and subsequently a clear opportunity, was the difficulty in accessing raw data and obtaining more numbers to study and conduct more quantitative comparisons – which is why in the later iterations of the study, quantitative analysis was omitted. Data that is shared by companies on their websites, or from sources like a UN study or even Statistics Finland, which was the closest one, was not sufficient. Instead, what was needed was an actual database containing all the relevant numbers, with filtering options by component, for example. This gap was expressed in the interviews on several occasions, and it is believed that such a database should be created and made available—whether for a fee or for free is yet to be decided.

The biggest area of improvement with regards to the study lies in the sample size. The goals set were too ambitious and ideally should have included closer to 20 or more companies. In its current state, the sample size is probably too small to make statements such as, "based on these five companies, these are the most sought-after ESG services." Perhaps, focusing on a single company and conducting a much deeper analysis could have added more value. Furthermore, including more quantitative measures would have strengthened the results.

On a more positive note, a deeper understanding was gained regarding the practical barriers and facilitators that companies face when attempting to align with the established ESG frameworks mentioned in the theoretical framework, such as the United Nations Sustainable Development Goals (SDGs) and the Global Reporting Initiative (GRI). These frameworks served as key theoretical underpinnings, and the study's findings supported their relevance in providing structured guidelines for ESG implementation, particularly in the manufacturing sector.

One concept that gained increasing relevance throughout the study was stakeholder engagement as a critical factor for ESG success. Initially, the focus was placed more on compliance and operational changes; however, as revealed through the interviews, genuine stakeholder engagement—

from executives to employees—was crucial in ensuring the successful adoption of ESG practices. The importance of an inclusive approach, involving all stakeholders, in creating lasting impact was thereby emphasized. Finally, upon reflection, the learning experience underscored the value of a holistic approach to sustainability, where every stakeholder, from top executives to entry-level employees, plays a vital role in driving positive change.

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Appendices

Appendix 1 The Interview Guide

Theme 1: ESG Implementation Journey

Can you describe your company's journey in implementing ESG practices?

What motivated your company to start focusing on ESG practices?

How does your company's ESG strategy align with its overall business strategy?

What role does senior leadership play in driving ESG initiatives?

Theme 2: Environmental Practices

What steps has your company taken to reduce greenhouse gas emissions?

How do you manage the environmental impact of your supply chain?

Can you provide examples of initiatives your company has taken for biodiversity conservation?

How do you ensure sustainable sourcing of raw materials?

Theme 3: Social Practices

How does your company ensure fair labor practices within your supply chain?

Can you describe your community engagement programs?

What measures do you take to ensure employee health and safety?

How do you handle complaints and grievances from employees and the community?

Theme 4: Governance Practices

How is your board of directors structured to support ESG initiatives?

What measures are in place to prevent corruption and bribery?

Can you describe your whistleblower policy?

How do you manage conflicts of interest within your company?

Theme 5: ESG Strategy and Future

How do you prioritize ESG issues within your company?

What tools and frameworks do you use for ESG reporting and measurements?

How do you see your ESG strategy evolving over the next five years?

What are the main obstacles you face in achieving your ESG goals?

Is there anything else you like to share about your company5

Appendix 2 The Webropol Survey Results

Basic report
Survey for Master's Thesis: ESG Service Portfolio

Total number of respondents: 14

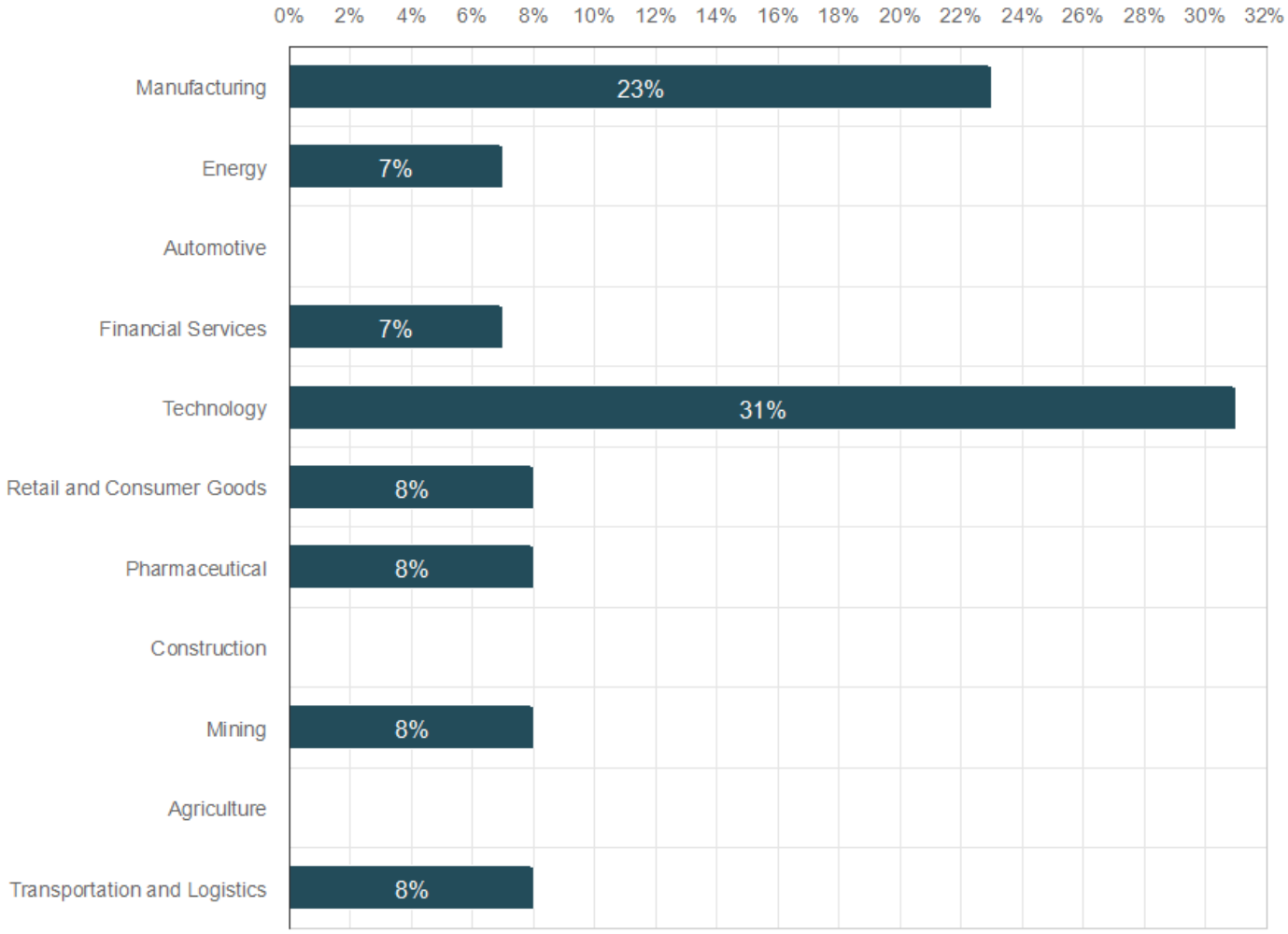
	Total (N)	%
Submitted responses: Public weblink	14	87
Survey opened by respondents	**85**	531
Started responding	16	100

General Information
Number of respondents: 14

Years of experience in your field
Number of respondents: 14

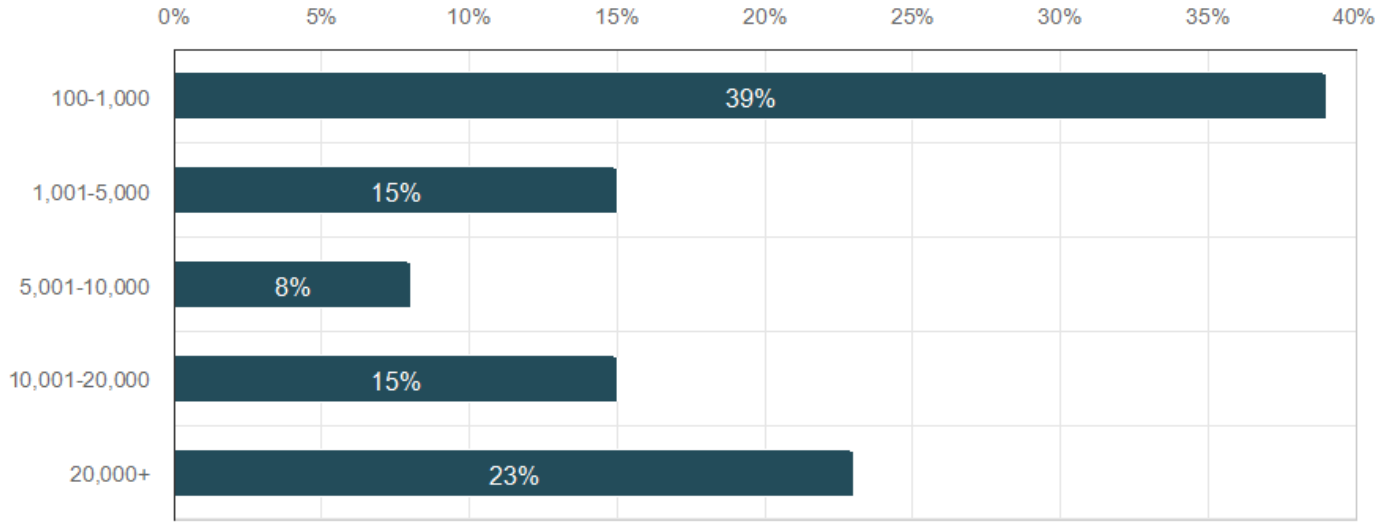
	Min value	Max value	Average	Median	Sum	Standard Deviation
Number of Years	1,0	25,0	10,4	9,0	146,0	7,4

Industry Sector
Number of respondents: 13



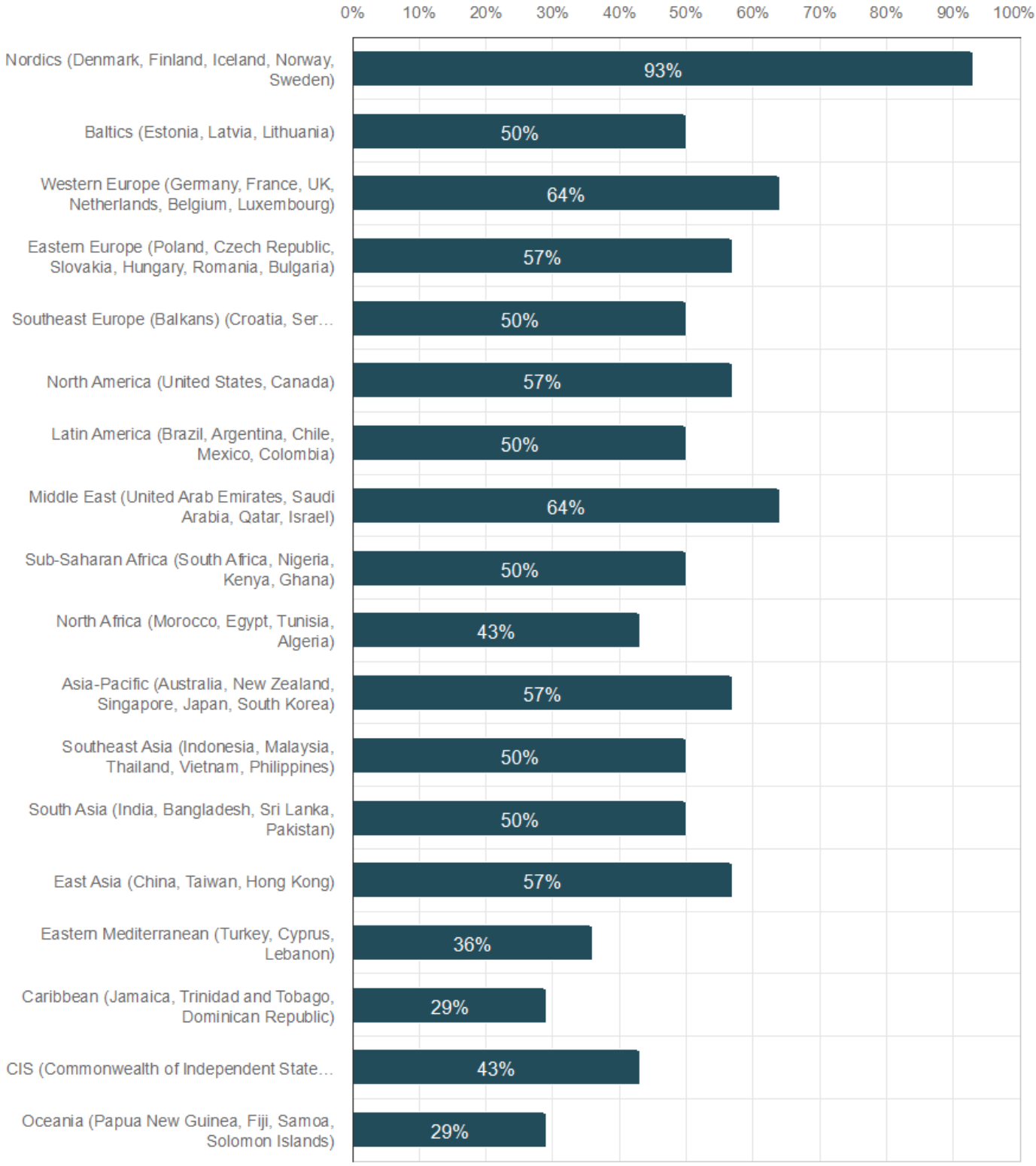
	n	Percent
Manufacturing	3	23,1%
Energy	1	7,7%
Automotive	0	0,0%
Financial Services	1	7,7%
Technology	4	30,7%
Retail and Consumer Goods	1	7,7%
Pharmaceutical	1	7,7%
Construction	0	0,0%
Mining	1	7,7%
Agriculture	0	0,0%
Transportation and Logistics	1	7,7%

Size of the Company (# of Employees)
Number of respondents: 13



	n	Percent
100-1,000	5	38,4%
1,001-5,000	2	15,4%
5,001-10,000	1	7,7%
10,001-20,000	2	15,4%
20,000+	3	23,1%

Regions the company operates in:
Number of respondents: 14, selected answers: 130

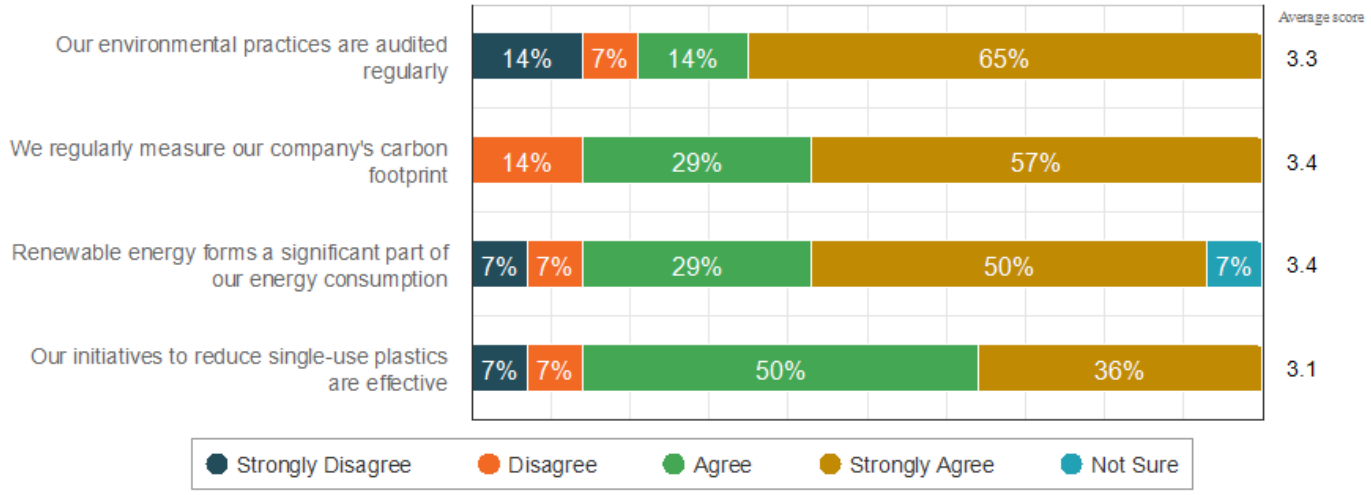


	n	Per-cent
Nordics (Denmark, Finland, Iceland, Norway, Sweden)	13	92,9%
Baltics (Estonia, Latvia, Lithuania)	7	50,0%

Western Europe (Germany, France, UK, Netherlands, Belgium, Luxembourg)	9	64,3%
Eastern Europe (Poland, Czech Republic, Slovakia, Hungary, Romania, Bulgaria)	8	57,1%
Southeast Europe (Balkans) (Croatia, Serbia, Bosnia and Herzegovina, Albania, Montenegro, North Macedonia)	7	50,0%
North America (United States, Canada)	8	57,1%
Latin America (Brazil, Argentina, Chile, Mexico, Colombia)	7	50,0%
Middle East (United Arab Emirates, Saudi Arabia, Qatar, Israel)	9	64,3%
Sub-Saharan Africa (South Africa, Nigeria, Kenya, Ghana)	7	50,0%
North Africa (Morocco, Egypt, Tunisia, Algeria)	6	42,9%
Asia-Pacific (Australia, New Zealand, Singapore, Japan, South Korea)	8	57,1%
Southeast Asia (Indonesia, Malaysia, Thailand, Vietnam, Philippines)	7	50,0%
South Asia (India, Bangladesh, Sri Lanka, Pakistan)	7	50,0%
East Asia (China, Taiwan, Hong Kong)	8	57,1%
Eastern Mediterranean (Turkey, Cyprus, Lebanon)	5	35,7%
Caribbean (Jamaica, Trinidad and Tobago, Dominican Republic)	4	28,6%
CIS (Commonwealth of Independent States) (Russia, Kazakhstan, Belarus, Ukraine, Armenia)	6	42,9%
Oceania (Papua New Guinea, Fiji, Samoa, Solomon Islands)	4	28,6%

Environmental Practices
This section focuses on the company's environmental sustainability efforts, such as reducing emissions, managing waste, and using renewable energy.

Select the level of agreement you have with following statements:
Number of respondents: 14

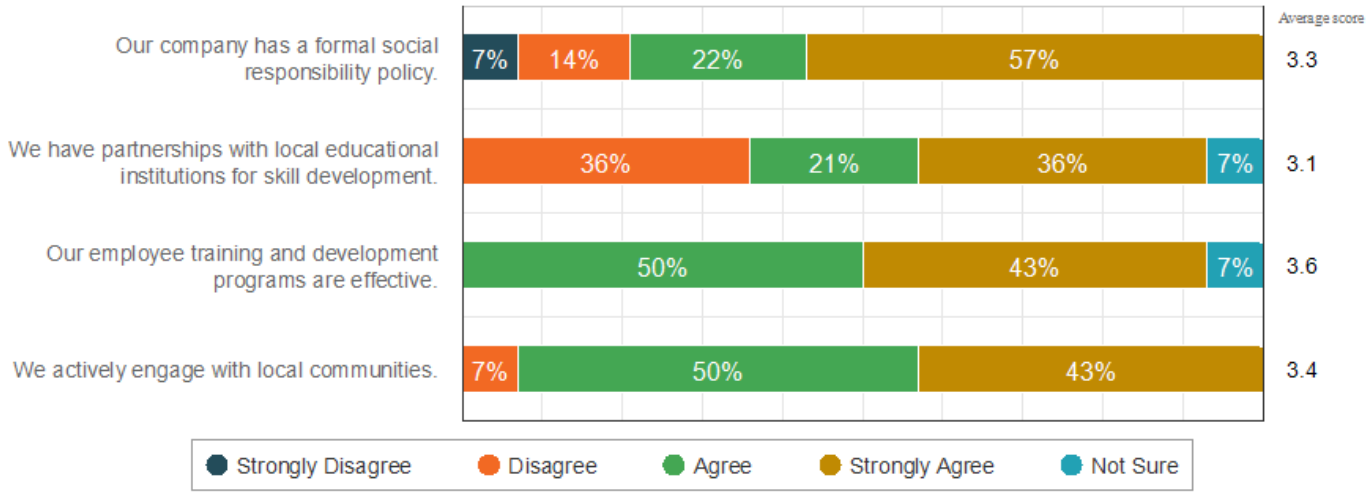


	Strongly Disagree	Disagree	Agree	Strongly Agree	Not Sure	Average	Median
Our environmental practices are audited regularly	14,3%	7,1%	14,3%	64,3%	0,0%	3,3	4,0

We regularly measure our company's carbon footprint	0,0%	14,3%	28,6%	57,1%	0,0%	3,4	4,0
Renewable energy forms a significant part of our energy consumption	7,2%	7,1%	28,6%	50,0%	7,1%	3,4	4,0
Our initiatives to reduce single-use plastics are effective	7,2%	7,1%	50,0%	35,7%	0,0%	3,1	3,0
Total	**7,2%**	**8,9%**	**30,4%**	**51,8%**	**1,8%**	**3,3**	**4,0**

Social Practices:
This section examines how the company addresses social responsibility, including labor practices, community engagement, employee safety, and human rights

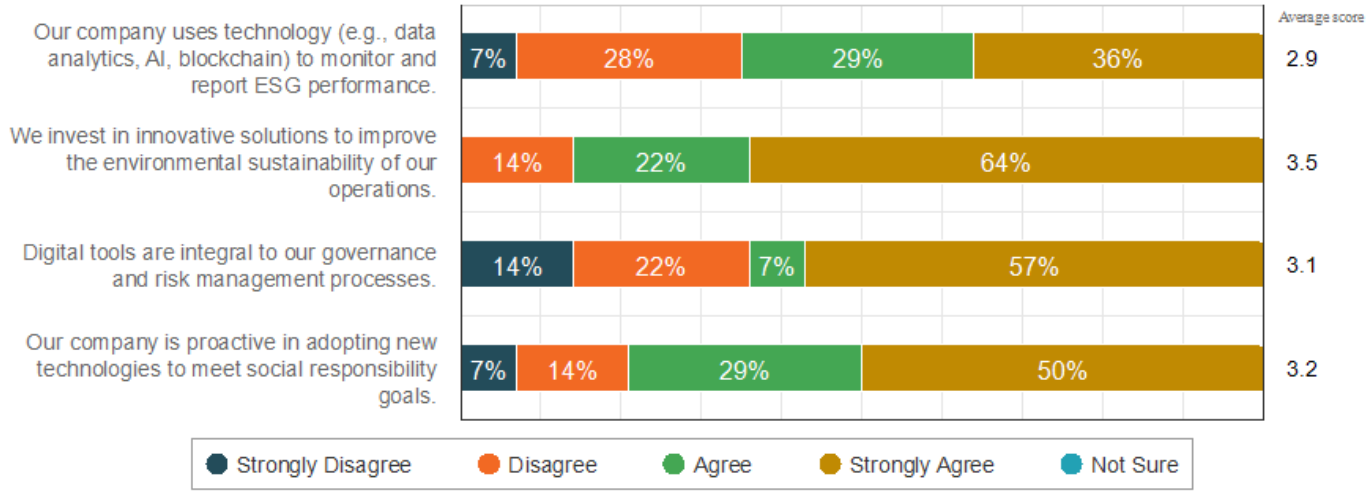
Select the level of agreement you have with following statements:
Number of respondents: 14



	Strongly Disagree	Disagree	Agree	Strongly Agree	Not Sure	Average	Median
Our company has a formal social responsibility policy.	7,2%	14,3%	21,4%	57,1%	0,0%	3,3	4,0
We have partnerships with local educational institutions for skill development.	0,0%	35,7%	21,4%	35,7%	7,2%	3,1	3,0
Our employee training and development programs are effective.	0,0%	0,0%	50,0%	42,9%	7,1%	3,6	3,5
We actively engage with local communities.	0,0%	7,1%	50,0%	42,9%	0,0%	3,4	3,0
Total	**1,8%**	**14,3%**	**35,7%**	**44,7%**	**3,6%**	**3,3**	**3,0**

Innovation and Technology in ESG
This section assesses the company's use of technology and innovation in advancing their ESG practices. It includes questions about the adoption of digital tools, automation, data analytics, and other technologies to enhance sustainability, social responsibility, and governance efforts.

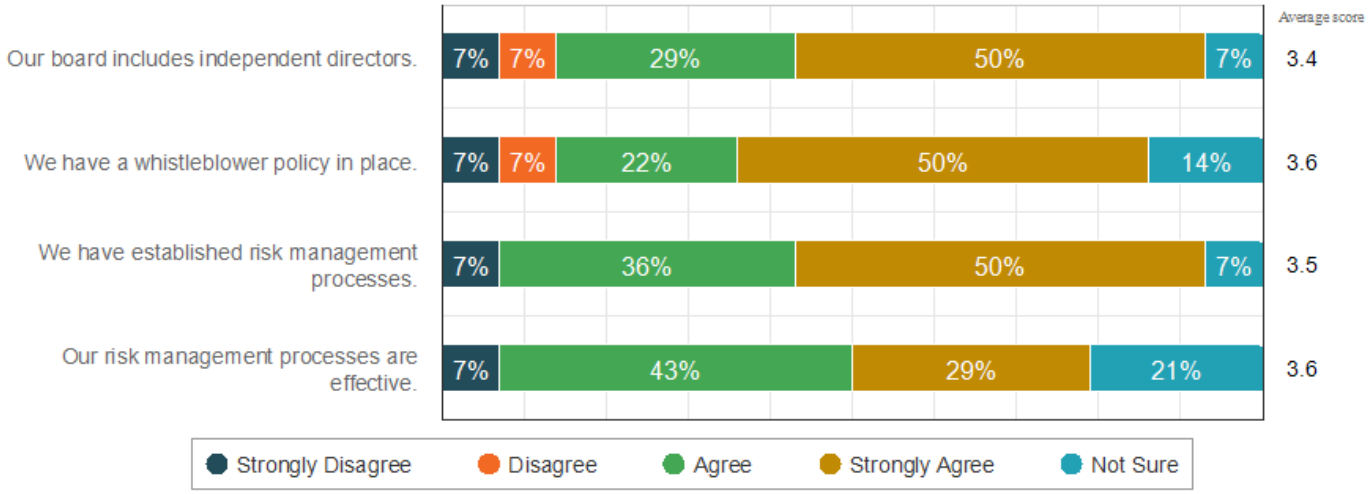
Select the level of agreement you have with following statements:
Number of respondents: 14



	Strongly Disagree	Disa-gree	Agree	Strongly Agree	Not Sure	Av-er-age	Me-dian
Our company uses technology (e.g., data analytics, AI, block-chain) to monitor and report ESG performance.	7,1%	28,6%	28,6%	35,7%	0,0%	2,9	3,0
We invest in innovative solutions to improve the environmental sustain-ability of our operations.	0,0%	14,3%	21,4%	64,3%	0,0%	3,5	4,0
Digital tools are integral to our gov-ernance and risk management pro-cesses.	14,3%	21,4%	7,2%	57,1%	0,0%	3,1	4,0
Our company is proactive in adopt-ing new technologies to meet so-cial responsibility goals.	7,1%	14,3%	28,6%	50,0%	0,0%	3,2	3,5
Total	**7,1%**	**19,7%**	**21,5%**	**51,8%**	**0,0%**	**3,2**	**4,0**

Governance Practices
This section looks at the company's governance structure, focusing on policies for preventing corruption, managing conflicts of interest, ensuring accountability, and supporting ESG initiatives at the board level.

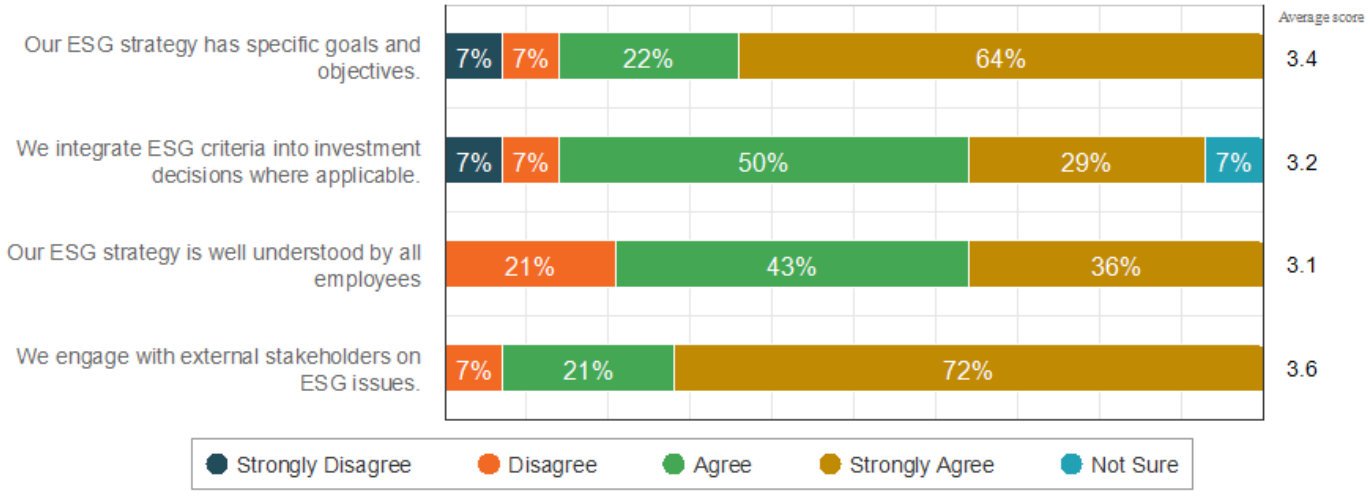
Select the level of agreement you have with following statements:
Number of respondents: 14



	Strongly Disagree	Disagree	Agree	Strongly Agree	Not Sure	Average	Median
Our board includes independent directors.	7,2%	7,1%	28,6%	50,0%	7,1%	3,4	4,0
We have a whistleblower policy in place.	7,2%	7,1%	21,4%	50,0%	14,3%	3,6	4,0
We have established risk management processes.	7,2%	0,0%	35,7%	50,0%	7,1%	3,5	4,0
Our risk management processes are effective.	7,1%	0,0%	42,9%	28,6%	21,4%	3,6	3,5
Total	**7,2%**	**3,6%**	**32,2%**	**44,7%**	**12,5%**	**3,5**	**4,0**

Overall ESG Strategy
This section evaluates the organization's broader ESG strategy, including how it sets ESG goals, measures performance, engages stakeholders, and plans for long-term sustainability.

Select the level of agreement you have with following statements:
Number of respondents: 14

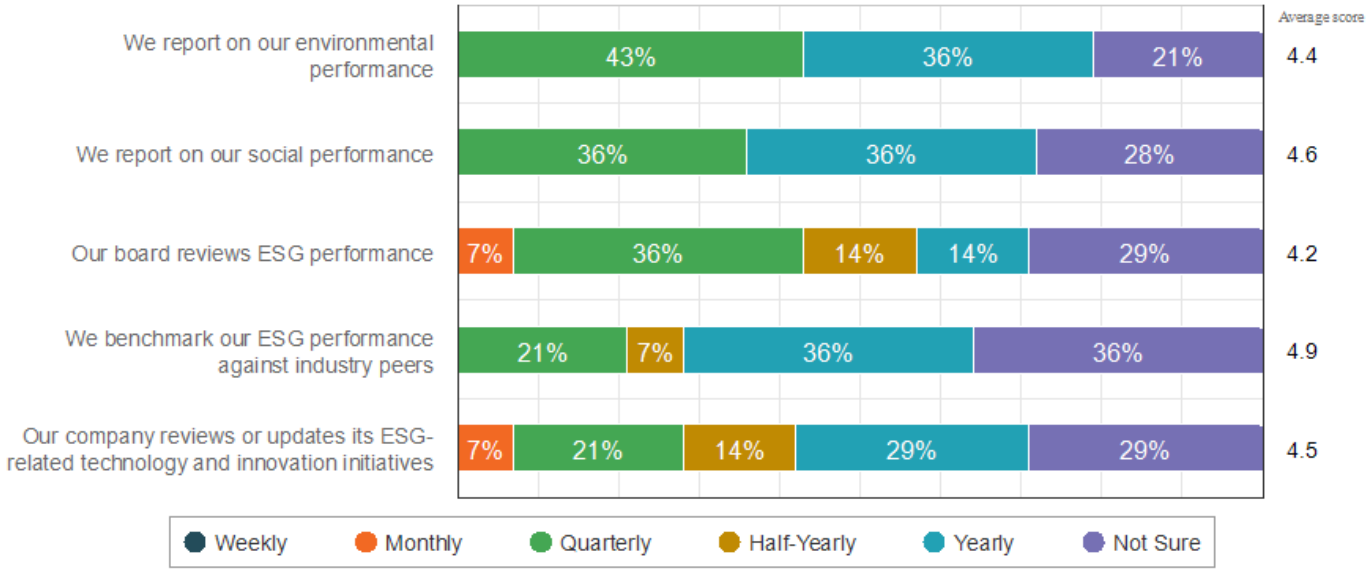


	Strongly Disagree	Disagree	Agree	Strongly Agree	Not Sure	Average	Median
Our ESG strategy has specific goals and objectives.	7,2%	7,1%	21,4%	64,3%	0,0%	3,4	4,0

We integrate ESG criteria into investment decisions where applicable.	7,2%	7,1%	50,0%	28,6%	7,1%	3,2	3,0
Our ESG strategy is well understood by all employees	0,0%	21,4%	42,9%	35,7%	0,0%	3,1	3,0
We engage with external stakeholders on ESG issues.	0,0%	7,2%	21,4%	71,4%	0,0%	3,6	4,0
Total	**3,6%**	**10,7%**	**33,9%**	**50,0%**	**1,8%**	**3,4**	**4,0**

Reporting Discipline and Transparency

Number of respondents: 14



	Weekly	Monthly	Quarterly	Half-Yearly	Yearly	Not Sure	Average	Median
We report on our environmental performance	0,0%	0,0%	42,9%	0,0%	35,7%	21,4%	4,4	5,0
We report on our social performance	0,0%	0,0%	35,7%	0,0%	35,7%	28,6%	4,6	5,0
Our board reviews ESG performance	0,0%	7,1%	35,7%	14,3%	14,3%	28,6%	4,2	4,0
We benchmark our ESG performance against industry peers	0,0%	0,0%	21,4%	7,2%	35,7%	35,7%	4,9	5,0
Our company reviews or updates its ESG-related technology and innovation initiatives	0,0%	7,1%	21,4%	14,3%	28,6%	28,6%	4,5	5,0
Total	**0,0%**	**2,8%**	**31,4%**	**7,2%**	**30,0%**	**28,6%**	**4,5**	**5,0**