



Assessing the Sustainability Reporting in the Energy Industry in Finland

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Bachelor of Business Administration

Thesis

2024

Abstract

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Degree Bachelor of Business Administration
Thesis Title Assessing the Sustainability Reporting in the Energy Industry in Finland
Number of pages and appendix pages 41 + 7
<p>This bachelor's thesis examines sustainability reporting in the Finnish energy industry in anticipation of the Corporate Sustainability Reporting Directive (CSRD), effective from 2024 onward. The CSRD enhances corporate transparency in sustainability by expanding the scope and depth of non-financial reporting in the European Union. The study aims to evaluate the preparedness of three large Finnish energy companies – Fortum, Neste, and Wärtsilä – to meet the new reporting standards mandated by the directive. The research seeks to understand how these companies' reports for 2022 and 2023 align with criteria and features of the CSRD. It focuses on their current disclosure of environmental, social, and governance (ESG) topics.</p> <p>The thesis comprises a theory section detailing the evolution of sustainability reporting frameworks and standards and the current legislative changes affecting them. This is followed by an empirical section analysing the sustainability reports of the selected companies. Using qualitative content analysis, the study categorizes and assesses the ESG disclosures within the companies' sustainability reports for 2022 and 2023. The analysis uses a coding framework to classify the reports according to predefined themes against the criteria and features of the CSRD.</p> <p>The study revealed a proactive approach by Fortum, Neste, and Wärtsilä towards adopting the CSRD's reporting requirements ahead of the 2024 mandate. All three companies have incorporated CSRD-aligned practices in their sustainability reporting for 2022 and 2023. This showcases substantial compliance with the CSRD's disclosure standards on ESG information. The companies exhibited extensive coverage across all topics, particularly in environmental aspects. They demonstrated advanced readiness by setting ambitious, quantifiable sustainability targets and reporting the yearly progress towards them.</p> <p>The findings indicate a strong alignment with CSRD guidelines among the three Finnish energy companies. Thus, the companies demonstrate high levels of preparedness in its implementation in their sustainability reporting for the following year. However, there is room for improvement in standardizing disclosures to fully meet the CSRD's extensive and cross-thematic reporting criteria. The study advocates for ongoing adjustments in reporting strategies to address the regulatory expectations. Further research is recommended in assessing the sustainability reporting after 2024 to analyse changes resulting from the formal application of the CSRD.</p>
Key words Sustainability Reporting, Non-Financial Reporting Directive (NFRD), Corporate Sustainability Reporting Directive (CSRD), Corporate Compliance, The European Green Deal

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1 Introduction

This is a research type of a bachelor's thesis written for the Degree Programme in International Business in the author's major specialization of Financial Management at Haaga-Helia University of Applied Sciences. This chapter will introduce the topic by presenting the background for it, the main research question and the investigative questions to be studied, the delimitation, the benefits, and finally – the key concepts surrounding it.

1.1 Background to the Topic

Corporate sustainability and its impact on society have been an important topic for decades. The concept encompasses aspects of environmental, social, economic, as well as political responsibility. Companies have an obligation to follow legislation enforced by governments to not only perform responsibly but ensure transparent reporting practices of their operations. Sustainability reporting is a complex issue that has undergone several changes since its introduction in the early 90s. Since then, it has evolved from simple efforts to communicate non-financial information to attempts to demonstrate and promote corporate commitment to the fight against key societal and environmental challenges.

In 2019 the European Commission presented "The European Green Deal". It is a comprehensive growth strategy aimed at establishing Europe as the first climate-neutral continent by 2050. The program has set detailed objectives such as achieving a reduction of at least 55% in net carbon emissions and a significant increase in the share of renewable energy within the EU's total energy usage by 2030. (European Commission 2019, 4-6.) To achieve the targets and fulfil the expanded sustainable finance disclosure obligations that come with it, the European Commission introduced several new regulations: EU Taxonomy, EU Carbon Border Adjustment Mechanism (CBAM), Foreign Subsidies Regulation (FSR). (PwC 2024, 1-2.) Among these stands out the Corporate Sustainability Reporting Directive (CSRD) which was presented in 2021. It aims to replace the Non-Financial Reporting Directive (NFRD) by both expanding the existing sustainability reporting requirements and the number of companies subject to it. The directive entered into force in January 2023. It will affect large public-interest companies' sustainability reports for the first time for the fiscal year 2024. Its implementation continues in phases and is to be finalized in 2028. Ultimately, the purpose of the CSRD is "to bring – over time – sustainability reporting on a par with financial reporting". (Ministry of Economic Affairs and Employment of Finland 2023; Spinaci 2024, 1-3.)

As the CSRD intends to drive sustainability initiatives towards a forward-looking effort to achieve a greener future, the energy industry finds itself at the leading edge of transformation. It will have to display strict compliance with the new ESG-related sustainability reporting mandates outlined by

the directive, which mark a need for far more expanded disclosure. As such, the author believes that it would be an interesting endeavour to examine energy companies' responsiveness to the change within their annual sustainability reporting for the years 2022 and 2023. These two years capture the relevant period of the CSRD's proposal, enactment, and introduction, as well as the transition period in anticipation of the formal application of the CSRD in 2024. The thesis has a focus of investigating the energy sector in Finland – a country recognized for its leadership in environmental sustainability and innovation. Therefore, examining the sustainability reporting of the three companies among the largest within Finland's energy industry emerged as a logical choice.

1.2 Research Question and Investigative Questions

This thesis aims to gain an understanding of the level of implementation and early adoption of the anticipated Corporate Sustainability Reporting Directive (CSRD) within the sustainability reporting in the energy industry in Finland. Although the directive will affect the reports from the fiscal year 2024 onwards, it was introduced three years ago by the European Commission. Companies who are required to report on their sustainability, as well as those whose nature heavily entails screening the latest standards within sustainability reporting, are likely to have familiarized themselves with the directive. Companies within the energy industry fall under both those categories, with an emphasis on the latter.

The outcome of this thesis is to achieve an understanding of the preparedness of three of the largest companies in the energy industry in Finland to expand their sustainability reporting to fit the requirements of the CSRD. The international aspect required by the degree program is ensured by conducting a study of legislation that affects the sustainability reporting of companies within the European Union. The three companies included in the research are Finnish energy companies that have widespread international operations. Furthermore, they centre their sustainability reporting according to internationally enforced frameworks.

The research question (RQ) of this thesis is "How does sustainability reporting of large Finnish energy companies appear for the years 2022 and 2023 in anticipation of the formal application of the CSRD?" This research question is divided into three investigative questions (IQ):

IQ 1. What are the main ESG themes reported by the companies in compliance with the CSRD in 2022?

IQ 2. What are the main ESG themes reported by the companies in compliance with the CSRD in 2023?

IQ 3. How evident is the companies' preparation to transition their sustainability reporting according to the CSRD?

Table 1 below depicts the used theoretical framework, implemented research method, and results for each of the three investigative questions in order.

Table 1. Overlay matrix

Investigative questions	Theoretical Framework	Research methods	Results
IQ 1. What are the main ESG themes reported by the companies in compliance with the CSRD in 2022?	Sustainability reporting frameworks, standards and legislative changes	Qualitative content analysis	Chapter 4.1
IQ 2. What are the main ESG themes reported by the companies in compliance with the CSRD in 2023?	Sustainability reporting frameworks, standards and legislative changes	Qualitative content analysis	Chapter 4.2
IQ 3. How evident is the companies' preparation to transition their sustainability reporting according to the CSRD?	Sustainability reporting frameworks, standards and legislative changes	Qualitative content analysis	Chapters 4.1, 4.2 & 4.3

1.3 Demarcation

This research consists of an analysis of the sustainability reporting of large companies within the energy industry in Finland for the years 2022 and 2023. Therefore, the criteria used to delimitate the study are the following: size of the companies, the industry they operate in, the country of origin, and the timeframe considered. Regarding the legislation that affects the anticipated changes in sustainability reporting, the author has chosen to focus on the Corporate Sustainability Reporting Directive (CSRD). The directive is part of a complex series of policies and regulations that the European Commission has introduced during the relevant years. These policies are interlinked and support each other in their objectives, however, the CSRD overarches the rest in importance and hierarchy. The choice is supported by the fact that including the full set of legislation would make the research too extensive.

1.4 Benefits

The topic of sustainability reporting is one of social significance, especially in the current landscape of evolving practises and changes that are affecting it. Although the research is not commissioned, it aims to conduct a comprehensive analysis which will produce an overview of the preparation for a crucial turning point in sustainability reporting. This is done for an industry where it is exceptionally relevant and impactful, with an analysis of leading companies in it. The understanding gained from the research could be useful to companies and corporate executives who are looking to enhance the depth and scope of their sustainability reporting to prepare for the new requirements. Furthermore, the investigation stands to benefit the broader academic community interested in the temporal development that has taken place in sustainability reporting in the recent years, and the anticipated improvements in the sustainability reports of energy companies.

For the author, delving into this subject supports future career aspirations of advancing professional development in the sphere of corporate sustainability performance. The author believes sustainability reporting is yet to grow in importance and depth and become a crucial part of corporate strategy. This is supported by the author's experience of having completed an internship within finance in one of the largest energy companies in Finland. Additionally, the topic enriches the author's academic pursuits, especially with plans to advance to master's studies.

1.5 Key concepts

Sustainability Reporting constitutes the act of public disclosure of organizations' effects on sustainable development goals through the systematic reporting of the most important economic, environmental, and social outcomes (GRI s.a.).

Non-Financial Reporting Directive (NFRD) is an adaptation to the Accounting Directive introduced in 2014 meant to increase the transparency of environmental and social data reported by public interest entities with more than 500 employees. The amendment requires the reporting of non-financial information by all entities subject to it. This includes the disclosure of topics such as treatment of employees, anti-corruption, risk management, and key performance indicators regarding business operations. (Hahnkamper-Vandenbulcke 2021, 3.)

Corporate Sustainability Reporting Directive (CSRD) is a European Union initiative that came into effect in 2023 as part of the European Green Deal programme. It replaces the existing Non-Financial Reporting Directive (NFRD). The directive was enforced so as to enhance the depth of non-financial information reported to reflect companies' accountability to long-term environmental and social goals. It includes all large and listed companies, raising the number from around 11 700 to 50 000 companies subject to sustainability reporting within the EU. (Deloitte 2023, 1-2, 8.)

Corporate Compliance refers to the adherence of companies to regulatory and legal requirements that govern it, its operations, and processes. (Social Business Wales 2021, 3-4.)

The European Green Deal is a program launched in 2019 by the European Union's commission. It consists of several policies that aim to transform the EU into a thriving society and competitive economy while leading the way to a green transition that has the target of achieving climate neutrality by 2050. The initiatives included in it expand over several areas and industries such as transport, energy, environment, and sustainable finance. (European Council 2024.)

2 Sustainability Reporting and Its Evolving Landscape

This chapter presents the theoretical framework which serves as a basis for conducting the study this thesis aims to deliver. The chapter contains an overview of sustainability reporting and its main concepts, which allow for a comprehensive understanding of it. This is followed by presenting the key frameworks used in sustainability reporting. The chapter is concluded after discussing the relevant legislative changes affecting sustainability reporting and the requirements regarding it.

2.1 Overview of Sustainability Reporting

This section will provide a broad overview of sustainability reporting by defining its concept, describing its history, explaining the impacts of global initiatives, and finally, describing it in the context of the energy industry. The concept of sustainability reporting will be explained through the lens of corporate responsibility and the most common theories that define it. The discussion of the history of sustainability reporting will encompass its inception and evolution throughout the past decades. The most relevant global sustainability events and initiatives are presented, and the ways they have led to changes in the nature and objectives of sustainability reporting. The section is concluded by a discussion of sustainability reporting and its implementation in the energy industry.

2.1.1 Corporate Responsibility and Sustainability Reporting

Sustainability within the context of business can be defined as the creation of value for stakeholders in an ethical and socially responsible manner. The primary goal of a business is profitability and the enhancement of economic performance which leads to the creation of value that stakeholders seek. However, this view has evolved throughout time to encompass an enlightened understanding of achieving long-term profitability. Companies have come to understand that stakeholder value can also be created through the enhancement of ethical, social, and environmental performance. Corporate sustainability does not only reflect on the well-being of society but is also a means for companies to establish competitive advantage in the modern landscape of business. (Brockett & Rezaee 2012, 14.)

One of the first theories to recognize this was the Triple Bottom Line (TBL) introduced by John Elkington in 1989. Traditional models before this emphasised garnering profits as the main way of maintaining a successful company. However, the Triple Bottom Line explains that without satisfied employees and a concern for how company operations affect the environment, a company will not persist in the long run. Corporate sustainability is ultimately a key factor in ensuring that. The triple bottom line has set the foundation for how sustainability information reported by companies is presented and viewed. It consists of economic, social, and environmental aspects which are also

known as the 3P concept – people, planet, and profits. (Young & Dhanda 2013, 17.) Today, the disclosure regarding corporate sustainability is often referred to as the reporting of Environmental, Social and Governance (ESG) issues (U.S. Chamber of Commerce Foundation 2018, 3). While these terms are different in phrasing, the general nature of what they cover remains the same.

Non-financial reporting is the disclosure of all information that does not directly stem from financial statements or does not have to solely do with the reporting of the financial performance of an organization. As non-financial reporting has taken the form of disclosing data within the three most prominent areas of environmental, social and governance issues, sustainability reporting is also often referred to as ESG-reporting. Alternative expressions include integrated reporting and climate-related reporting. (A4S Accounting Bodies Network 2023, 2.) The report types that stem from this activity can take place as stand-alone documents or be part of annual and interim documentation which discloses both financial and non-financial information for the relevant period. (BDO 2021, 6.) The range of information on ESG-factors included in these reports brings forth a thorough grasp of company strategy and performance to a broad audience of stakeholders. (A4S Accounting Bodies Network 2023, 2.)

2.1.2 The History and Evolution of Sustainability Reporting

The beginnings of sustainability reporting go back several decades. As early on as in the 1970s, companies within Europe introduced environmental reports as a result of awareness of corporate sustainability and responsibility. During the 1990s with the introduction of values reporting some non-financial indicators regarding social, environmental, and animal protection concerns were accepted as part of the larger reporting of financial performance. However, it wasn't until 1997 when the first mandatory law regarding sustainability reporting was adopted. This was done by Finland. After this pioneering act, several countries within Europe followed, as well as Australia, Canada, China, and Indonesia. In addition to the adaptation of mandatory laws regarding the reporting in certain countries, this period also marks a momentum in the increase of voluntary corporate responsibility reports. The main encouraging factor for this was brand reputation building, which went hand in hand with the growing requirements of investors. (Brockett & Rezaee 2012, 28.)

The Year 2000 marked the publishing of the Global Reporting Initiative (GRI) sustainability reporting guidelines. These were immediately implemented in the sustainability reports of 50 companies. The GRI was established with the purpose of providing reporting guidelines for companies regarding the topics covered by the triple bottom line. About a year after issuing the sustainability reporting guidelines, the GRI emerged as an independent organization. It was relocated to Amsterdam from Boston, where the organization was originally founded. To this day, the GRI is considered a

global authority for setting standards in sustainability reporting. (Brockett & Rezaee 2012, 28-29; GRI 2024.)

The first decade of the 21st century marked several milestones that showed continued progress in enhancing and expanding the scope of sustainability reporting. The UN Principles for Responsible Investment (UNPRI) introduced initiatives to promote the cooperation and discussion among investors and regulatory bodies requiring companies to improve transparency. In 2010, amongst the Gulf of Mexico oil spill scandal, the Securities and Exchange Commission (SEC) published a report requiring companies to disclose performance risks specifically related to global climate change. The same year the International Integrated Reporting Committee (IIRC) was established to enforce reporting which shows integrated linkage between economic value and sustainability. Another relevant milestone within the same year was the publishment of “ISO 26000” guidelines by the International Organization for Standardization. These sought to improve reporting on companies’ social responsibilities. (Brockett & Rezaee 2012, 29-30.)

After an intensive series of improvements affecting sustainability reporting, the effects were evident. From about 50 companies disclosing sustainability reports according to the GRI guidelines in the year 2000, the number grew to about 2000 companies by the year 2010. (Brockett & Rezaee 2012, 31.) The figure 1 below illustrates the growth in existing regulations, policies and guidelines that have guided sustainability reporting throughout the past two decades. As reported by the Global Reporting Initiative (GRI), by the year 2020 there were more than 600 such instruments in place in over 87 countries (GRI 2020, 15).



Figure 1. Growth in number of sustainability reporting instruments (Adapted from GRI 2020, 15)

In the years following these events, a turning point regarding sustainability reporting, specifically within the EU, was in the year 2014 with the introduction of the Non-Financial Reporting Directive (NFRD). The directive is not mandatory and is out of the scope of imposed legal requirements. It leaves room for companies to continue choosing the guidelines they use for disclosure, such as the UN guiding principles, or the “ISO 26000” mentioned before. However, with this initiative, the European Commission aimed to significantly assist companies’ compliance with non-financial reporting requirements. This was done by presenting a comprehensive guideline that would enhance the accountability and transparency concerning businesses social and environmental impact. (European Commission 2017; Hahnkamper-Vandenbulcke 2021, 2-3.)

The responsiveness of Finnish companies to the NFRD, although non-mandatory, was extensive. According to Tomas Otterström from KPMG in Finland (KPMG 2020, 20), after the enforcement of the directive, 84 out of the 100 top Finnish companies included sustainability data in their annual reports in 2020. This is a notable increase from the prior result of 54 companies in 2017. The relevant changes to sustainability reporting within the EU after the introduction of the NFRD and from 2014 onwards will be discussed in the following chapters dedicated to legislative reforms.

2.1.3 Impact of Global Sustainability Initiatives on Sustainability Reporting

One of the most influential events to address serious environmental challenges within the past decade took place in Paris in 2015. This resulted in the establishment of the “Paris Agreement” – an internationally binding treaty focused on climate change. The ultimate goal achieved through a series of Nationally Determined Contributions (NDCs) is to limit the rise in temperature to 1.5°C above pre-industrial levels. As urged by the UN’s Intergovernmental Panel on Climate Change, that threshold should be maintained by this century’s end in order to avoid far harsher climate impacts and weather events. (United Nations Framework Convention on Climate Change s.a.)

The Paris Agreement was one of the most recent among decades of effort in multilateral and international policies brought by the UN and the UN department of Economic and Social affairs. Other key events include the introduction of the Millennium Development Goals (MDGs) in 2000, The Johannesburg Declaration at the World Summit on Sustainable Development in 2002 and the “Future We Want” program presented at the United Nations Conference on Sustainable Development in Rio de Janeiro in 2012. The last one set the foundations for building upon the MDGs established in 2000 and develop the improved SDGs (Sustainable Development Goals) to replace them. The 2030 Agenda for Sustainable Development in 2015 introduced the 17 SDGs adopted by all UN members. They offer a blueprint for global prosperity with actionable targets to promote economic growth while eradicating poverty and inequality and preserving our biosystems. (Ministry for Foreign Affairs of Finland s.a.; United Nations Department of Economic and Social Affairs s.a.)

The growing sustainability challenges have brought for the need of governments and regulatory bodies to address them. The translation of global sustainability goals into laws has affected the reporting of non-financial data internationally, through several regulations. Among the most impactful globally are the NFRD (EU Directive 2014/95), which requires disclosure of non-financial and diversity-related data by large undertakings within the EU; The Johannesburg Stock Exchange (JSE) Listing which mandates 450 South African companies to generate an annual integrated report that includes sustainability details, or provide an explanation for its absence; And The Business Responsibility Report introduced by The Securities and Exchange Board of India (SEBI) that compels the country's top 500 companies to report on environmental and social responsibilities. (GRI & International Organisation of Employers 2020, 5.)

Following the initiatives under the Paris Agreement, the Commission of the European Union introduced The European Green Deal in 2019. This programme seeks to review and redesign more than 50 laws that affect 8 policy areas among which are biodiversity, clean energy, sustainable industry, and the elimination of pollution. The ultimate goal is to achieve climate neutrality in Europe by 2050. The series of individual targets regarding the environmental challenges to be tackled are summarized into three goals: Achieving net-zero emissions in all sectors with an emphasis on targeted strategies regarding the energy industry which accounts for over 75% of the EU's greenhouse gases; Separate economic growth from the use of natural resources (a goal termed as a "generation-defining task"); Implementing the Just Transition Mechanism which will allocate between 65€-75€ billion within the period of 2021-2027 to mitigate the socio-economic effects of the transition and alleviate the process for all subjects. (Belardo 2021.) The features and goals of the European Green deal are illustrated in the figure 2 below.



Figure 2. The European Green Deal Program (Adapted from PwC 2022, 5)

In March 2022 PwC published a survey which studies the far-reaching implications of the European Green Deal on European businesses and their preparedness towards it. A total of 300 businesses from 13 EU countries were included. The survey shows that companies are still trying to catch up. Only about a half (49%) of the companies were reported as prepared for the EU green deal and effectively working on achieving the goals it has set. Most of them are big companies with specialized departments which can affectively approach the endeavour from several aspects: finance, R&D, and sustainability teams. (PwC 2022, 2-3, 14.)

One of the most significant contributions of the EU Green Deal will be on sustainability reporting. The intensive targets the programme has set will bring requirements for enhanced transparency and stronger efforts by companies. While many are motivated to voluntarily report their contributions to ESG-related matters, the lack of standardized ESG reporting has led to the overshadowing of sincere ESG initiatives. For this purpose, the newly established International Sustainability Standards Board (ISSB) by the IFRS Foundation, and the European Financial Reporting Advisory Group (EFRAG) aim to create unified global ESG reporting standards. The non-financial reporting scope will be extended to all large companies, removing the current 500-employee threshold. Additionally, all EU-listed companies (including SMEs), will be required to disclose their climate effects. The directive overshadowing these initiatives is the Corporate Sustainability Reporting Directive (CSRD) which had been set to be integrated into national legislation by all EU countries by the end of 2022. (PwC 2022, 12.)

2.1.4 Sustainability Reporting in the Energy Industry

The goal of achieving a net-zero economy is fundamentally present in many global accords, with an emphasis on the Paris Agreement. The energy industry specifically has a vast impact on total carbon emissions. Due to this, the energy sector's commitment to green solutions and a green transition is of exceptional importance. (Lee, Serafin & Courteau 2023, 473.)

Depending on the geographical location and the applicable legislation, not all energy companies provide mandatory sustainability reports. For example, The United States implements a "private ordering" disclosure system which gives companies the freedom to act on self-initiative in transparency rather than follow uniform standards. EU directives on the other hand require the compliance of large energy companies to report their environmental effects. Smaller ones are not yet facing such strict criteria, however, that is about to change. This currently "hybrid" EU system is witnessing a transition in the sustainability reporting requirements from the more flexible Non-Financial Reporting Directive (NFRD) to the soon-to-be mandatory Corporate Sustainability Reporting Directive (CSRD), affecting almost all energy companies. (Lee et al. 2023, 474-476, 478-479.)

In 2012 Tim Steinweg and Joseph Wilde-Ramsing of the Centre for Research on Multinational Corporations conducted a study on 20 European energy sector companies and their sustainability reporting. Companies included were some of the biggest European energy companies such as Vattenfall, Fortum and Statkraft. The study found that 19 companies provide sustainability reporting and 18 of them use the Global Reporting Initiative (GRI) guidelines in doing so. Vattenfall was among the top companies that had the most extensive use of the GRI guidelines, having reported fully or partly on every indicator, and internal verification of their report's accuracy. The latter part of the study consisted of recognising information gaps in the reports of the companies and compiling a draft with suggestions related to the found issues. Only 7 companies (36%) out of the 20, among which Vattenfall and Fortum, responded to the improvement suggestions by revising their reports. The cooperation that resulted from this contributed to the development of reporting accuracy and system credibility in corporate sustainability for the energy companies. (Kowal & Kustra 2016, 3.)

The Electric Power Research Institute (EPRI) has been conducting surveys about sustainability reporting trends in the energy industry since 2013. Companies included in the surveys are members of the Energy Sustainability Interest Group (ESIG). It currently consists of more than 40 member companies who actively participate in the annual surveys and provide relevant information as insights into sustainability reporting in the industry. (EPRI 2022, 7.)

The 2021 survey came up with a few key findings related to recent trends, as suggested by the 29 ESIG companies that participated. Comparing results from 2017 to 2021, there is a 52% increase in the level of effort put in the preparation of the reports, as stated by the respondents. For the size of the sustainability teams and the involvement of other departments, the largest companies specified having had support from as many as 19 teams within the company. Regarding third-party verification, 84% of the companies indicated implementation of such systems, with a focus on verifying greenhouse gas emissions. As the top benefits of reporting, "improved shareholder and investor relations" and "improved reputation or corporate image" were found. (EPRI 2022, 7-8.) Finally, the main sustainability themes reported among the companies included "Just Transition, Energy Justice, Equity, or Climate Equity" (EPRI 2022, 9).

2.2 Key Frameworks in Sustainability Reporting

This section will present the most common frameworks used in sustainability reporting. The frameworks are recognized and endorsed globally by international organizations such as the United Nations. Although they vary in categories such as their focus, extent, and target audience, the frameworks are tools that ensure the quality and comparability of sustainability reporting globally. By implementing them, companies are able to navigate the complexities of reporting practises within the industries and sectors they operate in. (Gutterman 2019, 50-51.)

2.2.1 Global Reporting Initiative (GRI) Standards

Since the establishment of the Global Reporting Initiative (GRI) in 1997, the organization has grown to be the pioneer and primary driver of setting sustainability reporting standards. The GRI standards are by far the most commonly used framework by companies. They build on internationally recognised norms such as the OECD Guidelines for Multinational Enterprises, the ILO Conventions and the UN Guiding Principles on Business and Human Rights. (Gutterman 2019, 51-52.) As many as 23 000 reports worldwide follow the GRI guidelines, with most of them being from large companies or large industry groups. According to a survey conducted by EcoAct in 2018, about 78% of the G250 companies use GRI standards in their reporting. (EcoAct 2024, 30.) The G250 represents the 250 leading global companies by revenue, recognized as pioneers in both their respective industries and sustainability reporting practises. (KPMG 2020, 4.)

In 2006, the third generation of GRI standards (G3) was published. Compared to its two predecessors (published in 2000 and 2002) , it was far more comprehensive. It established 4 key principles for companies to follow in their sustainability reporting: materiality, the coverage of important environmental, economic, and social impacts; stakeholder inclusiveness, addressing them and their expectations; sustainability context, explaining performance within a broader sustainability meaning; and completeness, ensuring an extensive view on impactful topics and the ability for stakeholders to assess the company's performance related to them. The latest GRI standards were published in 2016 and went into effect in 2018. They further emphasize the reporting of the three categories and the topics within: economic (performance, impacts, procurement processes); environmental, (energy, materials, transport); and social (employment, health and safety, non-discrimination, customer privacy). The standards establish the specific requirements and guidance for reporting each of these topics in the form of universally standardized reporting principles. (Gutterman 2019, 53-54.)

Organizations can choose whether they want to report using core or comprehensive reporting style. The core report includes information only on the most relevant material topics according to the nature of the company and how they are managed. The comprehensive report sees the material topics in a more extensive way and includes a wider range of information including governance and operational strategy. The GRI standards can also be used selectively instead of as a whole by using certain 'GRI referenced' claims. (BDO 2021, 8.)

2.2.2 International Integrated Reporting Framework (IR)

The International Integrated Reporting Framework (IR) was published in 2013 by the International Integrated Reporting Council (IIRC), a global coalition of regulators and standard setters. This

framework was introduced as a means of giving companies guiding principles and content elements to shape their integrated reports, with a focus on the information being beneficial for long-term investors. (Gutterman 2019, 54-55.) The goal is to harmonize corporate activities with the objectives of financial stability and sustainability. The framework is used in around 75 countries by more than 2500 entities, with it being mandatory for all Johannesburg Stock Exchange (JSE) listed companies. (BDO 2021, 9.)

The principles governing the preparation of an integrated report include: focus on organizational strategy and its creation of short, medium, and long-term value; holistic picture of all relevant and interdependent information; stakeholder relationships, a detailed description of their interests and needs; materiality, disclosure of the most significant information that could result in the value-creation; and comparability. (Gutterman 2019, 54-56.) The factors that create value over time are referred to as the 'six capitals' – "financial, human, social and relationship, natural, intellectual and manufactured" (BDO 2021, 9). The content elements that the framework requires are: description of the business model, strategic objectives and performance, risks and opportunities that affect value creation, governance structure, description of external environment, and finally – presentation basis, criteria used to build the integrated report. (Gutterman 2019, 56-57.)

2.2.3 Sustainability Accounting Standards Board (SASB)

The Sustainability Accounting Standards Board (SASB) is a US-based organization established in 2011. Similarly to the IIRC, the sustainability reporting standards it provides seek to disclose material information relevant to investors and their decision-making. Additionally, they aim to highlight industry specific ESG issues that are most closely linked to financial performance and value creation. With more than 1000 organizations using the SASB across 77 industries, they are most widely present in the United States. However, the standards are gaining a steady increase in users across Europe and Asia, especially by companies that are dually listed. (BDO 2021, 9.)

The standards are categorized into 5 segments: "environment, social capital, human capital, business model and innovation, and leadership and governance" (Gill & Pedroza 2019, 25). As stated by the framework, the information and indicators regarding these themes must be up to par with the following criteria: objectivity, accessibility, completeness, and pertinence. (Gill & Pedroza 2019, 25.) SASB has also developed the concept of a 'materiality map' which outlines the way in which materiality varies in different industries and issues, based on the significance of business activities to investors in those industries. For example, data regarding carbon emissions is more likely to be significant in the transportation sector or energy sector compared the financial sector. According to these priorities, companies can map the most important disclosure topics to include in the reports. (Bose 2020, 19.)

2.2.4 Task Force for Climate-Related Financial Disclosures (TCFD)

The Task Force for Climate-Related Financial Disclosures (TCFD) was established in 2015 and its recommendations published in 2017. Although its focus is on application within the financial sector, its relevance reaches out to all. Over 2000 organizations have implemented the TCFD in more than 80 countries. It stands as the leading framework in climate risk reporting. Additionally, all major sustainability frameworks support the TCFD, marking its growing mandating across several jurisdictions. (BDO 2021, 10.)

The TCFD provides a methodology for organizations to integrate and internalize climate change risks and opportunities into the company strategies. Financial risk reporting is believed to be enhanced through disclosure of four areas: governance, board supervision and action plan implementation; strategy, analysis of climate scenarios and their possible effects; risk management, incorporation of climate-related problems into Enterprise Risk Management (ERM) systems; and metrics and targets, for example setting targets for the reduction of emissions. The concept of materiality in TCFD aligns with the requirements for other financial reporting details by extending the disclosure to governance and risk management. (BDO 2021, 10.)

The sector-specific recommendations and standards are divided and aimed at two primary groups: financial sector (banks, insurance companies, asset managers) and non-financial (energy, transportation, agriculture). The TCFD includes step-by-step instructions and assistance for each sector to fully integrate climate-related risk processes to companies' operational and risk management practices. (FigBytes s.a.,13.) By doing this, the framework aims to enhance the utility of climate change disclosures not only for direct investors, but also for all other intermediaries in the investment ecosystem. (Bose 2020, 23.)

2.2.5 CDP (Carbon Disclosure Project)

The CDP is a standard-setter when it comes to a global reporting system that has encouraged organizations to disclose vast amounts of data on the way they affect the environment. This encompasses not only climate change, but also all natural resources such as water and forests. It has also initiated a carbon action effort for reduction and acceleration in industries deemed as the biggest contributors of it. The CDP stands as the most thorough compilation of self-reported environmental information. (Gutterman 2019, 65-66.)

The CDP provides surveys and reporting guidance to the companies that have agreed to implement it. Companies answer the questionnaires based on three themes: water security, climate change and forests. The information that results from this is not only valuable to investors, but helps the companies map their own risks and opportunities. The reporting guidelines that the CDP

provides consist of modules, definitions, connections to other frameworks and content requisites. (FigBytes s.a., 5.) The reporting organizations that follow the CDP are then scored and listed in the 'Carbon Disclosure Leadership Index'. It ranks the organizations by performance level, showing the very best at the top. The globe's leading institutional investors endorse the CDP, acknowledging it as one of the most reliable sustainability rating methodologies. (Gutterman 2019, 66.)

2.2.6 ISO 26000

ISO 26000 was introduced in 2010 as a result of a five-year collaboration between several government representatives, industries, and labour organizations. ISO 26000 is not a reporting standard per se, however it acts as a guide in clarifying social responsibility for companies. This guidance helps them convert the principles relating to the concept to actionable measures and advocate for the best practises of social responsibility. (Gill & Pedroza 2019, 27.) The guide outlines seven social responsibility principles: "accountability; transparency; ethical behaviour; respect for stakeholder interests; respect for the rule of law; respect for international norms of behaviour; and respect for human rights" (Gill & Pedroza 2019, 27-28). It also defines seven core subjects for companies to report on regarding their performance in them: "organizational governance; human rights; labour practices; environment; fair operating practices; consumer issues; and community involvement and development" (Gill & Pedroza 2019, 28).

2.3 Legislation affecting Sustainability Reporting in the EU

This section presents the recent legislative changes which affect sustainability reporting and its requirements within the European Union. The current Non-Financial Reporting Directive (NFRD) has been in effect for several years and has enforced the reporting of non-financial information. However, with the transition to the new Corporate Sustainability Reporting Directive (CSRD), significant changes regarding the scope, nature, and objectives of sustainability reporting are expected.

2.3.1 The NFRD and the Need for Change

As an attempt to make social and environmental effects of companies transparent, the European commission introduced the Non-Financial Reporting Directive (NFRD, Directive 2014/95/EU) as an amendment to the Accounting Directive (Directive 2013/34/EU) in 2014. The directive aims to improve the quality of corporate responsibility disclosure to a correspondingly high level in all member states of the EU. Member states' deadline for incorporating the directive into national law was in December 2016. The first reports were published in 2018, concerning the previous fiscal year of 2017. (Hahnkamper-Vandenbulcke 2021, 3-4.)

Subjects to the directive include all large public interest entities with more than 500 employees. Large entities are considered those who either have a balance sheet total of more than €20,000,000, or a turnover of more than €40,000,000. Public interest entities are listed companies, credit institutions, insurance companies and others specifically designated as such by a member state. (Welling-Steffens, Schoute & Bodelier 2021, 2.)

The directive requires the disclosure of four sustainability areas and issues: environmental, social and employee matters, human rights, and bribery and corruption. It also requires information on risks and risk management, business model and policies, and company performance. Key Performance Indicators (KPIs) and the due diligence processes regarding these should also be disclosed. The NFRD outlines the concept of 'double materiality'. It refers to the reporting of the way in which sustainability issues affect companies and the way companies in turn affect the general society and environment in a broader context. The materiality of the information is defined to go as far as to provide an understanding of the development, position, and impact of a company's activities. (European Commission 2020, 3; Welling-Steffens et al. 2021, 2-3.)

The directive leaves room in its implementation and does not impose a reporting standard or detailed criteria for the ways of disclosure. Companies are free to choose from existing international frameworks when producing their reports, such as the GRI, SASB, IR, and TCFD. (Hahnkamper-Vandenbulcke 2021, 3.) However, non-binding reporting guidelines were published by the commission in 2017 as a means of helping companies. In 2019 these were supplemented by publishing an additional guideline with a focus on reporting climate-related data, incorporating the recommendations of the TCFD. (European Commission 2020, 3.)

In the case that a subject does not report on one or more of the defined key sustainability areas, it needs to supply a reasoning in its non-financial statement – 'comply-or-explain'. Regarding the assurance of the non-financial information, the directive puts forth a minimum requirement of a statutory auditor confirming that the information has been provided. (Hahnkamper-Vandenbulcke 2021, 3-4.)

Although the NFRD set a solid foundation for regulated non-financial reporting within the EU, the evolving landscape of global environmental efforts and the growing demands of stakeholders have called for changes. Throughout the years the NFRD grew to be recognized for having several deficiencies. According to the inception impact assessment conducted by the European Commission in January 2020, there is lack of information on the effect of sustainability issues on companies, as well as on the influence of companies on the environment and society. This directly contradicts the 'double materiality' concept outlined in the NFRD – stakeholders argue that the directive fails to provide an adequate definition of it. Additionally, the problem of comparability and relevancy arise

as companies face the complexities of vague reporting guidelines. This is further supported by the overlap of different EU legislations and their varying disclosure requirements. (Hahnkamper-Vandenbulcke 2021, 2-4.) Finally, being able to choose the reporting framework or combination of frameworks results in companies' freedom to "tailor the report to their activities" (De Groen et al. 2020, 12).

2.3.2 The CSRD – Expanding Scope and Enhancing Disclosure

The need for a revision of the NFRD resulted in the European Commission publishing a proposal on a new Corporate Sustainability Reporting Directive (CSRD) in April 2021 (Deloitte 2022, 1). With this, the directive replaces and amends its predecessor. The CSRD is part of the EU Sustainable Finance package which aims to support the implementation and financing of the Green Deal. (EY 2022, 2.) The objective of the CSRD is to significantly improve and expand the reporting requirements as well as increase corporate responsibility in a wide range of sustainability themes. (Deloitte 2022, 2.)

The directive extends the scope of its subjects. It now includes all listed companies, including SMEs. Large public interest entities continue to meet the criteria already set by the NFRD for having a balance sheet total of more than €20m, or a turnover of more than €40m. However, the threshold for number of employees is lowered to be more than 250 from the previous requirement of more than 500. Credit institutions and insurance companies are also included, no matter their legal form. To address the separate needs of large companies and SMEs, the commission adopts a principle of proportionality and will provide an according set of reporting standards for both. (EY 2022, 3.)

EU members states were expected to incorporate the new directive into national law by the end of 2022 (EY 2022, 2). The compliance timelines for companies differ based on their size and ownership structure. However, the general schedule for implementation is to take place between the years 2024-2028. Companies who are already subject to the NFRD are expected to publish their first sustainability reports according to the new requirements of the CSRD in 2025, for the fiscal year 2024. Large entities who were previously not subject to the NFRD but are now subject to the CSRD are to publish their first reports in 2026. Credit institutions and insurance companies are expected to publish their reports in 2027. (Ramboll s.a., 8.) Finally, to lessen the burden on the newly affected SMEs, they are given flexibility to begin the reporting after three years of the application of the directive (EY 2022, 4).

The content that the CSRD requires must be disclosed in a retrospective as well as a forward-looking way. This puts an emphasis on the effect of sustainability issues in a broader context, such as

the targets and progress made to align with the goals of the Paris Climate Agreements. The disclosure must oversee short, medium, and long-time horizons. Both quantitative and qualitative data is required for a spectrum of areas that expand on the four key topics of the NFRD (environment, social and employee matters, human rights, bribery and corruption). Information regarding the following is highlighted: Negative effects regarding the value chain; Company policy on sustainability and due diligence efforts; Roles and obligations of the management; Key sustainability related risks; Disclosure of intangibles (social, human and intellectual capital). (Deloitte 2022, 3; BDO 2022, 3.)

To address the issue of non-existent standardized reporting within the NFRD, the European Commission tasked the European Financial Reporting Advisory Group (EFRAG) with developing the EU sustainability reporting standards (ESRS). (EY 2022, 5.) The commission adopted the ESRS for use for all organizations under the CSRD in July 2023 (Directorate - General for Financial Stability, Financial Services and Capital Markets Union 2023).

The ESRS include four categories; cross-cutting standards (general requirements and disclosures), environmental, social and governance. The topics under the environmental category are climate change, pollution, water and marine resources, biodiversity, and ecosystems and circular economy. The topics under the social category are workforce, workers in the value chain, affected communities, and consumers and end users. The topic in governance is regarding business conduct. Each of these topics has several sections addressing their specificities. (Bloomberg 2024, 2.)

It is important to note that the first set of ESRS are sector-agnostic, meaning they are applicable regardless of industry. The process of developing and finalizing the ESRS by the EFRAG is still ongoing. Currently sector-specific ESRS are to be adopted in June 2024. However, in order to lessen the burden on companies subject to the CSRD, a proposal for delaying the adoption of sector-specific standards by two years is being considered. (Proposal for a Decision amending Directive 2013/34/EU, COM(2023) 596.)

The CSRD further defines and expands on the concept of double materiality. Companies have to evaluate their effects on people and the environment (impact materiality) as well as the sustainability topics that effect the company financially (financial materiality). The disclosure topics overarch the entirety of the value chain, both in the EU and third-party countries where present. Beyond disclosing the general sustainability policies and initiatives, the CSRD mandates that companies set targets for themselves and report the progress towards these. Examples include specific goals in reducing GHG emissions by 2030 or 2050. (Bloomberg 2024, 2.)

Initially, 'limited' assurance will be required before the CSRD mandates 'reasonable' assurance in the later stages of the directive's implementation. The mandated auditing aims to have professional

services ensure there are no misstatements in the sustainability information provided. (Bloomberg 2024, 2; Deloitte 2022, 9.)

The CSRD harmonizes its reporting requirements and the adopted standards with existing international frameworks such as the GRI, SASB, IIRC and TCFD. The harmonization stems from using the existing frameworks as reference points and aims to provide global comparability of sustainability reports. (European Commission 2023, 4-5; Ramboll s.a., 2.)

Ultimately, the directive aims to have ESG information be treated with the same level of thoroughness and accuracy as financial information and eliminate all ambiguity in its reporting. (SGS 2023, 3.)

3 Research Methods

This chapter presents the research approach and design for the study examining the sustainability reports of the three energy companies in Finland for the years 2022 and 2023. The purpose of the research is to assess the current compliance of the reports with the requirements of the CSRD, therefore, evaluating the level of preparedness the companies showcase. After presenting the research method, the subject companies included in the research are detailed.

3.1 Research Approach and Design

This research consists of a comprehensive qualitative study of corporate sustainability reports. The choice of qualitative study is due to its nature of having interpretation of information – verbal and visual data – at its core. The difference between quantitative and qualitative research in this sense is the fact that interpretation takes a peripheral role in quantitative studies, whereas in qualitative studies it is central to understanding and describing phenomena. Key attributes of qualitative research that align with the objective and investigative questions of this thesis include it being case-oriented – enabling the in-depth study of specific cases, and inductive – insight emerges from the data itself as it is being studied. (Schreier 2012, 20-21, 28.)

The type of qualitative research chosen is Qualitative Content Analysis (QCA). Qualitative content analysis systematically defines the meaning of qualitative data. It involves determining predefined categories within a coding framework, which classifies data into segments. Although QCA follows a structured sequence of steps in the analysis, it maintains flexibility in the way that the coding and categorizing are tailored to the material being studied. While it reduces the overall material by focusing on relevant elements, it aims to incorporate those details under the overarching general concept – the main research question. (Schreier 2012, 1, 8-9.)

The data being used in the research is secondary data. This is data which has already been gathered and published in a certain form. Examples of secondary data include information from industry publications and government reports. (Hassan 2024.) The secondary data used for the purpose of this research are sustainability reports published by the three companies under study. The sustainability reports are found and accessed through the official websites of each company.

The main analysis tool used to organize and analyse the data is Excel. Excerpts and statements are taken from the sustainability reports of each company for each year and compiled into Excel. There they are classified and sorted according to themes and sub-themes relevant to the main ESG-related concepts. These are defined by the coding framework the author has established. The coding framework consists of themes defined by the European Sustainability Reporting

Standards (ESRS), divided into sub-themes that have emerged both inductively and deductively – according to the contents of the reports. These are then assessed based on their relevancy and compliance with the CSRD requirements, features, and criteria. To provide clarity, additional notes and reasonings are included for the excerpts. Previous theory on sustainability reporting, its frameworks and the legislative changes guide the analysis. However, the units of analysis are selected from the data itself. Therefore, the concept of qualitative content analysis applies. The data is analysed using a data-driven approach, searching for patterns and insights to the presence of the sought after dimensions in the reporting. The results of the analysis in Excel in their full extent can be found in the appendices of this report.

3.2 Research Subjects

The three companies included in the research – Fortum, Neste and Wärtsilä – are all among the largest in the energy industry in Finland, both by revenue and in terms of the reach of their operations. While each of them specializes in different segments and areas of expertise, they play crucial roles in the impact in energy innovation and sustainability both in Finland and globally.

Fortum is one of the leading energy companies in the Nordics, headquartered in Espoo, Finland. In addition to the Nordics, its offices are present in several other European countries, as well as India. (Fortum 2024a; Fortum 2024b.) The company's primary operations consist of carbon-neutral power production, electricity sales, district heating, and waste recycling solutions. Fortum has around 5 000 employees working to offer its professional services. (Fortum 2024a.) In 2023 the company's comparable EBITDA amounted to €1,9 billion, whereas its operating profit totalled €1,5 billion. With a power generation of 47TWh and a 98% rate of CO₂-free generated electricity, the company asserts itself as being among the cleanest energy producers in Europe. (Fortum 2024a; Fortum 2024c.)

Neste was founded in 1948 with the purpose of ensuring Finland's oil supply. Since then, the company has grown through drive for sustainability and innovation to rank as a global leader in the production of renewable feedstock solutions and sustainable fuels. Neste has refineries in Finland, the Netherlands and Singapore, and key markets in a wide range of locations in Europe and North America. In 2023, the company employed around 6 000 professionals, had a revenue of almost €23 billion, and amounted to a comparable EBITDA of €3,5 billion. In the last five years, Neste's renewable solutions have enabled customers to cut almost 50 mil tons of GHG emissions. Its future entails establishing Porvoo's refinery as the most sustainable in Europe by 2030 and reaching carbon neutrality by 2035. (Neste s.a.)

Wärtsilä is a Finnish company operating in the energy industry in around 80 countries worldwide. The company dates back as far as 1834. (Wärtsilä 2024a.) Today, it stands as a global leader in advanced technologies and comprehensive lifecycle solutions for the marine and energy sectors. Its products include future-fuel enabled balancing power plants, and integrated powertrain and propulsion systems. In 2023 the company had a comparable operating result of almost €500 million and a total net sale of €6 billion. With more than 17 000 employees working in Wärtsilä Portfolio Business, Wärtsilä Marine, and Wärtsilä Energy, the company drives the decarbonisation transformation in the industries. (Wärtsilä 2024b.)

4 Research Findings

This chapter presents the research analysis, findings, and the data gathered as a result of the qualitative content analysis on the sustainability reports of Wärtsilä, Fortum and Neste for the chosen years. The chapter is divided into three sub-chapters. The first two present the analysis for each year separately, discussing the relevant environmental, social and governance (ESG) disclosures the companies provided for the year in question. For effective presentation, the author highlights patterns, trends and progress between the two years. The author gives an explanation and justification for the relevant disclosures and their alignment with specific CSRD-related features and criteria. The third subchapter discusses the specific preparatory measures the companies have disclosed regarding the implementation of the CSRD for the following year.

4.1 Sustainability Reporting for the Year 2022

This sections presents the analysis of the sustainability reports for the financial year 2022. The environmental, social and governance aspects are covered by presenting relevant information reported by each of the three companies under the category in question.

4.1.1 Environmental Information Reported in Compliance with the CSRD in 2022

The environmental information reported by the companies in 2022 encompasses a variety of themes and sheds light on specific focus areas within each theme. When identifying relevant information that complies with the criteria and features of the Corporate Sustainability Reporting Directive (CSRD), the environmental disclosures were categorized into 5 themes defined by the European Sustainability Reporting Standards (ESRS). These are shown in Table 2.

Table 2. Presence of environmental ESRS themes containing CSRD-aligned disclosures

Environmental ESRS Defined Themes	Wärtsilä	Fortum	Neste
Climate Change	x	x	x
Pollution	x	x	x
Water & Marine Resources	x	x	x
Biodiversity & Ecosystems		x	x
Circular Economy	x	x	x

The table above shows the presence of environmental information reported in compliance with the CSRD within each theme by the companies in 2022. Wärtsilä's sustainability report includes disclosures that cover the themes of Climate Change, Pollution, Water & Marine Resources and Circular Economy, however, lacks the CSRD-specific disclosures for the theme of Biodiversity & Ecosystems. Fortum and Neste include information compliant with certain CSRD criteria for all themes.

Within the theme of **Climate Change**, focus points that emerged for Wärtsilä were in renewable energy and energy efficiency. Regarding renewable energy, the company emphasized its initiatives in technological innovation and strategic investment in R&D which reflect the double materiality perspective outlined by the CSRD – financial materiality, and impact materiality through the effect on sustainable efforts. An example outlining this addressed Wärtsilä's continuous effort to pioneer in the usage of sustainable fuels by setting itself targets for developing an engine concept on pure ammonia fuel by 2023 and a power plant operating on clean hydrogen by 2025. (Wärtsilä 2022, 45). This statement aligns with the CSRD's criteria for providing forward-looking information with defined sustainability efforts and initiatives looking over a long-term horizon (2022-2025). Regarding energy efficiency, the company stated the following:

“In the beginning of 2017, Wärtsilä set an energy saving target to reduce energy consumption by at least 7% in terms of absolute consumption (GWh) from 2015 levels by 2025. By the end of the sixth year of the target, permanent energy savings of 10.2 GWh have been reached” (Wärtsilä 2022, 65.)

This statement matches the CSRD's requirement to provide retrospective information which serves as a baseline for comparison and highlights the progress made thus far, in addition to a set target for achieving the effort, in this case reduction of energy consumption. Both Fortum and Neste's climate change disclosures mainly focused on their efforts in climate risk management and addressing GHG emissions. Fortum stated the following regarding set metrics and targets valid in 2022:

“Reduction of CO2 emissions (Scope 1 and 2) in European generation by at least 50% by 2030 (compared to base year 2019); Carbon neutral (Scope 1 and 2) in European generation by 2035 at the latest; Reduction of Scope 3 GHG emissions by 35% by 2035 at the latest (compared to base-year 2021); Carbon neutral (Scope 1, 2 and 3 emissions) globally, in line with the goals of the Paris Agreement, by 2050 at the latest. (Fortum 2022, 34.)

Respectively, Neste disclosed the following:

“Our target is to reduce production (scopes 1 & 2) emissions by 50% by 2030 compared to 2019 and reach carbon neutral production by 2035. We believe that these commitments are in line with global climate ambitions and the Paris Agreement. We are well on track to reach our

targets as in 2022, our production (scopes 1 & 2) emissions totalled to 2.5 MtCO₂, which is 28% smaller than in 2019, which is our baseline year.” (Neste 2022, 70.)

These excerpts demonstrate alignment with global environmental goals, such as those set by the Paris Agreement and enforced by the European Green Deal. This is a crucial aspect of the impact materiality concept emphasized by the CSRD. The companies have set ambitious goals for themselves and heavily consider the implications of their operations on the climate. The defined timeframes, baseline years, and quantitative data on progress and metrics align with the requirement of more extensive and in-depth disclosure of efforts.

Within the theme of **Pollution**, the focus areas that align with more comprehensive disclosure addressed air quality and waste management. Wärtsilä announced the preparation of an innovative maritime carbon capture technology between the years 2023-2024, aiming to introduce it to the market in 2025 (Wärtsilä 2022, 23). Fortum described investment in long-term waste management planned to dispose of radioactive waste caused by spent nuclear fuel at the Loviisa power plant, starting in the mid-2020s. (Fortum 2022, 53.) Neste outlined the continuous air quality monitoring that has taken place near the Porvoo refinery since 1970 with shown improvements in the reduction of sulphur dioxide and nitrogen oxide emissions. The air quality information is verified by the Finnish Meteorological institute as part of national data. (Neste 2022, 79.) These statements provide insight into the unique approach and focus of each company on pollution control, according to the nature of their operations. They serve as both retrospective and forward-looking disclosure, addressing impact materiality by mitigating risks and financial materiality through investments.

Under the theme of **Water & Marine Resources**, the relevant disclosures for all three companies mainly addressed water stewardship and consumption as well as effluent treatment. The companies detailed levels of water consumption and recycling efforts with specific rates and quantitative data presenting the performance for subsidiaries in different geographical locations. They also provided insight into the risk assessment regarding their ecological impact, especially in high water-stressed areas. Fortum described the risks to its water availability as “relatively small in the medium term” as majority of its operations only withdraw and discharge water to and from the same source. However, for the amount in production operations the company discloses the percentage (3%) of water that comes from water-stressed areas – specifically in Russia and Poland. (Fortum 2022, 41-42.) This is in line with the CSRD’s requirement for transparency regarding risks, especially potential negative implications of company operations.

The theme of **Biodiversity & Ecosystems** is addressed by Fortum and Neste with a focus on disclosing information regarding habitat protection and land use. Fortum establishes general targets regarding its biodiversity impacts as follows:

"No net loss of biodiversity from direct operations 2030 onwards (excluding all aquatic impacts)."; "50% reduction in dynamic terrestrial impacts in upstream Scope 3 by 2030 vs. 2021." (Fortum 2022, 20.)

Fortum builds on the disclosure of these targets and provides data for their biodiversity footprint assessment which acknowledges the primary factors as being from "GHG emissions, land use and fuel procurement". (Fortum 2022, 46). In addition to ambitious targets similar to Fortum's in committing to establishing a nature positive value chain, Neste describes a unique effort which has a direct positive impact on local surroundings – homing beehives at the Espoo headquarters (Neste 2022, 79). This serves as a tangible example of how small-scale initiatives can contribute to habitat protection and demonstrate corporate environmental responsibility at the community level.

For **Circular Economy**, the sub-themes that occurred most often and disclosed the most relevant information were regarding resource recovery and product lifecycle. The companies highlighted newly introduced innovative solutions and that go beyond traditional practices and set new standards. Fortum has created Fortum Circo – a recycled, carbon-neutral plastic product meant to serve as a sustainable alternative to virgin materials. In 2022, the product was approved by the EU Toy Safety Standard and will proceed to be used for manufacturing. (Fortum 2022, 11, 51.) Neste offers the Neste RE - a renewable substitute that can be used solely or in a blend and delivers the same quality as fossil-based materials. The product enables the reduction of GHG emissions by at least 85% when applied in the chemical and polymer industries. (Neste 2022, 65.) These examples and their disclosure demonstrate the double materiality principle – reducing environmental impacts while also providing potential financial benefits through innovation in product development.

4.1.2 Social Information Reported in Compliance with the CSRD in 2022

Data on social responsibility can be categorized into 4 themes defined by the European Sustainability Reporting Standards (ESRS). These are illustrated in the table below, as well as their presence regarding disclosures compliant with the Corporate Sustainability Reporting Directive (CSRD) requirements across the three companies. As seen in table 3, out of the three companies, Neste lacks CSRD-specific disclosures for the theme of Consumers and End Users.

Table 3. Presence of social ESRS themes containing CSRD-aligned disclosures

Social ESRS Defined Themes	Wärtsilä	Fortum	Neste
Own Workforce	x	x	x
Workers in Value Chain	x	x	x
Affected Communities	x	x	x
Consumers & End-Users	x	x	

Sub-themes that emerged under theme of **Own Workforce** for Wärtsilä included information about diversity and inclusion, employee health and safety, and training and education. Regarding diversity and inclusion, the company discloses quantitative data on nationalities present in the company, as well as qualitative data on embracing different genders, educational backgrounds and age groups. The employee health and safety disclosures include information on rates and the number of Wärtsilä companies that have occupational health and safety programmes compliant with global standards such as the ISO 45001 in place. The company provides information on code of conduct violation and the total number of reports made in 2022. With connection to training and education efforts, Wärtsilä states the following:

"Since 2019, we have been delivering 'Champions in Safety' training. By the end of 2022, 7,500 employees had completed this training."; "Average number of training days in 2022 for male employees was 1.45 and for female employees 1.15." (Wärtsilä 2022, 56; 73.)

These statements provide a baseline year for the implementation of the internal initiative and show the continuity of the effort by providing information for the current statistics of its completion by number of employees, average days, and gender. Thus, as required by the CSRD, they showcase a form of investment in their human capital development, in a detailed form.

Fortum's and Neste's disclosure regarding their own workforce is reported in similar manner and covers the same sub-themes as Wärtsilä. Additional focus points that appeared for Fortum were information regarding employee satisfaction, and in connection to that, usage of whistle-blower channels. Fortum assessed perception of the Diversity, Equity and Inclusion (DEI) culture through an internal survey. The company disclosed the rates for satisfaction regarding management's method of handling DEI and the process of reporting incidents regarding DEI – 5% of the employees had reported cases of discrimination during 2022. (Fortum 2022, 59.) Additionally, Neste

highlighted relevant information for employee compensation and fair wages. In 2022 the company performed a living wage gap assessment for its Finnish employees with data from the Fair Wage Network, confirming all are compensated above the local living wage. The company also started utilizing living wage data for its suppliers in sustainability audits. (Neste 2022, 33.)

Within the theme of **Workers in Value Chain**, all three companies reported relevant disclosures regarding their suppliers and their social assessment. The companies have established mandatory supplier requirements that range from health and safety management to general social performance compliant with the SDG goals. Human rights are an essential part of the supplier code of conduct. Compliance with them is monitored, both for current suppliers as well as a criterion for the assessment and selection of new suppliers. (Fortum 2022, 71; Neste 2022, 83; Wärtsilä 2022, 34.) The relevancy of these disclosure is reflected through the transparency in the companies' due diligence as per CSRD requirements in ensuring that their entire supply chain aligns with the core social commitments.

The theme of **Affected Communities** is addressed through information on the companies' social investments and community engagement. For this purpose, Wärtsilä, Fortum and Neste have shown initiative in partnerships with other high-profile institutions and contributed to a variety of social factors covering a long timeframe of set goals and actions. For 2022 Wärtsilä reported having signed a three-year partnership with Aalto University for a long-term cooperation that aims to improve sustainable wellbeing and education through research and societal engagement. (Wärtsilä 2022, 44.) A similar social investment is outlined by Fortum. The company described having invested in a project targeting Indian villages near solar operations that provides health camps, vocational courses and computer training for children. (Fortum 2022, 84.) Additionally, Fortum provided detailed insight into its donation activities for the year, stating the following as a more significant effort:

“Due to the devastating war in Ukraine, we directed donations towards organisations helping the Ukrainian people. In the beginning of the war, we made a 200,000-euro donation as part of a wider Emergency Appeal where IFRC, alongside its partner Red Cross and Red Crescent societies, provided basic assistance to more than 5 million people.” (Fortum 2022, 84.)

Neste highlighted community engagement efforts similar to Fortum's in entering a three-year project in providing relief to children in vulnerable communities located across the company's supply networks (Neste 2022, 84). Neste also made significant donations to the Red Cross and UNICEF with regards to the company's strong support for the Ukrainian people. In addition to external efforts, the company incentivized internal support among the employees by offering a paid full day for volunteering activities, most of which were aimed at raising charitable donations through

employee-organized events and activities. The number of employees taking part in volunteer work in 2022 doubled compared to the previous year. (Neste 2022, 54.) These activities and their disclosure strongly align with the concept of impact materiality to broader social advancement and efforts to making a positive impact on human capital. Additionally, they address the reporting of impact on social issues in crisis situations, a vital aspect emphasized by the CSRD.

Regarding the theme of **Consumers and End-Users**, Wärtsilä and Fortum disclosed their methods of measuring customer satisfaction. This practice aligns with the CSRD's requirement of companies' assessing the impact of their operations on consumers. Wärtsilä informed of implementing a monthly assessment of customer perception through Net Promoter Score methodology (NPS). (Wärtsilä 2022, 74.) Fortum implements the 'One Fortum Survey' which assesses the Customer Satisfaction Index (CSI) and reports them separately as points on a scale of 0 – 100 by business area. The overall range for the CSI including all business areas compared to the range for the previous year is reported, showing improvement. (Fortum 2022, 82.)

4.1.3 Governance Information Reported in Compliance with the CSRD in 2022

For the reporting of information on Governance practices, the ESRS defines one theme – **Business Conduct**. Each company provided relevant and CSRD-adhering disclosures that cover certain aspects of business conduct, thus highlighting specific focus areas or sub-themes.

The sub-themes that appeared in Wärtsilä's report mainly addressed risk management, corporate governance and political engagement. Risk management for Wärtsilä is present in both its strategic and operative assessment annually. A strategic risk is defined by the company as one that has potential for long-term effect on its performance. Wärtsilä discloses the principle of managing the mitigation of financial impacts that cannot be directly controlled – transferring them to insurance companies. Regarding privacy and data protection, Wärtsilä follows the EU's General Data Protection Regulation (GDPR) and describes a continuous risk-based approach that aims to enhance practices and accountability. (Wärtsilä 2022, 33, 121, 128.) These disclosures ensure a forward-looking approach and demonstrate due diligence in considering both current and potential challenges.

Regarding political engagement Wärtsilä describes its policy as being committed to transparent and open communication with authorities at both local and international levels. A relevant example for the company's decision-making in this context includes the scaling down of operations with Russia, followed by a full exit from its market finalized in July 2022. (Wärtsilä 2022, 42, 123.) This example demonstrates a business decision that considers the broader implications of the current state of society and global trade. It aligns with the CSRD's requirement to disclose information regarding political engagement and lobbying.

Fortum's focus areas regarding business conduct included regulatory compliance and shareholder and political engagement. Similar to Wärtsilä, Fortum describes active dialogue with public officials and engagement in policy and regulatory debates relevant to the energy sector. For 2022, the company detailed having participated in debates with connection to the EU energy crisis, EU sustainable finance taxonomy and the Fit for 55 package. Additionally, the company highlights its effort in initiating a political discussion on hydro- and nuclear energy, as well as financial power market regulation (EMIR). (Fortum 2022, 75.) Regarding the regulatory compliance of its own operations, Fortum discloses cases of non-compliance along with the consequences. Due to the sale of a payment solution that violated the electricity invoicing regulation according to the Norwegian Energy Regulation Authority, Fortum was fined for NOK 6.29 million (EUR 0.62 million). The company adhered to the Authority's decision. (Fortum 2022, 19.) Regarding its operations in Russia, Fortum has also announced an exit from the market, acknowledging the divestment as ongoing but remaining subject to the needed regulatory approvals. (Fortum 2022, 74.)

The most relevant sub-themes that appeared in Neste's report for governance and business conduct are the same as the ones previously mentioned for Wärtsilä and Fortum. Similarly, Neste performs thorough risk assessment and monitoring on a variety of aspects. A key element in its operations is the compliance with health and safety protocols. The company disclosed a fire incident that occurred at the Rotterdam refinery which resulted in its temporary closing. The incident led to no injuries or adverse effects. However, it indicated the necessity to enhance process safety performance. (Neste 2022, 56.) To address the regular auditing and monitoring of sustainability practices, Neste conducts internal sustainability audits that assess suppliers' compliance with its Code of Conduct and local regulations. The audit standards which define the criteria for the sustainability audits were published in 2021. Neste disclosed the total number of audits it conducted for 2022 across various categories such as raw materials, contractor audits and terminals. (Neste 2022, 88.) Regarding operations with the Russian market, Neste announced its decision to stop using Russian crude oil and other fossil feedstocks. The last crude oil contracts ended in July 2022, with other fossil feedstock contracts concluding by the end of the year. (Neste 2022, 18.)

4.2 Sustainability Reporting for the Year 2023

This section presents the analysis of the sustainability reports for the financial year 2023. The environmental, social and governance aspects are covered by presenting relevant information reported by each of the three companies under the category in question. Connections are made regarding the content reported for the previous year. Positive or negative patterns, trends and progress have been identified and highlighted wherever possible.

4.2.1 Environmental Information Reported in Compliance with the CSRD in 2023

The classification of the environmental information in the reports of the three companies for 2023 followed the predefined themes set by the European Sustainability Reporting Standards (ESRS). The presence of the themes across the three companies and the relevant disclosures within is the same as for the previous year (see Table 2).

Within the theme of **Climate Change**, Wärtsilä's disclosures mainly referred to renewable energy, energy efficiency and the R&D and technological innovations that have helped enhance the performance in these areas. The long-term targets that the company had set for itself previously (see 4.1.1) are once again detailed, along with information regarding progress. Ammonia and hydrogen continue to be utilized for engine testing - engine power plants were reported to currently be capable of using blends with up to 25% hydrogen, steadily aligning with the previously set target to achieve a 100% hydrogen concept by 2025. Similarly, the company follows its energy saving targets and provides a progress update of reaching a new milestone which represents 47% of the target set for 2025. (Wärtsilä 2023, 26, 37, 66-67.) Additionally, Wärtsilä reported having heavily invested in innovation regarding its engines, establishing green purchasing models for electricity, and investigating the potential of 'Power-to-X' fuels. Regarding these investment efforts, the company stated the following:

“Wärtsilä has increased its R&D investments from its historical ~3% of net sales to ~4%. In 2023, the company's R&D investment accounted to 4.3% and was largely related to the decarbonisation of the marine and energy sectors. (Wärtsilä 2023, 124.)

The disclosure of such information reflects adherence to the CSRD-requirements for long-term horizon reporting, progress updates towards targets along with historical figures, and the double-materiality perspective in showing sustainable impacts that stem from financial activities.

Regarding Climate Change, Fortum reestablished its targets for the reduction of CO₂ and GHG emissions and carbon neutrality in line with the set goals of the Paris Agreement. It also provided mid-point targets for emissions in energy production and power generation for 2028, and a progress update representing the performance for 2023. (Fortum 2023, 24.) The company allocated the performance improvement for part the targets to an investment decision amounting to EUR 225 million in projects part of the 'Espoo Clean Heat' initiative, as well as the reduced operations at the Meri Pori power plant. (Fortum 2023, 9.) Neste followed a similar manner in reporting its progress. The company detailed quantitative data regarding progress in renewable energy and GHG emissions as part of the broader context in their climate risk management. Neste's milestones for 2023 included greater automation in fleet usage optimization, significant expansion of production

capacity for Sustainable Aviation Fuel (SAF) and receiving the European Inventor Award for its work on transforming waste into high-quality renewables. (Neste 2023, 18, 19, 72.) These statements provide information on strategic positionings and financial allocations that the companies have put forth to continue their ambitions in transitioning to more sustainable operations.

Under the theme of **Pollution**, relevant disclosures in Wärtsilä's report once again addressed the topic of waste management. A new initiative the company outlined in 2023 was its effort to reduce plastic waste from marine operations through a collaboration with the cruise operator Carnival Corporation. The project resulted in achieving a 40% reduction in plastic usage for spare parts' packaging. (Wärtsilä 2023, 24, 47.) This initiative is another example showcasing double materiality – the company reduced its negative environmental impact as well as costs associated with product packaging. Both Fortum and Neste disclosed information regarding the disposal of hazardous materials. Both companies reported amounts of waste disposed or incinerated and described the manner of treating them. Fortum's process of converting waste into energy addresses the dual challenge of waste management and sustainable energy production. (Fortum 2023, 35.)

For **Water & Marine Resources**, the reoccurring sub-themes for all three companies were water stewardship and consumption. The companies assessed their water-related impacts and described the treatment and reuse of water. They also provided quantitative data on recycled and consumed amounts, including those for water-stressed areas. Fortum reported having successfully utilized artificial intelligence in condition monitoring for leakage detection which has contributed to a decrease in water usage. Although the current consumption rate is 2.0, further process development is necessary to meet the target rate of 1.6. (Fortum 2023, 29.) This initiative aligns with the CSRD's focus on transparency regarding specific company practices that affect environmental outcomes.

The theme of **Biodiversity & Ecosystems** was addressed through relevant disclosures by Fortum and Neste. Fortum restated the goals mentioned in the previous years' report regarding the reduction of its negative dynamic terrestrial impacts, and the continued efforts in achieving them. For 2023, these included projects dedicated to restoring terrestrial and aquatic habitats, managing invasive species, and facilitating fish migration. The company reported having carried out fish-related commitments associated with hydropower, totalling around EUR 2.8 million. (Fortum 2023, 32.) Similarly, Neste has taken part in projects that aimed to restore landscapes in areas affected by deforestation in Northern Brazil. On a more local level, the company persists in safeguarding vulnerable species and habitats on its land in Naantali and Porvoo. (Neste 2023, 77, 79.)

Finally, regarding **Circular Economy** the focus in all three companies' disclosures continued to be on resource recovery and product life cycle. The companies detailed both quantitative and

qualitative disclosures regarding technologies and practises that improved recycling rates. An example provided by Fortum describes its mechanical and hydrometallurgical technologies which extract chemicals that are utilized to manufacture new batteries. This process enables over 95% of the valuable metals from a battery's black mass to be reintroduced into circulation. (Fortum 2023, 35.)

4.2.2 Social Information Reported in Compliance with the CSRD in 2023

The information on the companies' social responsibility in their reports for 2023 is categorized into the four predefined themes established by the European Sustainability Reporting Standards (ESRS). The presence of relevant disclosures made by the companies for each theme follows the same occurrence as in the previous year's report (see Table 3).

Regarding the theme of **Own Workforce**, impactful disclosures provided by Wärtsilä mainly covered the topics of health and safety, diversity and inclusion, and fair wages. The company reported quantitative insight of their performance in health and safety, specifically the Lost Time Injury Frequency (LTIF) and the Total Recordable Injury Frequency (TRIF). These metrics showed an increase of 1% and 2%, respectively, compared to the previous year. (Wärtsilä 2023, 58.) Detailing the injury frequency rates aligns with transparent reporting of positive or negative trends, important for balanced disclosure. In addressing diversity and inclusion and fair wages, the company shared a significant milestones of having achieved a previously set target for 2023 of 100% equal pay for both men and women (not including top management and trainees). The company also aims to have gender balance present in its board – in 2023 it consisted of three women and five men. (Wärtsilä 2023, 38, 101.)

Once again, Fortum conducted its biannual internal survey on employee perception on the DEI culture. The results of the survey positioned the company near the benchmark score generally present in the energy and utility sector. (Fortum 2023, 36.) Regarding the company's principle on gender equality on its board, it discloses alignment with the Finnish Government's 2020–2023 gender equality action plan and the 'Women on Board' directive which underscores the need for 40% representation of both genders. (Fortum 2023, 37.) Neste reports similar efforts in connection to its own workforce. The company provides quantitative insights into safety metrics and compares them with those of the previous year, reports on DEI implementation and satisfaction rates, and provides data on development programs. Additionally, Neste reported having expanded the previous year's local living wage gap assessment by conducting its first global living wage gap assessment across all operating countries, utilizing the Fair Wage Network data. (Neste 2023, 85.)

The companies discussed **Workers in Value Chain** mainly in the context of labour practises present across the entirety of the value chain and supplier's social assessment. Wärtsilä disclosed an example of financial implications due to negative social responsibility – a penalty for Wärtsilä Korea Ltd. for not fulfilling the legal requirement of having disabled persons constitute at least 5% of the total workforce. (Wärtsilä 2023, 78.) The companies disclosed information regarding employment practices they require throughout the supply chains, with Neste having focus on those in high-risk areas. Neste detailed an initiative in providing training for certain suppliers to help enhance their management structures for ethical hiring. (Neste 2023, 29, 84.)

Under the theme of **Affected Communities**, the companies continued their efforts in community engagement and social investments and highlighted their dedication to addressing issues concerning human rights. The companies donated and invested in several projects such as educational centres, health clinics for children, and environmental community clean-ups. Neste disclosed the following information regarding its work in supporting children's rights:

“We were recognized as a Leader in Global Child Forum's children's rights and business benchmark, The State of Children's Rights and Business 2023. The report ranked Neste among the top 15 companies out of the 795 benchmarked globally, recognizing us for setting a positive example for the whole energy and utilities sector.” (Neste 2023, 85.)

These initiatives and their disclosure demonstrate the companies' active role in contributing positively to a wide spectrum of societal needs. A recognition as the one received by Neste acts as evidence for this and could have potential long-term benefit on financial materiality by influencing consumer and investor perceptions of the company.

Relevant disclosures regarding **Consumers and End-Users** included measurement of customer satisfaction as well as internal awareness initiatives aimed at enhancing employee understanding of customer success and developing customer-focused skills. (Wärtsilä 2023, 54.)

4.2.3 Governance Information Reported in Compliance with the CSRD in 2023

In presenting the relevant disclosures regarding the area of governance, the same structure outlined by the ESRS is followed. The data refers to the theme of **Business Conduct**, in which most common topics addressed by the companies were compliance, risk management, ethics and integrity, advocacy and policy engagement, and strategic oversight.

The companies disclosed their policy enforcement and compliance regarding their codes of conduct, anti-corruption and trade sanctions. They reported relevant misconduct incidents including data regarding their frequency and occurrence and the appropriate response mechanisms. Risk

management frameworks and techniques were described to be utilized in several aspects: In R&D through Wärtsilä's Failure Modes and Effects Analysis (FMEA) tool; Climate-related risks integrated into Fortum's short- and long-term scenario reviews; Country risk assessments of Neste's high-risk geographical areas through custom methodology provided by Maplecroft. (Fortum 2023, 23; Neste 2023, 87; Wärtsilä 2023, 126.)

Fortum detailed the initiatives for its climate policy advocacy for 2023. The company lobbied for cost-effective policy measures like carbon pricing and presented its position on advocating for a 90% net reduction in emissions by 2040 relative to the levels from 1990. (Fortum 2023, 46.) Wärtsilä and Neste disclosed similar policy advocacy and their strategies for participation in influencing climate-related regulations in line with the EU's targets. (Neste 2023, 68.)

Towards the end of 2023, Neste disclosed its intention to streamline organizational structure and the operational model which will enable the company to enhance growth strategy through better cost efficiency. The changes are expected to result in a global reduction of around 400 roles set to take effect in April 2024. (Neste 2023, 14.) Regarding Fortum's operations in Russia, the company reported them being unlawfully seized by Russian authorities in April 2023. Consequently, these assets were fully impaired, removed from Fortum's consolidated accounts, and listed as discontinued operations. As a result, Fortum's carbon intensity in electricity generation dropped to one of the lowest in Europe (16 g/kWh) by the end of 2023. (Fortum 2023, 45.)

4.3 Disclosure of Preparatory Measures for the CSRD

All three companies include explicit mention of awareness of the changing regulatory landscape regarding sustainability reporting in the European Union. In the sustainability reports for the year 2022, which marked the formal adoption of the Corporate Sustainability Reporting Directive (CSRD), Neste is the only company among the three that addressed the event in its early stage.

Neste described its proactive approach to following regulatory adjustments of sustainability reporting frameworks, with a focus on the changes and global standardization efforts particularly within the EU. By monitoring the developments and phased implementation of the CSRD and the European Sustainability Reporting Standards (ESRS), the company states the wish to ensure that its reporting methods remain current. (Neste 2022, 99.)

In the sustainability reports for the year 2023, which marked the CSRD's entry into force, all three companies state explicit preparatory measures regarding the adoption of the new criteria and requirements for the following year.

In its preparations for the upcoming report, Wärtsilä disclosed having carried out the CSRD required double materiality assessment in 2023. The identified key sustainability issues from this assessment will be incorporated in the company's sustainability report for the fiscal year of 2024 which will be published in 2025. (Wärtsilä 2023, 35.) Similarly, Fortum announced its first sustainability report prepared according to the requirements of the CSRD to be published the following year. (Fortum 2023, 10.) Fortum did not state information on a double materiality assessment or any other specific preparatory measures.

Neste stated that ensuring ESG reporting for the next year meets CSRD and double materiality requirements has been established as a high priority for its internal control. The company informs of having completed the necessary double materiality assessment. The assessment determined relevant sustainability topics along with their relationships to both financial and non-financial effects throughout the entire value chain. These material topics will shape Neste's sustainability report for 2024. (Neste 2023, 34, 133.) Neste also disclosed making efforts to ensure that its currently used frameworks, specifically the Science Based Targets (SBTs), will align with the requirements of the CSRD. (Neste 2023, 78.) Additionally, Neste updated its Environmental Management Principle to enhance compliance and environmental performance and meet the new criteria. (Neste 2023, 80.)

5 Conclusions

The final chapter of this thesis aims to summarize the findings and present a discussion on the interpretation of the results in relation to answering the main research question. This is followed by addressing the reliability of the research and the author's recommendations for further research ideas. The chapter concludes with the author's reflection on the writing process and the learning experience gained from the thesis work.

5.1 Findings and Results

The qualitative content analysis of the three companies' sustainability reports for the two years identified relevant environmental, social and governance (ESG) information aligned with the features and criteria of the Corporate Sustainability Reporting Directive (CSRD). The information was categorized according to the sector-agnostic European Sustainability Reporting Standards (ESRS). An additional deductive categorization was then applied based on the nature and content of each report. This approach resulted in outlining a set of themes and sub-themes that provide an extensive overview of the companies' performance in each ESG area.

In the sustainability reports for the year 2022, the environmental information presented by the companies provided insight into the initiatives taken to address the broader context of combating climate change. The companies revealed their unique approach to a variety of issues such as GHG emissions, energy efficiency, and circular economy. The approach in addressing each was tied to set targets that demonstrated alignment with global environmental goals, such as those enforced by the Paris Agreement. The companies highlighted examples of product innovation and strategic investments meant to reduce their negative environmental impacts, thus proving the adaptation of the double materiality concept.

The information on the companies' social responsibility included efforts to invest in own human capital, as well as in the workforce throughout the entirety of their value chain, and to impact broader social advancement through community engagement. Governance disclosures focused on policy enforcement, advocacy, risk management, and political engagement. These topics are descriptive of the dynamic landscape the companies currently find themselves in, both in a geopolitical sense and in the midst of a changing regulatory environment. Regarding the latter, Fortum for example reported having participated in discussions regarding the EU energy crisis and regulatory developments overarched by the European Green Deal.

The sustainability reports for the year 2023 show continuity in the reporting approach established the prior year. The companies showcase ongoing monitoring of long-term targets and report the

progress towards these, along with additional projects and new-large scale investments for improved environmental and social responsibility. The assessment of critical ecological impacts and social efforts continue and the companies set themselves additional mid-point targets for specific metrics. These efforts are shown to be recognized, as with Neste's example of the company having been positioned among the global leaders for its contributions to children's rights.

All the relevant ESG information taken from the sustainability reports aligned with certain features or criteria of the CSRD. At the core of reporting the information lies the double materiality principle – requiring companies to reflect on how their initiatives impact people, the environment, and the company's financials. This was demonstrated through examples that highlighted effects from investments and donations, as well as consequences like fines for misconduct. Balanced reporting should include both positive and negative trends for an extensive overview. The targets regarding environmental and social causes were disclosed in the required manner of detailing past performance and future plans that cover medium or long-term horizons; Including quantitative metrics or qualitative insights; Demonstrating due diligence efforts and transparency in tracking progress.

Disclosures on governance aligned with the criteria requiring disclosure of political and lobbying activities, key sustainability-related risks and their management, and intangible assets such as social and intellectual capital. All three companies fulfilled the obligation of having limited assurance be conducted. This serves as a gateway and a reasonable indicator of the companies' readiness to transition to reasonable assurance in the future, as outlined in the CSRD's phased implementation plan. Additionally, the companies disclosed compliance with and usage of international sustainability frameworks that complement CSRD requirements. These included the Global Reporting Initiative (GRI), Task Force on Climate-related Financial Disclosures (TCFD), and UN Sustainable Development Goals (SDGs).

Regarding the occurrence of the predefined ESRS themes, a gap was noticed in 'Biodiversity & Ecosystems' by Wärtsilä, as well as in 'Consumers & End-Users' by Neste. The lack of disclosure regarding these themes can be attributed to the nature of the companies' operations. Wärtsilä's primary focus on energy solutions for marine and energy sectors prioritizes the reporting on areas where it has a more direct impact, such as energy efficiency and product-life cycle. Similarly, Neste's focus on delivering to the B2B sector differentiates it by not directly involving consumers or end-users in the same way as Fortum and Wärtsilä, which have more customer-facing interactions. Areas for improvement and potential future disclosures regarding the exhaustiveness of CSRD content requirements include: Expanded scenario analyses of physical and transitional risks aligned with TCFD standards (beyond GHG emissions); More in-depth lifecycle analysis with

regards to 'Circular Economy'; Additional data on labour conditions within the supply chain; Improved transparency on value chain impacts for operations in non-EU third-party countries.

In the sustainability reports for the years 2023, all three companies explicitly mention preparatory measures concerning the formal application of the CSRD for the following year. The extensiveness of the completed measures varies in scale, as Neste having reported the most proactive approach. However, the readiness of all companies in adopting and complying with the CSRD is evident in their sustainability reporting itself, to an almost equally similar level. The industry in which the companies engage and the nature of their operations entail additional efforts in environmentally conscious practices. This is proved by their comprehensive reporting of initiatives and policies impacting the environment, already aligned with most of the features and criteria asserted by the CSRD. The areas of social responsibility and governance do not fall short on relevant CSRD – adhering information. The companies demonstrate dedication to social causes and through transparency in their governance structures, exceeding the content requirements under the current Non-Financial Reporting Directive (NFRD). This positions the companies' sustainability reporting in an advantageous position, providing a robust foundation for further enhancement and expansion after the formal application of the CSRD for the year 2025.

5.2 Reliability of the Research

The qualitative content analysis consisted of a coding scheme made up of predefined themes in each Environmental, Social or Governance (ESG) area as per the European Sustainability Reporting Standards (ESRS). The sub-themes derived deductively according to the content of each report, however, proved to be similar due to the companies' nature of operating in the same industry. Therefore, the same coding scheme was applied to each sustainability report and used as a standardized framework, enabling a comparative assessment across all companies.

The information that derived from the analysis was defined as relevant according to its alignment to a certain criteria or feature of the Corporate Sustainability Reporting Directive (CSRD). The same criteria and features, established by the theory on the legislative changes, were used in evaluating the information for each company. Therefore, the theoretical framework presented in this work served as a foundational basis for conducting the analysis and ensuring that the assessment of each company's compliance was both systematic and consistent with the defined concepts.

5.3 Recommendations for Further Research

Further research ideas identified by the author include a continuous study of the developments in sustainability reporting within the energy industry in Finland. While the study conducted for the purpose of this thesis assessed the current sustainability reporting and its readiness to comply with

the CSRD, the next step would be the assessment of sustainability reporting once it is officially prepared under the CSRD – starting with reports from 2024 onward. This would enable a comparison of the content, quality and extent of sustainability reporting before and after the formal application of the CSRD.

The themes used in this study follow the currently available sector agnostic ESRS. Industry-specific ESRS will be published two years after the formal application of the CSRD. As a result of this, companies within the energy industry will have to follow a different set of standards, tailored specifically to the needs of the industry. This would be an additional change and development process worth following.

5.4 Reflection on Learning

The author decided to take on a topic which had been previously unfamiliar but interesting to her. Sustainability reporting is a complex issue consisting of several dimensions crucial for its understanding. In addition to comprehending its purpose, content, extent and applicability in different areas of business, the complexity is furthered by the changing regulatory landscape it finds itself within. To understand the topic in its entirety, the author had to conduct an extensive study – both theory-wise and in practice through the comprehensive assessment of the individual sustainability reports. The process of writing was slightly disrupted by unforeseen events which impacted the phased schedule planned beforehand. Despite this, the author managed to navigate the circumstances and present the work in a timely manner. The author would describe the process as a profound learning experience important for her professional development and career aspirations. It has set a valuable foundation regarding academic research and thesis work that the author intends to utilize in her upcoming master's studies.

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Appendices

Appendix 1. Coding Scheme for Classification of ESG-themes

ESG-Area	Theme (ESRS-Defined)	Sub-Theme	
Environmental	Climate Change	GHG Emissions	
		Energy Efficiency	
		Renewable Energy	
		Climate Risk Management	
	Pollution	Air Quality	
		Hazardous Material	
		Waste Management	
		Water Consumption	
	Water & Marine Resources	Water Stewardship	
		Effluent Treatment	
		Habitat Protection	
	Biodiversity & Ecosystems	Biodiversity Impact	
		Land Use	
		Product Life-Cycle	
	Circular Economy	Resource Recovery	
		Resource Optimization	
Sustainable Packaging			
Social	Own Workforce	Employee Health & Safety	
		Employee Satisfaction	
		Diversity & Inclusion	
		Training & Education	
		Labor Practices	
		Fair Wages	
	Workers in Value Chain	Supplier Social Assessment	
		Labor Practices	
		Fair Wages	
	Affected Communities	Community Engagement	
		Human Rights	
		Social Investment	
	Consumers & End-Users	Customer Health & Safety	
		Customer Satisfaction	
	Governance	Business Conduct	Ethics and Integrity
			Compliance
Anti-corruption Policies			
Political Engagement			
Market Exit Strategies			
Risk Management			
Corporate Governance			
Supply Chain Management			
Strategic Partnerships			
Stakeholder Engagement			
Transparency and Reporting			
Data Privacy and Protection			
Cyber Risk Management			

Appendix 2. Analysis of Wärtsilä's Sustainability Report for 2022

Wärtsilä's Sustainability Report for 2022				
Excerpt/Statement	ESG-Area	Theme	Sub-Theme	Reasoning for Alignment with CSRD
"In energy, electricity generation is expected to grow by 3X and renewables by 8X by 2050. By 2030, the balancing power market is expected to grow by 10X."	Environmental	Climate Change	Energy Efficiency	Data on the expected growth in electricity and renewable energy production, aligns with mandate for detailed and forward-looking disclosure.
"Set for 30' decarbonisation targets: Carbon neutral in the company's own operations by 2030, a product portfolio ready for zero carbon fuels by 2030."	Environmental	Climate Change	GHG Emissions	Outlines specific, measurable decarbonization targets; Forward-looking information.
"Wärtsilä is preparing for pilot projects in 2023-2024 with the intention to launch a maritime carbon capture (CCS) product to the market in 2025."	Environmental	Climate Change	GHG Emissions	Introduces technology for approach in pollution management with defined target years over a long time horizon.
In 2022, Wärtsilä joined the UN Global Compact Climate Ambition programme to support decarbonisation ambition.	Environmental	Climate Change	Climate Risk Management	Reflects strategic alignment with global decarbonization efforts - commitment to a broader context of combat in climate change.
In 2022, Wärtsilä continued pioneering the adoption of sustainable fuels with encouraging testing results. The company anticipates an engine concept operating with pure ammonia fuel in 2023, and an engine and power plant concept for operating with clean hydrogen by 2025.	Environmental	Climate Change	Renewable Energy	Both retrospective and forward looking information; Current status as well as clearly defined measurable targets looking over a long time horizon.
"Operations and products are continuously developed and improved with the help of certified environmental management systems (...) Our EHS management system emphasises compliance with legal requirements, identifying and reducing environmental impacts"	Environmental	Climate Change	Climate Risk Management	Structured approach to reducing environmental impacts with management system, certified under ISO 14001 / ISO 45001, demonstrates adherence to global and verifiable standard.
Wärtsilä's roadmap to decarbonise its own operations is divided into three phases, with the emission reduction measures and targets for the first phase (2022-2024) having been confirmed in 2022. Target was to reduce CO2e emissions by 20,000 tons.	Environmental	Climate Change	GHG Emissions	Detailed GHG reduction targets part of a phased decarbonisation roadmap; Information on current status and an achieved target.
In November 2022, the company launched an internal energy saving campaign. Example of energy saving action on a local level: Wärtsilä's Central Distribution Centre in Kampen, the Netherlands, lowered the indoor temperature by 2°C.	Environmental	Climate Change	Energy Efficiency	Detailing internal effort to operationalize energy efficiency targets and monitoring progress.
In the beginning of 2017, Wärtsilä set an energy saving target to reduce energy consumption by at least 7%. By the end of the sixth year of the target, permanent energy savings of 10.2 GWh have been reached.	Environmental	Climate Change	Energy Efficiency	Retrospective report on energy consumption against a set baseline year, provides demonstration of impact materiality.
In 2022, the emission reduction measures and targets for the first phase of Wärtsilä's decarbonisation roadmap were confirmed. Wärtsilä's CO2 emissions were reduced by 7,391t CO2e.	Environmental	Pollution	Air Quality	Emission reduction targets and actual reductions achieved in CO2 emissions; Quantitative data, alignment with broader climate goals.
"Wärtsilä Italia S.p.A. recycled 21,343 m3 of water in 2022. The amount corresponds to roughly 17% of Wärtsilä Italia's annual water consumption."	Environmental	Water & Marine Resources	Water Stewardship	Reporting of water recycling initiatives in high water-stress areas, addresses the impact materiality aspect.
Wärtsilä uses seawater for its engine and process cooling needs: Wastewater is seweraged and piped to the local wastewater treatment plant or treated on site before being discharged	Environmental	Water & Marine Resources	Water Stewardship	Aligns with the CSRD's requirement of managing ecological impact.
"In June, Wärtsilä opened its new technology centre, the Sustainable Technology Hub (...) The Hub acts as a global ecosystem of collaboration and accelerates decarbonisation activities."	Environmental	Climate Change	Climate Risk Management	Strategic investment in R&D - reflecting both impact materiality and financial materiality.
"With Wärtsilä's multifuel technology, ranging from transition fuels to sustainable, 100% green fuels, our customers have a viable upgrade path for the future. Today, Wärtsilä has the most comprehensive development programme for sustainable fuel technologies in the industry, with proven 4-stroke technology for the use of MDO, LNG, LPG and methanol."	Environmental	Circular Economy	Resource Optimization	Explains current technology, continuing to innovate toward 100% green fuels (long-term development horizon).
Wärtsilä is included in several sustainability indices. In 2022, Wärtsilä was selected as an index component of the Dow Jones Sustainability Indices (DJSI), both in the DJSI World and DJSI Europe indices, for the seventh year in a row.	Governance	Business Conduct	Transparency and Reporting	Recognition in prominent sustainability indices, showcases continuous external validation of sustainability practice.
Wärtsilä identifies and assesses on an annual basis its sustainability risks, including climate change risks, in both its strategic and operative risk assessments	Governance	Business Conduct	Risk Management	Integration of sustainability considerations into risk assessments, provides information on timeframe: continuous (yearly) management.
Sustainability is governed by the Board of Directors and the Board of Management; All the targets have nominated target owners, who prepare action plans, oversee their implementation, and report on the proceedings	Governance	Business Conduct	Corporate Governance	As required by the CSRD, highlights governance structure and accountability mechanisms.
Wärtsilä's policy is to engage in an open dialogue and discussion with both local and international public authorities and officials	Governance	Business Conduct	Political Engagement	Aligns with CSRD's requirement to disclose information regarding approach to political engagement and lobbying.
The sustainability data is collected and reported according to Wärtsilä's specific internal reporting guidelines. PricewaterhouseCoopers Oy (PwC) has independently assessed the report against GRI Standards.	Governance	Business Conduct	Transparency and Reporting	Data in line with established internal guidelines and independent verification by PwC - limited assurance.
"Major items on the agenda of the Board of Management were the business strategies and their implementation plans, as well as the sustainability strategy and decarbonisation targets."	Governance	Business Conduct	Corporate Governance	Reflects CSRD's emphasis on integrating sustainability considerations into core business strategy.
Employees can provide feedback to the management and communicate suspected misconduct via a whistle-blower channel that secures anonymous reporting	Governance	Business Conduct	Ethics and Integrity	CSRD's requirement of disclosure of processes that allow employees to report unethical behavior.
Strategic risk assessment is an essential part of the strategic planning process and enterprise risk management in the Group. A risk with potential for a long-term impact on the business of Wärtsilä is considered as a strategic risk.	Governance	Business Conduct	Risk Management	Forward-looking approach to risks that considers both current and future challenges.
The risks that Wärtsilä is unable to influence through its own efforts are transferred, whenever possible, to insurance companies.	Governance	Business Conduct	Risk Management	Discloses how the company mitigates potential financial impacts that cannot be directly controlled.
Wärtsilä has an internal organisation dedicated to the effective management of cyber security risks. The Wärtsilä Security Operations Center continuously monitors and provides coordinated responses to identified information security incidents.	Governance	Cybersecurity	Cyber Risk Management	Proactive stance on cyber risk management; CSRD's focus on disclosing risks and describing how these are managed.
"The EU's General Data Protection Regulation (GDPR) sets out the general framework for Wärtsilä's data protection. Wärtsilä applies a risk-based approach to privacy and data protection."	Governance	Business Conduct	Data Privacy and Protection	Demonstrates due diligence and the operationalization of data privacy principles.
Wärtsilä strongly condemns the war in Ukraine. After Russia's invasion into Ukraine, the company immediately suspended all deliveries, sales, orders, and bidding activities to and with Russia.	Governance	Business Conduct	Political Engagement & Market Exit Strategies	Impact of decision making regarding political presence; Highlights broader implications of business decision on society and global trade.
Policy for the demand of green sea transport, driven by companies' environmental commitments to their customers and investors push for sustainability targets.	Social	Consumers & End-Users	Customer Satisfaction	Criterion of outward materiality by disclosing the demands of customers and investors.
Fleet optimisation and safety solutions managed voyage performance with real-time decision support, helping customers in achieving optimised routing and port operations with tangible fuel savings.	Social	Consumers & End-Users	Customer Satisfaction	Improving operational efficiency and contributing to environmental sustainability - external materiality concept.
Wärtsilä has mandatory supplier requirements for areas of compliance with legislation, environmental aspects, quality, occupational health and safety management, social performance, and cyber security. Compliance with these requirements is assessed, both in the selection and onboarding of new suppliers, as well as in the company's continuous supplier performance management.	Social	Workers in Value Chain	Supplier Social Assessment	Due diligence as per CSRD requirements in ensuring that entire supply chain aligns with core commitments.
Wärtsilä supports and respects internationally recognised human rights. In those countries where local legislation does not recognise these rights, employees are offered other channels for expressing their opinions	Social	Affected Communities	Human Rights	Adherence to internationally recognised human rights and labour standards, with additional efforts.
"Human and labour rights are also included as part of the requirements stated in the Wärtsilä Supplier Handbook, as well as in our supplier risk assessment and compliance assurance procedures."	Social	Workers in Value Chain	Supplier Social Assessment	Incorporating human and labor rights into supplier management practices; Application of due diligence.
"Employees who report a potential Code of Conduct violation in good faith will not suffer harassment, retaliation, or adverse employment consequences (...) In 2022, a total of 112 reports of suspected misconduct incidents were made."	Social	Own Workforce	Labor Practices	Provision for reporting misconduct including a whistleblowing channel.
Wärtsilä and Aalto University in Finland signed a new three-year strategic partnership contract aimed at enhancing long-term collaboration on sustainable wellbeing, competitiveness, and vitality through research, education and societal interaction.	Social	Affected Communities	Social Investment & Strategic Partnership	Strategic partnerships for R&D - corporate contribution to social advancement (impactfulness).
"We build strategic capabilities and learning portfolios to support our efforts towards shaping the decarbonisation of marine and energy. Our leaders reinforce learning and empower us all to take responsibility for our own growth and development."	Social	Own Workforce	Training & Education	Investment in employee development with focus on the company's decarbonisation goals - double materiality perspective.
"At the end of 2022, 56 Wärtsilä companies, representing roughly 91% of Wärtsilä's total workforce, were operating with a certified ISO 45001 occupational health and safety management system in place."	Social	Own Workforce	Employee Health & Safety	Demonstrates commitment to globally recognized health and safety standards.
"Since 2019, we have been delivering 'Champions in Safety' training. By the end of 2022, 7,500 employees had completed this training."	Social	Own Workforce	Training & Education	Continuous education for safety culture, baseline year provided along with completion statistic.
"At Wärtsilä we value, respect, and embrace diversity in terms of gender, age, personality, and educational background. Our workforce comprises some 130 nationalities."	Social	Own Workforce	Diversity & Inclusion	CSRD's emphasis on the impact of diversity in terms of corporate culture.
"We observe our customers' perception of loyalty and satisfaction by applying a Net Promoter Score methodology, NPS. The results are monitored on a monthly basis."	Social	Consumers & End-Users	Customer Satisfaction	An aspect of social and relationship capital - assessing the impact of business practices on consumers.
Wärtsilä's average number of training days in 2022 for male employees was 1.45 and for female employees 1.15	Social	Own Workforce	Training & Education	Transparency into investment in human capital development with quantitative information.
Wärtsilä companies apply occupational health and safety programmes as required by local legislation (...) 68% of Wärtsilä companies have an occupational health and safety committee covering to total 86% of Wärtsilä's employees.	Social	Own Workforce	Employee Health & Safety	Adherence to local legislation and formation of safety committees - due diligence and risk management.

Appendix 3. Analysis of Fortum's Sustainability Report for 2022

Fortum's Sustainability Report for 2022				
Excerpt/Statement	ESG-Area	Theme	Sub-Theme	Reasoning for Alignment with CSRD
"In 2022, Fortum's new hydrometallurgical plant in Harjavalta, Finland, was under construction. The investment is a major step in increasing our hydrometallurgical recycling capacity (...). The new plant will start commercial operations in April 2023. The new Harjavalta plant will significantly increase the recycling capacity of battery materials in Europe."	Environmental	Circular Economy	Resource Recovery	Investment's contribution to expanding Europe's capacity for recycling battery materials - double concept materiality (financial, impact).
"Fortum is looking into new technologies and next generation circular economy solutions to complement mechanical recycling, such as chemical recycling and CCU (Carbon Capture and Utilisation) solutions. The Carbon2x concept, launched by the company in April 2022, is a pilot project that aims to capture emissions from waste incineration and turn them into CO2-based, high-quality raw materials. It will help reduce dependence on fossil-based raw materials, improve Europe's self-sufficiency, and decarbonise waste incineration."	Environmental	Circular Economy	Resource Optimization & Product Life-Cycle	Future-oriented approach; Engagement with innovative solutions that go beyond traditional practices
"Fortum is today one of Europe's cleanest power generators. Almost 90% of the Group's EBITDA originates from the company's Nordic 45 TWh outright power generation, which is based on CO2-free hydro and nuclear power."	Environmental	Climate Change	Energy Efficiency	Quantitative data and qualitative insight into operations.
"Fortum has brought forward its target to reach carbon neutrality (Scopes 1, 2, 3) by several years to 2030 and will exit all coal-based generation by the end of 2027."	Environmental	Climate Change	GHG Emissions	Accelerated long-term target timeline, defined years brought forward - progress.
"Development of Fortum Circo® recycled plastic as a sustainable solution to replace virgin plastics in plastic products continues in 2022 with a carbon footprint assessment. The new cellulose fibre-reinforced compound Fortum Circo® PP-CF 40 is carbon neutral."	Environmental	Circular Economy	Sustainable Packaging	Double materiality principle - impact materiality in reducing environmental footprint, financial materiality in innovating in product development.
"100% of Fortum's electricity and heat production worldwide were ISO 14001 environmentally certified at the end of 2022."	Environmental	Climate Change	Energy Efficiency	Quantitative insight into adherence to internationally recognized environmental management standard.
"Target: '50% reduction in dynamic terrestrial impacts in upstream Scope 3 by 2030 vs. 2021.'; 'No net loss of biodiversity from direct operations 2030 onwards (excluding all aquatic impacts).'"	Environmental	Biodiversity & Ecosystems	Biodiversity Impact	Forward-looking information; Specific targets to reducing footprint in indirect activities.
"The Finnish Government granted a new operating licence for Fortum's Lovisa nuclear power plant until the end of 2050, which is expected to generate up to 170 terawatt-hours of CO2-free electricity."	Environmental	Climate Change	Energy Efficiency	Strategic investment; Mention of a timeframe (till 2050) - long-term commitment and target.
"In 2022, a decision was made to place Finland's first floating LNG terminal in Fortum's Inkooport. The LNG terminal project will secure the supply of gas to industry and households and will replace earlier Russian gas supplies. This enhances Finland's energy security from 2023 onwards, demonstrating a strategic shift towards diversified and reliable energy sources."	Environmental	Climate Change	Energy Efficiency	Discloses action to adapt to geopolitical changes and ensure energy supply continuity - addressing external challenge.
"Fortum is committed to carbon neutrality by 2030 in its own operations as well as in the emissions created in the value chain."	Environmental	Climate Change	GHG Emissions	Aligns with the global goals and initiatives, such as the Paris Agreement.
"In 2022, Fortum's CO2-free power generation, including renewable energy and nuclear power, was 42.3 TWh, 97% of its power generation in Europe and 59% of total power generation globally was CO2-free."	Environmental	Climate Change	Renewable Energy	Quantitative data; Information on current status and an achieved target.
"The following climate targets were valid in 2022: reduction of CO2 emissions in European generation by at least 50% by 2030 (...). Carbon neutral in European generation by 2035 at the latest (...). Carbon neutral globally, in line with the Paris Agreement, by 2050 at the latest."	Environmental	Climate Change	GHG Emissions	Outlines specific, measurable decarbonization targets; Forward-looking information.
"With production located mostly in the Nordic countries, Fortum's risks related to water availability are, based on our assessment, relatively small in the medium term (...). 3% of Fortum's water withdrawal in production operations is in water-stressed areas in Russia and Poland, based on water-stress screening using the WRI Aqueduct Water Risk Atlas."	Environmental	Water & Marine Resources	Water Consumption & Risk Management	Provides geographical overview of water risk in risk management for understanding impact materiality.
"Fortum has set a new target to decrease leakages in the district heating network to a water consumption rate below 1.6 litres/year of the network's current water volume."	Environmental	Water & Marine Resources	Water Consumption	Setting and reporting on a future target; Current baseline data for comparison.
"Fortum's water withdrawal in water-stressed areas was 58 million m ³ , which was about 3% of our total water withdrawal. The decrease was mainly due to the divestment of the Argayash CHP plant in Russia."	Environmental	Water & Marine Resources	Water Stewardship	Due diligence in managing water resources; Discloses negative effects on the value chain.
"According to the biodiversity footprint assessment (excluding hydroponic aquatic impacts), on a global scale Fortum's main biodiversity impacts are related to the impacts from GHG emissions, land use, and fuel procurement."	Environmental	Biodiversity & Ecosystems	Biodiversity Impact & Risk Management	Reporting on self-assessment; Acknowledging the negative effects across the value chain.
"We aim to improve biodiversity in connection with our operations, we carry out biodiversity-related projects, and collaborate with our stakeholders in projects. In 2022, Fortum carried out hydroponer-related fish obligations, valued at about EUR 2.1 million."	Environmental	Biodiversity & Ecosystems	Biodiversity Impact	Double materiality principle - detailed account of investment in project and impact materiality.
"About 79% (2021: 65%) of the ash from our plants operating in Europe is utilised as a raw material, for example, in the construction industry and road construction, and as soil improvement and backfill."	Environmental	Circular Economy	Resource Recovery	Indicates quantitative progress (increasing from 65% to 79%), yearly comparison.
"Fortum and Teollisuuden Voima have established Poasia Oy to handle the technical implementation of the final disposal of spent nuclear fuel, and final disposal is scheduled to begin at Olkiluoto in Eurajoki, Finland around the mid-2020s."	Environmental	Pollution	Waste Management	Addresses both impact materiality by mitigating risks and financial materiality by investing in long-term solutions.
"Fortum's new strategy does not include the Group's Russian operations and the company continues to actively pursue an exit from Russia as a divestment or a preferred alternative."	Governance	Business Conduct	Market Exit Strategies	Discloses the adaptation of business model and governance to mitigate geopolitical and reputational risk.
"Fortum published an update to its Climate Lobbying Review, originally published in 2021. Fortum's climate policy advocacy is strongly based on climate science, and support for the Paris Agreement is the core principle underpinning Fortum's climate advocacy."	Governance	Business Conduct	Political Engagement	Compliance with a key international environmental agreement; Updated information.
"Deloitte Oy has provided limited assurance in accordance with ISAE 3410 for the reporting period of 1 January 2022 to 31 December 2022 on GHG emissions calculations (Scope 1, 2 and 3) based on the Greenhouse Gas (GHG) Protocol."	Governance	Business Conduct	Transparency and Reporting	Engagement of external auditors to verify GHG emissions calculations - 'limited' assurance.
"The Norwegian Energy Regulation Authority notified Fortum to stop the sales of a payment solution which the Authority considered to be in breach of the electricity invoicing regulation. Fortum was imposed a fine of NOK 6.29 million (EUR 0.62 million). Fortum has complied with the decision of the Authority."	Governance	Business Conduct	Compliance	Highlights a financial materiality aspect by showing impact due to non-compliance.
"Fortum became a supporter of the Task Force on Climate-related Financial Disclosures (TCFD) during the first quarter of 2021."	Governance	Business Conduct	Transparency and Reporting	Alignment to global and reliable framework, supported by CSRD; Retrospective information.
"Political uncertainty, climate change, and the growing dependence on partners may cause disruptions to Fortum Group's operations. For this reason, we have invested in preparing for disaster and emergency situations, concentrating heavily on ensuring contingency arrangements and continuity management as well as on substitute locations for critical functions."	Governance	Business Conduct	Risk Management	Forward-looking perspective on external risks and their impact on operations; Double materiality principle.
"Fortum communicates openly and engages actively in dialogue with authorities and decision makers: in 2022, we actively participated in the debates on resolving the EU energy crisis, the Fit for 55 package, the EU sustainable finance taxonomy and corporate sustainability."	Governance	Business Conduct	Stakeholder/Political Engagement	Discloses role and influence in regulatory and policy discussions impacting the energy sector.
"Fortum is a member of the Bettercoal initiative and uses the Bettercoal Code and tools to monitor and improve sustainability in the coal supply chain."	Governance	Business Conduct	Supply Chain Management	Shows commitment to industry-wide improvements and cooperative efforts.
"Fortum's goal is a high level of environmental and safety management in all business activities. Calculated in terms of CO2, 100% of Fortum's electricity and heat production operations at the end of 2022 were ISO 14001 environmentally certified and 100% were ISO 45001 safety certified."	Governance	Business Conduct	Compliance & Ethics and Integrity	Compliance with internationally recognized standards (ISO 14001 and ISO 45001); Disclosure and performance tracking.
"Fortum's Board of Directors approves the Group Risk Policy that defines the objective, main principles and responsibilities for risk management. Fortum's internal control framework is based on the main elements of the framework introduced by the Committee of Sponsoring Organisations of the Treadway Commission (COSO)."	Governance	Business Conduct	Risk Management	Disclosure on risk management processes - adherence to internationally recognized standard (COSO framework).
"We at Fortum want to do our part to promote the achievement of the SDG goals in our own value chain. We take responsibility for and aim to prevent our adverse impacts related to the goals while also seeing business opportunities in them."	Governance	Business Conduct	Supply Chain Management	Double materiality - responsibility for impact on SDGs, recognizing opportunities (financial materiality).
"Fortum uses an external service provider's 'SpeakUp' channel for reporting any suspected misconduct relating to the environment, labour practices or human rights violations. Fortum cooperates with many civil society organisations including Amnesty, an organisation in Sweden that supports children whose parents have mental challenges or substance abuse problems."	Governance	Business Conduct	Ethics and Integrity	Transparency in method of upholding standards for managing grievances.
"Safety targets for 2022: Total Recordable Injury Frequency (TRIF), for own personnel and contractors, <1.0 by the end of 2025. No severe accidents. A severity rate per TRIF <1.1, and 85% execution rate for both the Safety Leadership training and the new Safety eLearning. New safety targets for 2023: Total Recordable Injury Frequency (TRIF), for own personnel and contractors, <1.0 by the end of 2030. Zero severe or fatal injuries, 95% execution rate for the Safety Leadership training, and 60% execution rate for safety improvement plans."	Social	Own Workforce	Employee Health and Safety	Quantitative data on specific safety targets, accomplishment rates, threshold for comparison, and yearly performance (reporting progress 2022-2023).
"Fortum participates in the Equal by 30 campaign, a global effort to reach gender parity in the energy sector by 2030. The initiative includes 12 governments and more than 130 participating organisations worldwide."	Social	Own Workforce	Diversity & Inclusion	Shows contribution to broader social goals; Aligning policies with global campaigns.
"Employee perceptions of the DEI culture at Fortum were also addressed in the &Frankly survey. The results show that 79% of our employees feel valued and included, and 91% think that their managers handle DEI matters appropriately. However, 5% of the respondents said they have experienced harassment or discrimination in the last 12 months."	Social	Own Workforce	Employee Satisfaction	Insights into employee perceptions of DEI; Transparency on negative patterns.
"Fortum follows and respects the International Bill of Human Rights, the United Nations Convention on the Rights of the Child, and the core conventions of the International Labour Organisation (ILO). Fortum's approach to human rights due diligence is based on the UN Guiding Principles on Business and Human Rights and follows the six steps outlined in the OECD Guidelines for Multinational Enterprises."	Social	Affected Communities	Human Rights	Discloses the due diligence in adhering to global human rights frameworks and practices.
"Human rights requirements for suppliers are described in Fortum's Supplier Code of Conduct. The human rights requirements are also addressed as part of the Supplier Code of Conduct training."	Social	Workers in Value Chain	Supplier Social Assessment	Due diligence as per CSRD requirements in ensuring that entire supply chain aligns with core commitments.
"Fortum measures customer satisfaction as part of the extensive One Fortum Survey. The customer satisfaction index (CSI) varied by business area between 60 and 83 points (2021: 56-83), on a scale of 0-100. Overall, Fortum's customer satisfaction is at a very good level among business-to-business customers."	Social	Consumers and End-Users	Customer Satisfaction	Provides quantitative data - customer satisfaction scores across all business units.
"In addition, due to the devastating war in Ukraine, we directed donations towards organisations helping the Ukrainian people. In the beginning of the war, we made a 200,000 euro donation as part of a wider Emergency Appeal where IFRC, alongside its partner Red Cross and Red Crescent societies, provided basic assistance to more than 5 million people."	Social	Affected Communities	Social Investment	Reports impact materiality on social issues in crisis situations.
"We have partnered with various stakeholders for years in rehabilitating waterways and improving riverside landscaping. In 2022, as part of the OUMO project, we improved the services and safety of the Metall beach area in Paltamo, Finland."	Social	Affected Communities	Community Engagement	Shows collaboration with diverse stakeholders to improve local amenities (both environmental and social contribution).
"In our solar operations in India, we carry out various CSR projects in the villages located near plants. These projects include regular and specialized health camps, courses in tailoring and handicrafts to uplift women, and basic computer skill training courses for children and young adults."	Social	Affected Communities	Social Investment	Shows the contribution towards creating positive social impact and enhancing human capital.
"The Shareholders' Nomination Board prepares and applies diversity principles to the Board of Directors in line with the Finnish Corporate Governance Code 2020. The proposal for the board members for the Annual General Meeting 2023 consists of 4 women and 6 men."	Social	Own Workforce	Diversity & Inclusion	Demonstrates transparent disclosure on both diversity policies and corporate (board) structure.

Appendix 4. Analysis of Neste's Sustainability Report for 2022

Neste's Sustainability Report for 2022				
Excerpt/Statement	ESG-Area	Theme	Sub-Theme	Reasoning for Alignment with CSRD
"We are committed to reduce our customers' greenhouse gas emissions by at least 20 million tons annually by 2030 with our renewable and circular solutions, aligning our goals to significant environmental impact through innovative product offerings."	Environmental	Climate Change	GHG Emissions	Quantitative target for forward-looking goal, set year.
"Our vision is to drive a positive impact on biodiversity and achieve a nature positive value chain by 2040, aiming at creating net positive impacts (NPI) for biodiversity from new own activities from 2025 onwards and targeting no net loss (NNL) of biodiversity from all ongoing own activities by 2035."	Environmental	Biodiversity & Ecosystems	Biodiversity Impact	Specific targets and timelines, Both the current state and future commitments.
"In September 2022, we launched a strategic study on transitioning our refinery in Porvoo, Finland to a renewable and circular site, aiming to end crude oil refining in the mid-2030s."	Environmental	Circular Economy	Resource Optimization	Forward-looking disclosure and long-term goal; Double materiality principle (financial and impact).
Starting in 2023, Neste will supply the Air France-KLM Group with more than 1 million tons of Neste MY Sustainable Aviation Fuel™ over a period of 5 years. Neste's partnership with Fly Victor allows Victor's customers to replace fossil fuel by purchasing Neste MY Sustainable Aviation Fuel for every private jet booking globally."	Environmental	Climate Change	Renewable Energy	Supports the broader context (impact materiality) of aviation industry's shift to sustainability.
Neste introduced co-processed marine fuel in partnership with Nordic Marine Oil – a new solution for the maritime sector enabling up to 80% GHG emission reduction."	Environmental	Climate Change	GHG Emissions	Effort for sector-wide advancement (quantitative data provided) through innovation.
Neste aims for 100% renewable electricity use globally by 2023. This target was achieved ahead of schedule in Finland with the new hydropower agreement with Valtionvoima."	Environmental	Climate Change	Energy Efficiency	Shows ahead-of-time progress toward set environmental target.
Neste's climate vision is to lead transformation towards carbon neutral value chain by 2040. Our climate commitments cover the entire value chain (scopes 1, 2 & 3)."	Environmental	Climate Change	GHG Emissions	Aligns with CSRD's requirement to disclose actions affecting the entire value chain; Future goals.
Collaboration between Neste, Borealis and MAM to bring new soother made with renewably sourced feedstock to market."	Environmental	Circular Economy	Resource Optimization	Double materiality principle - environmental impact reduction through product development.
"We are committed to reducing the GHG emissions from our production (scopes 1 & 2) and reach carbon-neutral production by 2035."	Environmental	Climate Change	GHG Emissions	Provides quantitative goals, forward-looking disclosure.
"The use of our Neste MY Renewable Diesel helps reduce greenhouse gas emissions by as much as 50-85% compared to fossil diesel over the fuel's life cycle."	Environmental	Climate Change	GHG Emissions	Product innovation contributing to the reduction of emissions - impact and financial materiality.
"Neste RE is a drop-in solution that can be used on its own or in a blend to manufacture products of identical quality to those made out of conventional feedstock based on virgin fossil resources. When 100% renewable feedstock is used to replace virgin fossil feedstock in the chemical and polymers industry, it shows a GHG emission reduction of at least 85% over the life cycle."	Environmental	Circular Economy	Sustainable Packaging	Shows contributions toward sustainability through development in product life-cycle.
"Our target is to reduce production (scopes 1 & 2) emissions by 50% by 2030 compared to 2019, and reach carbon neutral production by 2035. We are well on track to reach our targets as in 2022, our production (scopes 1 & 2) emissions totalled to 2.5 MtCO2e, which is 28% smaller than in 2019, our baseline year."	Environmental	Climate Change	Climate Risk Management; GHG Emissions	Forward-looking target; Alignment with international climate goals such as the Paris Agreement; Reporting impact of measures over a defined timeframe.
"We aim for 100% renewable electricity use globally by 2023. In 2022, 93.8% of electricity purchased and used globally by Neste was renewable origin."	Environmental	Climate Change	Renewable Energy	Reports progress made towards forward-looking target.
"In 2022, we conducted materiality analysis for our own operations (scope 1), and water was highlighted as a key topic. There are risks related to freshwater ecosystems, water scarcity, and marine ecosystems that we might impact through our freshwater withdrawal and release of effluents."	Environmental	Water & Marine Resources	Effluent Treatment & Risk Management	Forward-looking perspective; Acknowledgment of ongoing and future risks.
Neste's raw material sourcing for renewable fuels is strictly regulated by the sustainability criteria of, e.g., the EU Renewable Energy Directive, which defines no-go areas and restricts the use of materials originating from land with high biodiversity value."	Environmental	Biodiversity & Ecosystems	Biodiversity Impact	Details regulatory compliance measures that impact the company's operational sustainability.
"Neste has conducted continuous ambient air quality monitoring in the vicinity of the Porvoo refinery since 1970. The air quality monitoring has demonstrated that sulphur dioxide and nitrogen oxides emissions to the air have significantly declined over the past decades."	Environmental	Pollution	Air Quality	Retrospective and forward-looking disclosure; Reports effectiveness of a measure over time.
"At Neste headquarters in Espoo, Finland we have four beehives that accommodate approximately 50,000 bees each, creating a positive impact on the surrounding environment locally."	Environmental	Biodiversity & Ecosystems	Habitat Protection	Impact and financial materiality - tangible example of small-scale project contribution.
"During the agreement period 2017-2025, we aim to save 500 GWh compared to the 2014 level. In 2022, our energy saving measures totalled 42.6 (95.8) GWh."	Environmental	Climate Change	Energy Efficiency	Quantitative targets and achievements during a defined long-term timeline.
"The most recent water risk evaluation of our operational sites was done in 2022, based on the WRF water risk filter tool that enables both a site-specific and global review of the water risks at the physical, regulatory and reputational levels."	Environmental	Water & Marine Resources	Effluent Treatment	Risk-based disclosure on method of managing water-related challenges.
Neste is advancing chemical recycling, also known as advanced recycling, to speed up the transition to a circular economy for plastics. Neste's development of chemical recycling technologies and capacity with value chain partners supports Neste's strategic target of becoming a global leader in circular solutions."	Environmental	Circular Economy	Product Life-Cycle	Double materiality principle - reduction of dependency on virgin raw materials and financial materiality.
"We require 100% of suppliers and other business partners to be committed to Neste Supplier Code of Conduct and have the best-in-class grievance processes, including human rights, biodiversity, and climate targets as key criteria for suppliers as we drive diversification and increased availability."	Governance	Business Conduct	Supply Chain Management	Demonstrates governance practices that ensure ethical operations across the entire supply chain.
"In 2022, we conducted a total of 118 sustainability audits on our raw material suppliers, terminals, and contractors, ensuring compliance with our sustainability standards."	Governance	Business Conduct	Supply Chain Management & Compliance	Quantitative data regarding operational oversight.
Neste is an active member of the WBCSD Business Commission to Tackle Inequality (BCTI), a multi-stakeholder coalition of organizations who put addressing inequality at the heart of the business agenda for sustainable growth."	Governance	Business Conduct	Stakeholder Engagement	Shows impact and financial materiality by mitigating social risks and enhancing corporate reputation.
Neste joined the Science Based Targets Network's (SBTN) Corporate Engagement Program to develop and set science-based targets for nature."	Governance	Business Conduct	Strategic Partnerships	Addresses CSRD's emphasis on trusted science-based environmental management practices.
"In December 2022, the Rotterdam Convention was shut down due to a fire in a refinery unit. Injuries were avoided and the incident had no effect on the expansion project, however, the fire indicated the need to further improve the process safety performance."	Governance	Business Conduct	Risk Management	Retrospective reporting of adverse events; Future actions to prevent them.
"We only accept renewable raw materials that are traceable to the point of origin. All the renewable raw materials we use meet the sustainability criteria defined in the EU RED II for the European markets. We ensure that the renewable raw materials that we use in refining enable us to produce renewable fuels that always provide the required greenhouse gas emissions savings - at least 50% reduction on per EU RED II over the fuels' life cycle compared to similar emissions from 100% fossil alternatives."	Governance	Business Conduct	Compliance	Demonstrates due diligence in sourcing, adhering to regulations set by the EU.
An independent third party, KPMG Oy Ab, has assured the topic-specific GRI disclosures for economic, social, and environmental indicators as well as General GRI disclosures 2-7 and 2-30. Also information presented in the Sustainability highlights, Material sustainability KPIs, Neste creates value, and Performance in figures pages of the report have been assured."	Governance	Business Conduct	Transparency and Reporting	Assurance of sustainability data by an independent third party - limited assurance.
"We are actively following various sustainability reporting framework developments, especially with the global sustainability reporting standardization in the EU, such as the Corporate Sustainability Reporting Directive (CSRD) and the European Sustainability Reporting Standards (ESRS), as well as with the coming standards from the International Sustainability Standards Board (ISSB), in order to keep our reporting methodologies up to date proactively."	Governance	Business Conduct	Transparency and Reporting	Shows the direct engagement with implementation of CSRD and ESRS.
"Neste Corporation (Neste) or the Company observes good corporate governance practices in accordance with the laws and regulations applicable to Finnish listed companies, the Company's own Articles of Association, and the Finnish 2020 Corporate Governance Code."	Governance	Business Conduct	Corporate Governance	Reports the adherence to a set of governance norms, including national laws and industry codes.
"In planning the composition of a skilled, competent, experienced, and effective Board of Directors, the Shareholders' Nomination Board also follows the following diversity principles defined by the Company."	Governance	Business Conduct	Corporate Governance	Demonstrates transparent disclosure on both diversity policies and corporate (board) structure.
Framework and principles for risk management have been defined in the Neste Corporate risk management policy, which has been approved by the Board of Directors. In Neste's risk model, risks are classified into external, strategic, and preventable risks that are more operational in nature."	Governance	Business Conduct	Risk Management	Detailed classification of risk types demonstrates structured approach; Shows understanding of potential impacts.
In 2022 Neste developed a donation management process throughout the organization, and allocated donations according to three themes: Innovation and education, Climate and environment, and Diversity and inclusion."	Social	Affected Communities	Social Investment	Discloses management of social impacts and contributions towards societal goals.
"In 2022, Neste completed a living wage gap assessment for its own employees in Finland, using data provided by the Fair Wage Network. The results of this assessment enabled Neste to verify that all its employees working in Finland receive compensation above the local living wage benchmark."	Social	Own Workforce	Fair Wages	Financial materiality through employee satisfaction and retention, impact materiality by positive contribution to economic stability.
"In 2022, the average number of Neste personnel was 5,244 and about 1,400 employees were hired globally by the end of 2022. About 30% of the recruits were temporary. We set a lot of focus on onboarding and induction of the new hires and people in new roles. According to the new hires survey, 90% of new employees feel happy working at Neste."	Social	Own Workforce	Employee Satisfaction	Qualitative and quantitative overview of the workforce; Reports impact of employment practices on organization's social capital.
"The planned transition of our Porvoo refinery into a renewable and circular site in the mid-2030s will provide new opportunities and learning possibilities to Oil Products personnel and also for many other Neste employees."	Social	Own Workforce	Training & Education	Demonstrates commitment to training employees regarding long-term sustainability and financial materiality.
"In 2022, our tailored leadership development programs gained a lot of interest: more than 750 employees participated in company-wide development programs and the average feedback from the programs was 4.3 (on a scale of 1-5)."	Social	Own Workforce	Training & Education	Quantitative data on participation in development programs and feedback received.
"In 2022, key activities included developing a framework and priorities for diversity, equity and inclusion at Neste with the support of external experts. We also carried out preparations for a company-wide training initiative - to be cascaded in 2023 - to drive continuous learning and dialogue on DEI within all our teams and among senior management."	Social	Own Workforce	Diversity & Inclusion	Forward-looking training initiative, shows commitment to ongoing development.
"In 2022, we made donations to Save the Children, WIRESS and Food Bank Houston, among others. In 2022, Neste was one of key partners of John Nurminen Foundation which aims to save the Baltic Sea and its heritage for future generations."	Social	Affected Communities	Social Investment	Transparent data on donation contributions made and the targeted causes.
"We offer our employees a dedicated paid full day for voluntary work as we believe volunteering activities are a way to build closer ties to our society."	Social	Affected Communities	Community Engagement	Contributing to the social well-being of both employees and society - reflective of impact materiality.
In 2022, Neste's occupational safety performance rate (TRIF, or rate of accidents requiring medical treatment per million hours worked, including contractors) did not reach the target level (1.5) and was 2.0 (2021: 1.4). Biggest challenges were experienced in contractor safety."	Social	Own Workforce	Health & Safety	Quantitative data and adherence to labor practices; Shows actual performance against targets.
"In 2022, we set up an operational-level local complaints and feedback mechanism at our Singapore refinery, providing a channel for all onsite workers, including contractors' employees, to be able to raise local complaints directly to Neste and access effective remedy."	Social	Own Workforce	Labor Practices	Disclosure of method of addressing remedy grievances across the entire value chain.
"Neste Supplier Code of Conduct defines minimum human rights requirements for all of our suppliers and business partners, who also are required to undergo a robust human rights assessment before they can partner with Neste."	Social	Workers in Value Chain	Supplier Social Assessment	Incorporating human and labor rights into supplier management practices; Application of due diligence.
"At the end of 2022, we started a partnership with SOS Children's Villages for a three-year project to support children in high-risk communities where Neste has supply chains."	Social	Affected Communities	Community Engagement	Impact materiality to the social welfare of communities impacted by business activities.
"In 2022, we partnered with Work Ahead to launch the use of a worker voice tool in Neste's supply chains. The worker voice tool is an audiovisual survey that enables direct and anonymous engagement with workers using mobile devices."	Social	Workers in Value Chain	Labor Practices	Provision for reporting misconduct including a whistleblowing channel.
"We are a member of the Consumer Goods Forum's (CGF) Human Rights Coalition on Working to End Forced Labour."	Social	Affected Communities	Human Rights	Reports alignment with global standards and collaborative efforts to address human rights.
"We participate in collaborative efforts to advance positive social and environmental impacts in the palm sector. Neste is a member of the Palm Oil Collaboration Group (POCG) and has participated in its Social Issues Working Group (SIWG) since the initiative was launched in 2020."	Social	Affected Communities	Social Investment	Reports participation in industry-wide initiatives to address social and environmental challenges - double materiality.
In 2022, more than 750 employees participated in company-wide development programs, such as the Neste leadership program, the Neste Reverse Mentoring Program and the Mission Possible program."	Social	Own Workforce	Training & Education	Detailing specific programs that foster enhancement of human capital.

Appendix 5. Analysis of Wärtsilä's Sustainability Report for 2023

Wärtsilä's Sustainability Report for 2023				
Excerpt/Statement	ESG-Area	Theme	Sub-Theme	Reasoning for Alignment with CSRD
"We aim to deliver a technology concept for 100% hydrogen in 2025."	Environmental	Climate Change	Renewable Energy	Long-term horizon disclosure; Reporting on progress towards set specific target.
"Wärtsilä has increased its R&D investments from its historical -3% of net sales to -4%. In 2023, the company's R&D investment accounted to 4.3% and was largely related to the decarbonisation of the marine and energy sectors."	Environmental	Climate Change	GHG Emissions	Retrospective and forward-looking disclosure for initiatives in decarbonisation; Historical figure provided for comparison.
"Wärtsilä is preparing for a commercial release of carbon capture & storage (CCS) in 2025"	Environmental	Climate Change	GHG Emissions	Forward-looking statement, set year as target.
"Wärtsilä has introduced a new ultra-low emissions version of its already efficient Wärtsilä 31DF engine. On a weighted average, it can reduce methane emissions by 41 percent more than the standard W31DF engine, which has already the lowest emission levels on the market."	Environmental	Climate Change	GHG Emissions	Indicates progress toward achieving climate-related target - impact materiality aspect; Provides a quantifiable measure of improvement.
"Our engine power plants can already use 100% synthetic and carbon-neutral methane and methanol. They are also capable of using hydrogen/natural gas blends containing up to 25% hydrogen."	Environmental	Climate Change	Renewable Energy	Both current capabilities and future developmental goals in energy efficiency.
"Origin Energy selected Wärtsilä as the contractor to deliver the first phase, 460 megawatts (MW) and 920 megawatt hours (MWh), of what will be one of Australia's largest energy storage projects and Wärtsilä's largest single energy storage deal to-date."	Environmental	Circular Economy	Resource Recovery	Supports a critical element of the circular economy model enforced by the CSRD.
"The green transition is expected to provide a potential growth of +2X for retrofits and conversions of Wärtsilä's running engine fleet by 2030."	Environmental	Climate Change	Energy Efficiency	Prospective measure, quantifiable data with a set target and time horizon.
"As our products have a long operational life, identifying the lifecycle impacts of our products is essential for understanding their total environmental impact. We manage the lifecycle of our products through their design, the careful selection of suppliers, production methods, and by optimising transportation, maintenance, and repairs during their operational life."	Environmental	Circular Economy	Product Life-Cycle	Impact materiality in detailing efforts to reduce environmental footprint throughout entire lifecycle.
"Wärtsilä published a whitepaper, which explores the potential of Power-to-X fuels to enable a decarbonised future for the global energy sector. Entitled 'The feasibility of Power-to-X fuels for power generation', the study examines the entire value chain of P2X fuels, analyses cost predictions, and provides a detailed analysis of P2X fuels in energy systems via Wärtsilä's extensive modelling capabilities."	Environmental	Climate Change	Renewable Energy	A paper on scientific study providing qualitative data; Shows efforts in R&D.
"In 2022, Wärtsilä and Carnival Corporation carried out a joint pilot project to reduce the plastic materials being used in marine operations. As a result of this pilot, in 2023, Wärtsilä Global Logistics Services has undergone a process of changing its spare part packaging to achieve a reduction of approximately 40% in the amount of plastic used."	Environmental	Circular Economy	Sustainable Packaging	Addresses both impact materiality in reducing environmental impact, and financial materiality, by potentially reducing costs.
"We have developed a purchasing model for green electricity purchases, where we have defined our approach for acquiring Guarantees of Origin (GOs), Renewable Energy Certificates (RECs), and International Renewable Energy Certificates (I-RECs)"	Environmental	Climate Change	Renewable Energy	Double materiality in potentially reducing energy costs and positioning company advantageously in the market; Aligning with global standards (I-RECs).
"In 2023, the fuels were mainly from non-renewable sources, but also methanol, ammonia, and hydrogen were used in engine testing. Out of the total electricity consumption 60% (54,234 MWh) was from renewable sources."	Environmental	Climate Change	Renewable Energy	Quantitative data - reports proportion of renewable energy usage.
"In the beginning of 2017, Wärtsilä set an energy-saving target to reduce energy consumption by at least 7% from 2015 levels by 2025. At the end of 2023, permanent energy savings of 14.0 GWh have been reached, representing 47% of the final 2025 target."	Environmental	Climate Change	Energy Efficiency	Progress update - complying with the CSRD's monitoring and reporting on the impact of operations.
"In 2023, Wärtsilä Italia S.p.A. recycled 4,188 m³ of water by running it through a water treatment plant and reusing the cleaned water in production processes."	Environmental	Water & Marine Resources	Water Stewardship	Reporting of water recycling initiatives in high water-stress areas, addresses the impact materiality aspect.
"Effluents and waste management in Wärtsilä has four aims - to reduce the amount of waste generated in processes, to use waste as a material, to use waste as energy, to dispose of waste in an environmentally sound way."	Environmental	Pollution	Waste Management	Hierarchy approach to waste management provides qualitative and procedural context.
"Wärtsilä's upstream waste impacts are related to the production and transportation of parts, components, and products to our locations and customer sites. The overhaul services and lifecycle upgrades that Wärtsilä provides to its customers extend the useful life of the equipment, thereby reducing the need for complete product disposal and the generation of waste downstream in Wärtsilä's value chain."	Environmental	Circular Economy	Product Life-Cycle	Indicates the sustainable value chain approach, integrating product life-cycle considerations.
"Wärtsilä has signed a strategic partnership agreement for decarbonisation modelling with Raizen, a Brazilian energy company."	Governance	Business Conduct	Strategic Partnerships	Disclosure of partnerships influencing long-term sustainability performance.
"Wärtsilä is included in several sustainability indices. In 2023, Wärtsilä qualified for the Dow Jones Sustainability Index (DJSI) Europe for the eighth year in a row"	Governance	Business Conduct	Transparency and Reporting	Recognition in prominent sustainability indices, showcases continuous external validation of sustainability practice.
"During 2023, Wärtsilä began preparations for the forthcoming mandatory reporting (CSRD). As a first step, we conducted the required double materiality assessment in order to define the most material sustainability issues to be included in the reporting. Wärtsilä's first CSRD report will be published in 2025 covering data from the 2024 financial year."	Governance	Business Conduct	Transparency and Reporting	Specifically mentions the transition and preparation for CSRD.
"Wärtsilä has signed the United Nations Global Compact initiative and supports its ten principles with respect to human rights, labour, the environment, and anti-corruption."	Governance	Business Conduct	Ethics and Integrity	Demonstrate governance efforts in aligning with broad global initiatives.
"Wärtsilä's policy is to engage in an open dialogue and discussion with both local and international public authorities and officials. The aim of the dialogue is to share information and improve the quality of regulations."	Governance	Business Conduct	Political Engagement	Aligns with CSRD's requirement to disclose information regarding approach to political engagement and lobbying.
"Wärtsilä's Code of Conduct, Anti-Corruption Policy, as well as specific policies implemented for sales intermediaries, namely Agent, Broker and Distributor Policies, expressly prohibit the company and its employees from offering or accepting any kind of benefit considered to be a bribe, and from taking actions that could give rise to a conflict of interest or breach of loyalty."	Governance	Business Conduct	Anti-corruptions Policies	Policy enforcement and compulsory compliance, disclosing governance mechanisms and their effectiveness.
"In 2023, a total of 95 reports of suspected misconduct incidents were made. All reported incidents are investigated and appropriate corrective actions are taken, as necessary."	Governance	Business Conduct	Ethics and Integrity	Quantitative and qualitative data on incident management and response mechanisms.
"In 2023, Wärtsilä carried out a project to implement recommendations by the Task Force on Climate-Related Financial Disclosures (TCFD). In this project, we identified three transitional risks, four transitional opportunities, and two physical risks as the main impacts arising in connection with climate change. These key risks and opportunities have been further evaluated in two detailed science-based climate and emissions scenarios."	Governance	Business Conduct	Transparency and Reporting	Impact materiality; Incorporation of TCFD demonstrates forward-looking strategic approach that shows alignment to a global, common, and reliable framework.
"Wärtsilä's occupational health and safety principles are defined in the company's Code of Conduct, its Quality, Environmental, Health and Safety (QEHS) Policy, and in the directive on environment, health, and safety (EHS). Wärtsilä's subsidiaries are required to have a management system in place that conforms to both the QEHS Policy and the EHS directive."	Governance	Business Conduct	Compliance	Internal and external standards; Mention of structured policies for management systems throughout the company.
"PricewaterhouseCoopers Oy (PwC) has independently assessed the report against GRI Standards."	Governance	Business Conduct	Transparency and Reporting	Independent verification by PwC - 'limited' assurance.
"The ongoing war in Ukraine and the conflict in the Middle East have resulted in various risks to both the demand and supply environment of various commodities globally, contributing to an increased uncertainty over the macroeconomic outlook."	Governance	Business Conduct	Risk Management	Assessment of the external factors affecting the company's financial materiality.
"Wärtsilä actively monitors political, regulatory and legal developments in its markets and engages in a dialogue with various official bodies on projects of importance to its operations."	Governance	Business Conduct	Political Engagement	Due diligence efforts and proactive engagement in monitoring regulatory developments.
"Several risk management techniques are applied in R&D, including the risk elimination tool FMEA (Failure Modes and Effects Analysis) and in-house validation testing."	Governance	Business Conduct	Risk Management	Reporting on risk assessment and mitigation processes.
"Wärtsilä has identified the need to mitigate the cyber security risks associated with its supply chain."	Governance	Business Conduct	Cyber Risk Management	Due diligence; Negative impacts identified within the value chain.
"Wärtsilä will supply Swedish shipping company Furetan's new maritime educational centre with a simulation training lab, providing the most sophisticated technology available."	Social	Affected Communities	Social Investment	Investment in human capital; Disclosure of impact on intangibles such as intellectual capital.
"Wärtsilä is strengthening support to Indonesian customers and the country's net zero targets."	Social	Consumers & End-Users	Customer Satisfaction	Emphasis on the broader impact of a company's operations within societal health and safety.
"Suppliers and business partners are an important and integral part of the total value chain for Wärtsilä's products and services. The supply base is extensive with around 26,500 active supplier accounts, with most key suppliers being located in Europe."	Social	Workers in Value Chain	Supplier Social Assessment	Quantitative and geographical indicators for supplier relationship management.
"The last Wärtsilä global engagement survey, MyVoice, was conducted in 2022 with an employee engagement index score of 80%. The next survey will be conducted in autumn 2024."	Social	Own Workforce	Employee Satisfaction	Qualitative data that reflects on the workforce's morale; Set target year for continuity.
"By the end of 2023, altogether 100% of the company's employees had completed development discussions."	Social	Own Workforce	Training & Education	Specifies completion rate, progress towards set target.
"During 2023, we achieved 100% equal pay for males and females."	Social	Own Workforce	Fair Wages	Meeting a previously set target; Due diligence in the matter of equal pay.
"In 2023, Wärtsilä participated in the UN Global Compact Business & Human Rights Accelerator programme."	Social	Affected Communities	Human Rights	Showcases continuous verification in line with international standards.
"In 2023, we gave special attention to the Customer Success index and the further implementation of The Wärtsilä Way. An internal awareness campaign titled 'Customer Stories' increased our understanding of how we drive customer success and collaboration."	Social	Consumers & End-Users	Customer Satisfaction	Steps in educating staff to align business practices with sustainability objective - double materiality concept.
"The safety performance of each business and company is monitored on a monthly basis, and the results are reviewed by Wärtsilä's Board of Management. The total recordable injury frequency (TRIF) for 2023 was 2.62, which was 2% higher than in the previous year."	Social	Own Workforce	Employee Health & Safety	Increase in TRIF reflects transparent reporting of negative trends - balanced disclosure.
"The lost time injury frequency (LTIF) for 2023 was 1.59, which was 1% higher than in the previous year. The total recordable injury frequency (TRIF) for 2023 was 2.62."	Social	Own Workforce	Employee Health & Safety	Quantitative data with baseline and comparison.
"Wärtsilä Korea Ltd. was charged a penalty fee for not fulfilling its legal obligation to hire a minimum number of disabled persons."	Social	Workers in Value Chain	Labor Practices	Indicates financial implications of negative social responsibility.
"The Shareholders' Nomination Board also considers the candidates' age, as having different seniority levels on the Board is considered beneficial in terms of ensuring a mutually complementary experience. With regards to gender, Wärtsilä's objective is to have a balanced representation of both genders in the Board."	Social	Own Workforce	Diversity & Inclusion	Demonstrates transparent disclosure on both diversity policies and corporate (board) structure.

Appendix 6. Analysis of Fortum's Sustainability Report for 2023

Fortum's Sustainability Report for 2023				
Excerpt/Statement	ESG-Area	Theme	Sub-Theme	Reasoning for Alignment with CSRD
Target: "No net loss of biodiversity (excluding any aquatic impacts) from existing and new operations (Scopes 1, 2) from 2030 onwards."	Environmental	Biodiversity & Ecosystems	Biodiversity Impact	Forward-looking information; Specific targets to reducing negative impact in direct activities.
Fortum commits to set emission reduction targets based on climate science (SBTI 1.5 °C)	Environmental	Climate Change	GHG Emissions	Aligned with goal of Paris Agreements; Efforts quantitatively driven, reflective of impact materiality.
Mid-point targets for specific emissions: "Below 20 g CO ₂ /kWh for total energy production and below 10 g CO ₂ /kWh for power generation by 2028."	Environmental	Climate Change	Energy Efficiency	Quantitative mid-term targets; Contribution to broader climate action context.
Fortum will reduce its negative dynamic terrestrial impacts in upstream Scope 3 by 50% by 2030 (base year 2021).	Environmental	Biodiversity & Ecosystems	Land Use	Specific targets to reducing negative impact in indirect activities; Set year, baseline provided.
"Fortum will also continue local initiatives, especially in hydropower production, and is committed to participate in the development of a science-based methodology to assess the company's aquatic impacts."	Environmental	Water & Marine Resources	Water Stewardship & Risk Management	Adheres to CSRD's emphasis on utilizing scientific frameworks to evaluate effects.
"Fortum's direct CO ₂ emissions decreased by 27% due to, e.g., the decreased use of the Meri Pori condensing power plant and success of the Espoo Clean Heat programme."	Environmental	Climate Change	GHG Emissions	Specific reduction percentage and reference to successful programme for the progress.
Fortum will invest over EUR 60 million during 2023–2030 to modernise Ultra, one of Sweden's oldest hydropower plants.	Environmental	Climate Change	Renewable Energy	Financial and impact materiality - addressing a financial investment and the positive environmental impact.
Fortum's final disposal facility for Loviisa nuclear power plant's low- and intermediate-level radioactive waste until the end of 2040.	Environmental	Pollution	Hazardous Material	Forward-looking outlook in waste management, outlines far-reaching target.
"Fortum is exploring commercial, technological, societal and regulatory conditions both for small modular reactors (SMRs) and development of conventional large reactors in Finland and Sweden."	Environmental	Climate Change	Renewable Energy	Consideration of long-term investment contributing to climate change mitigation - double materiality.
In June 2023, Fortum announced a decision to invest approximately EUR 225 million during 2023–2027 in projects within the Espoo Clean Heat programme to drive decarbonisation and build sustainable waste heat solutions in the Helsinki metropolitan area.	Environmental	Climate Change	GHG Emissions	Quantitative data on financial allocations; Indication of impact materiality in the transition to low-carbon energy - double materiality.
Fortum uses various fuels, such as uranium, coal, waste-derived fuels, biomass fuels, and natural gas, adjusting its fuel mix to improve energy production's environmental footprint.	Environmental	Circular Economy	Resource Optimization	Disclosure regarding approach to circular economy and resource efficiency - impact materiality.
Fortum has a specific process in place for the assessment of the key climate-related risks. The process utilizes the expertise of external large groups, including Sustainability Strategy, Risk Management, Market Intelligence, Public Affairs, and Investor Relations.	Environmental	Climate Change	Climate Risk Management	Aligns with detailed disclosure of structured approaches and cross-functional expertise.
"The use of coal will be discontinued in 2024 and fossil fuels are being replaced with smart and flexible solutions that are largely based on renewable electricity, waste heat utilization, heat pumps, heat accumulators and electric boilers. Demand side response (DSR), or the smart control of district heating, optimizes heat production and the heating of buildings at differing intervals to allocate heat where it is most needed at a given time."	Environmental	Climate Change	Renewable Energy & Energy Efficiency	Highlights both strategic and operational shifts with set target to reduce environmental impact - double materiality.
In 2023, Fortum started the construction of heat pump plants in Espoo and Kirkkonummi. Heat pumps will recycle waste heat from the nearby data centre - which is to be built later on - into district heat, and plants can also produce district heat independently with air-to-water heat pumps and electric boilers.	Environmental	Circular Economy	Resource Recovery	Forward-looking disclosure regarding project; Investment in innovative technologies for air-to-water heat pumps and electric boilers.
"Almost 50% of Fortum's greenhouse gas emissions are related to indirect Scope 3 emissions. Collaboration with parts and suppliers is vital to identify emission reduction possibilities and solutions to reduce joint efforts in reduction."	Environmental	Climate Change	GHG Emissions	Balanced disclosure - reporting of presence of negative effects along the entire value chain.
With production located mostly in the Nordic countries, Fortum's risks related to water availability are, based on Fortum's assessment, relatively small in the medium term. Fortum's water risks are related to dam safety, climate change impacts on hydrology, availability of water, leakages of chemicals and water-related pollution.	Environmental	Water & Marine Resources	Water Stewardship & Risk Management	Analysis of potential and actual impacts; Demonstrates anticipation and management of risks.
In 2023, Fortum's own water consumption was about 1.1 (2022: 0.7) million m ³ . In water-stressed areas, the water consumption was 0.07 (2022: 0.12) million m ³ .	Environmental	Water & Marine Resources	Water Consumption	Quantitative data providing overview of water risk to understand negative impact.
75% of Fortum's total water withdrawal takes place at the Loviisa nuclear power plant in Finland. It uses seawater for cooling. No water is consumed in the cooling process; water withdrawn from the sea is discharged back into the sea, albeit at a warmer temperature within permit limits.	Environmental	Water & Marine Resources	Water Stewardship	Quantitative data for process at key facility; Disclosure of compliance within regulatory limits.
"In 2023, the utilisation of artificial intelligence helped to decrease the use of water, and the consumption rate was 2.0. Some process development is still needed to achieve the 1.6 target."	Environmental	Water & Marine Resources	Water Consumption	Reflects CSRD mandate to disclose utilization of innovative measures (AI) to improve impacts.
"Fortum is working to reduce its impact, but must accept that its operations have caused and will cause changes in the natural environment: introducing new wind and solar power production has direct and indirect impacts on biodiversity, and the production of the fuel (both bio- and fossil-based) used in Fortum's power and heat production affects biodiversity through and use. These local-scale impacts are most evident and reportable."	Environmental	Biodiversity & Ecosystems	Biodiversity Impact	Acknowledges unavoidable impacts - transparency in providing realistic view of challenges.
Fortum is committed to applying a science-based approach when setting its biodiversity targets. Fortum will start assessing the aquatic impact qualitatively and the mitigation possibilities following the steps of ecological mitigation hierarchy at the river level.	Environmental	Biodiversity & Ecosystems	Habitat Protection	Adheres to CSRD's emphasis on utilizing scientific frameworks to evaluate effects.
Fortum is continuously developing activities that increase the proportion of waste materials kept in circulation, including producing plastic recycle from post-consumer plastic waste, recycling metals, and reusing contaminated soil for reuse.	Environmental	Circular Economy	Resource Optimization	Double materiality principle - impact materiality in promoting circular economy, financial materiality in potential revenue streams and reduction of costs.
"Fortum uses a combination of mechanical and hydrometallurgical technologies to recycle battery materials (...). It's possible to recycle over 90% of the battery and 90% of the valuable metals contained in the battery's black mass can be put back into circulation."	Environmental	Circular Economy	Resource Recovery	Details specific technologies and recycling rates; Quantitative and qualitative disclosure.
Fortum has three high-temperature incineration plants producing electricity and district heating. In 2023, about 325,000 tonnes of hazardous waste and additionally about 311,000 tonnes of non-hazardous waste was incinerated at these facilities.	Environmental	Pollution	Waste Management	Addresses dual challenge of waste management and sustainable energy production - impact materiality.
"During 2023, Fortum started preparations for the Corporate Sustainability Reporting Directive (CSRD), set by the EU. Starting from 2024 annual reporting, Fortum's sustainability reporting will be prepared following the CSRD requirements."	Governance	Business Conduct	Transparency and Reporting	Specifically mentions the transition and preparation for CSRD.
Fortum had a total of 50 cases of suspected or confirmed misconduct that were reviewed and closed during 2023. Violation was not confirmed in 13 of the cases. As a result of the investigations, 10 employment contracts were terminated and 11 written warnings were given.	Governance	Business Conduct	Ethics and Integrity	Quantitative data on incident management and response mechanism, results of non-compliance.
Fortum has adopted the reporting recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) starting from financial year 2019.	Governance	Business Conduct	Transparency and Reporting	Alignment to global and reliable framework, supported by CSRD; Retrospective information.
The management of climate-related risks is integrated into Fortum's respective risk management frameworks and follows the same governance and processes as other material risks and uncertainties.	Governance	Business Conduct	Risk Management	CSRD's aspect on disclosing management of sustainability risks alongside other business risks.
In 2023, biodiversity stayed in focus on the policy and regulatory agenda and in the public discussion. Fortum has actively followed the development of concrete actions in implementing the EU Biodiversity Strategy for 2030 as well as the post-2020 global biodiversity framework.	Governance	Business Conduct	Political Engagement	Shows commitment to compliance and adaptation to regulatory changes and industry initiatives.
As in the Supplier Code of Conduct, Fortum expects its suppliers to support a precautionary approach to environmental challenges and to undertake these initiatives: identify the environmental impacts of their operations and implement mitigation actions when required; Strive to continuously reduce the use of energy and water, minimise waste and emissions to the air, water and land in their operations, and mitigate impacts on biodiversity.	Governance	Business Conduct	Supply Chain Management	Shows due diligence effort across entire value chain; Double materiality - impact on environment and risks from supply chain vulnerabilities.
In April 2023, the Russian authorities unlawfully seized the company's assets in Russia, which resulted in the de facto loss of control of the company's Russian operations. Due to this, assets were impaired in full, deconsolidated and reclassified as discontinued operations. This also significantly reduced Fortum's carbon intensity profile, which was appreciated by the capital markets. The carbon intensity is now among the lowest in Europe, at 16 g/kWh in electricity generation (end of year 2023).	Governance	Business Conduct	Political Engagement	Retrospective and forward-looking disclosure regarding unexpected changes (external event) and implications.
"Fortum's climate policy advocacy is strongly based on climate science, and support for the Paris Agreement is the core principle underpinning it. In 2023, Fortum continued to lobby for legislation and policy instruments - in particular, carbon pricing - that will facilitate a cost-efficient transition towards a climate-neutral Europe by 2050."	Governance	Business Conduct	Stakeholder Engagement	Discloses role and influence in policy discussions impacting the energy sector.
"The Supplier Code of Conduct, which is based on the principles of the UN Global Compact, outlines the requirements for Fortum's suppliers and business partners. Suppliers who fail to observe the Supplier Code of Conduct are expected to take immediate corrective action, and Fortum reserves the right to terminate relationships with suppliers who cannot demonstrate adherence to the Code of Conduct."	Governance	Business Conduct	Supply Chain Management	Reports policy enforcement and compliance for suppliers; Details implementation of corrective measures.
Fortum follows and respects the International Bill of Human Rights, the United Nations Convention on the Rights of the Child, and the core conventions of the International Labour Organisation (ILO). Additionally, Fortum recognises in its operations the UN Guiding Principles on Business and Human Rights, the OECD Guidelines for Multinational Enterprises, the International Chamber of Commerce's anti-bribery and anti-corruption guidelines, and the BetterCall initiative's Code on responsible coal mining.	Governance	Business Conduct	Ethics and Integrity	Demonstrate governance efforts in aligning with broad global initiatives and norms.
Fortum's internal control framework is based on the main elements of the framework introduced by the Committee of Sponsoring Organisations of the Treadway Commission (COSO).	Governance	Business Conduct	Corporate Governance, Risk Management	Disclosure on risk management processes - adherence to internationally recognized standard (COSO framework).
"Fortum's total purchasing volume in 2023 was EUR 4.6 billion (...). About 97% of the purchasing volume of goods and services was purchased from suppliers operating in Europe (...). About 11% of Fortum's goods and services purchases were from risk countries, mainly from Poland."	Governance	Business Conduct	Supply Chain Management	Transparency in procurement processes and the geographical distribution of suppliers; Highlights portion from risk countries.
"Deloitte Oy has provided limited assurance in accordance with ISAE 3410 for the reporting period of 1 January 2023 to 31 December 2023 on GHG emissions calculations (Scope 1, 2 and 3) based on the Greenhouse Gas (GHG) Protocol."	Governance	Business Conduct	Transparency and Reporting	Engagement of external auditors to verify GHG emissions calculations - limited assurance.
In 2023, Fortum concentrated heavily on ensuring resiliency arrangements and continuity management as well as on substitute locations for critical functions. The company also held an annual emergency preparedness exercise related to a nuclear power accident at the Loviisa power plant.	Governance	Business Conduct	Risk Management	Shows continuity (annual practice) in emergency preparedness as part of risk management.
"Fortum organised the River Clean-up (Ävstådning) in collaboration with Ståda Sverige for the 11th year in a row to clean up rubbish from rivers relevant to Fortum's hydropower production and nearby nature with participation from 3,000 youngsters from local Swedish sports associations."	Social	Affected Communities	Community Engagement	Addressing impact materiality through habitat protection; Shows collaboration with diverse stakeholders (both environmental and social contribution).
Fortum's target is to comply with the principles of the Finnish Government's action plan for gender equality 2020–2023 and the Women on Board Directive on equal gender representation on the boards of listed companies, with the aim of the board consisting of at least 40% of women and men each. At the end of 2023, Fortum's Board of Directors comprised 10 members, four (40%) of them were women.	Social	Own Workforce	Diversity & Inclusion	Demonstrates transparent disclosure and statistics regarding diversity policies and corporate (board) structure.
"Fortum measures employees' perceptions on diversity and inclusion as part of Fortum's Employee Voice survey conducted twice a year. Fortum's overall Diversity and Inclusion score was 7.8, positioning Fortum close to the relevant energy and utility benchmark score, with a slight increase from May 2023 to November 2023."	Social	Own Workforce	Employee Satisfaction & Diversity & Inclusion	Monitors progress; Provides quantifiable data for understanding social dimensions at the workplace.
A certified ISO 45001 occupational health and safety management system covers 100% of Fortum Group's power and heat production worldwide. Internal audits and external audits by independent auditors are regularly conducted at Fortum's power plants to improve operations.	Social	Own Workforce	Health & Safety	Details commitment and statistic regarding globally recognized health and safety standards.
"Fortum's safety targets for 2023 and 2024 include Total Recordable Injury Frequency (TRIF) <1.0 by the end of 2030, and a 95% execution rate for the Management Safety and Security Leadership Programme."	Social	Own Workforce	Health & Safety	Quantitative data on specific safety targets, accomplishment rates, forward-looking goal.
"Fortum's Safety Culture Programme was launched in 2022 (...). In 2023, the programme was extended and the number of participants quadrupled to 409 managers who completed the 2-day programme."	Social	Own Workforce	Training & Education	Ongoing (current) efforts; Reports progress from previous year (retrospective information); Quantitative data.
"In 2023, Fortum participated in the Energy for a Just Transition collaboration facilitated by BSR in partnership with The B Team to identify and address the impacts of green energy transition on people and communities."	Social	Affected Communities	Social Investment	Demonstrates integration of considerations of broader social impacts into sustainability actions.
"Fortum measures customer satisfaction as part of the One Fortum Survey. In 2023, the customer satisfaction index (CSI) varied by business area between 62 and 83 points (2022: 60–83), on a scale of 0–100. Overall, Fortum's customer satisfaction is at a very good level among business-to-business customers."	Social	Consumers & End-Users	Customer Satisfaction	Provides quantitative data - customer satisfaction scores across all business units.
In line with the Code of Conduct, Fortum has zero tolerance for corruption and fraud and does not award donations to political parties or political activities, religious organisations, authorities, municipalities or local administrations (...). Fortum also requires its goods and service suppliers as well as its business partners to comply with a zero-tolerance policy towards corruption and bribery.	Social	Workers in Value Chain	Labor Practices	Discloses extensive policies on due diligence as per CSRD requirements in ensuring that entire supply chain aligns with core commitments.

Appendix 7. Analysis of Neste's Sustainability Report for 2023

Neste's Sustainability Report for 2023				
Excerpt/Statement	ESG-Area	Theme	Sub-Theme	Reasoning for Alignment with CSRD
Neste's crude oil refinery in Finland is to be gradually transformed into a leading renewable and circular solutions refining hub. The decision was made after the completion of a strategic study launched in September 2022. The planned transformation will proceed in phases and require multiple separate investment decisions before targeted completion in the mid-2030s.	Environmental	Circular Economy	Resource Optimization	Forward-looking target. Double materiality principle - addresses improved environmental impact and financial materiality (specified investment timeframe).
Neste commenced the construction of upgrading facilities for liquefied plastic waste at its Porvoo refinery in Finland. With an investment of EUR 111 million, Neste will build the capacity to upgrade 150,000 tons of liquefied waste plastic per year. The investment is part of a broader project (PULSE), which has received an EU Innovation Fund grant of EUR 132 million if fully implemented, and is targeting a total capacity of 400,000 tons per year.	Environmental	Pollution	Waste Management	Impact materiality on broader sustainability context (PULSE project); Quantitative data (capacity goals, investment).
"Neste celebrated the EUR 1.6 billion Singapore Expansion project's successful completion, doubling its production capacity in Singapore, including the capability of producing up to one million tons of sustainable aviation fuel (SAF), solidifying Neste's position as a global SAF leader."	Environmental	Climate Change	Renewable Energy	Reports update on completed investment; Addresses company's competitiveness (SAF leader) and financial materiality.
"Neste was selected for the initial target validation group for science-based targets (SBTs) for nature by the Science Based Targets Network (SBTN), which aims to set the global standard for ambitious and measurable corporate action on nature. Globally, only 17 companies were invited to the target validation group to pilot a global framework for setting such targets."	Environmental	Biodiversity & Ecosystems	Biodiversity Impact	Reflects global recognition and accountability in broader biodiversity impact.
"In its efforts to scale up chemical recycling, Neste successfully concluded another series of industrial-scale processing runs with increasing volumes of liquefied waste plastic at its refinery in Porvoo, Finland. The processing runs in the second half of 2023 doubled the total amount of liquefied waste plastic processed by Neste to more than 6,000 tons."	Environmental	Circular Economy	Resource Recovery	Quantitative data regarding operational measures that contribute to mitigating environmental impacts.
"Neste's inventors won the European Inventor Award 2023 in the Industry category for their work on converting waste and residues into high-quality renewable solutions. The European Patent Office granted the award, recognizing Neste's inventors' contribution to innovative technologies."	Environmental	Circular Economy	Resource Optimization	Disclosure of intangible - intellectual capital; Shows recognition in the industry and addresses financial materiality (enhancing competitive advantage, reputation).
"Together with our partners, we are aiming for a carbon neutral and nature positive value chain by 2040."	Environmental	Biodiversity & Ecosystems	Biodiversity Impact	Specific target and timeline - future commitments.
Target: "Reduce emissions in our own production (scopes 1 & 2) by 50% by 2030 compared to 2019 level, and reach carbon neutral production by 2035."	Environmental	Climate Change	GHG Emissions	Provides quantitative goals, forward-looking disclosure; Baseline year provided for comparison.
Target: "Reduce the methane emission intensity of solid products by 50% by 2040 compared to 2020 levels."	Environmental	Climate Change	GHG Emissions	Target over a long-term horizon; Baseline year provided for comparison.
Target: "Aim at creating net positive impacts (NPI) for biodiversity from new own activities from 2025 onwards; Target no net loss (NNL) of biodiversity from all ongoing own activities by 2035."	Environmental	Biodiversity & Ecosystems	Biodiversity Impact	Specific targets and timelines; Both the current state and future commitments.
Neste supplies Neste MY Sustainable Aviation Fuel™ to the Swedish Trollhättan-Vänersborg Airport enabling it to become the world's first airport to use sustainable aviation fuel on all flights, together with Västgöta Airlines.	Environmental	Climate Change	Renewable Energy	Example showing the broader context (impact materiality) of aviation industry's shift to sustainability.
"Neste's climate vision is to lead transformation towards carbon neutral value chain by 2040. Our climate commitments cover the entire value chain (scopes 1, 2 & 3)."	Environmental	Climate Change	GHG Emissions	Aligns with CSRD's requirement to disclose actions affecting the entire value chain; Future goals.
"As an active member of the Consumer Goods Forum (CGF) Forest Positive Coalition, Neste drives wider collaboration on preventing deforestation across industries."	Environmental	Biodiversity & Ecosystems	Land Use	Demonstrates collaborative and cross-sectoral approach in environmental impactfulness.
"In response to environmental concerns, we initiated a project to transition away from Per- and Polyfluorinated Alkyl Substances (PFAS) fire-fighting foams at our sites before the mandatory deadlines."	Environmental	Pollution	Hazardous Material	Forward-looking initiative; Addresses regulatory compliance ahead of deadlines - proactive stance.
Neste Marine™ 0.1 Co-processed helps the marine sector start reducing its dependence on fossil fuels, as the fuel produced by Neste also consists of renewable content. In the production of the fuel, crude oil is partly replaced by renewable raw materials.	Environmental	Climate Change	Renewable Energy	Provides qualitative description of impact materiality of product innovation.
"In 2023, the share of grid-connected renewable electricity was 89.3% (93.8%). Our aim was to reach 100% renewable electricity by 2023. With so-called additional measures we were able to cover 99.8% of Neste's total purchased electricity."	Environmental	Climate Change	Renewable Energy	Details progress towards set target; Provides quantitative data - percentage of energy used.
"Neste's refinery in Porvoo, Finland is among the most efficient and versatile refineries in Europe. It processes both crude oil and renewable raw materials into more than 100 end products for customers globally. Neste's ambition is to make the Porvoo refinery the most sustainable refinery in Europe by 2030."	Environmental	Circular Economy	Resource Optimization	Forward-looking disclosure and long-term goal; Double materiality principle (financial and impact).
"With the planned transformation of the Porvoo refinery, combined with other initiatives across all refineries and the entire value chain, we firmly believe that we are aligned with the scientific 1.5°C pathway."	Environmental	Climate Change	Climate Risk Management	Shows alignment with broader global goals like the Paris Agreement commitments.
"In 2023, the use phase emission intensity of fuel products was 58 gCO2e/mL (...) by 2030, we estimate to be able to reduce the use phase GHG emission intensity of solid products by over 30%."	Environmental	Climate Change	GHG Emissions	Reports quantitative data on emission intensity and projected impact - current status and future goals.
Neste has further developed the digital tools for shipping optimization and has thus gained a 11,000 tCO2e reduction from shipping operations during 2023.	Environmental	Climate Change	GHG Emissions	Details quantifiable environmental impact data and the innovative solutions enabling it.
"In 2023, we started to work on improving our understanding and the measurement accuracy of the scope 3 emissions arising from indirect procurement (...). This has been done in collaboration with suppliers by requesting product carbon footprint calculations."	Environmental	Climate Change	GHG Emissions	Reports steps in ensuring that emissions data is reflective of actual impacts - extends to entire value chain.
"Our evaluation of the biodiversity status on our sites indicates that we have some vulnerable species and habitats to protect (...). Within the Neantari refinery area, we have some areas that we have protected in the past. The area is forest, voluntarily protected under national legislation. The protected area is five hectares of the total 300 hectares in Neantari."	Environmental	Biodiversity & Ecosystems	Habitat Protection	Details efforts to assess and manage biodiversity in direct vicinity - at sites impacted by operations.
"In 2023, Neste joined efforts with NGOs Proforest, Solidaridad and Imaflores to promote more sustainable and inclusive landscapes in the municipality of Novo Repartimento, Para, a region in Northern Brazil that has been affected by deforestation."	Environmental	Biodiversity & Ecosystems	Land Use	Forward-looking strategy to mitigate environmental impacts through partnership - impact materiality.
"Neste uses a wide variety of sustainably produced renewable raw materials each year to produce renewable fuels (...). In 2023, their share was 92% of Neste's total renewable raw material inputs globally."	Environmental	Circular Economy	Resource Recovery	Discloses quantitative data on volumes of current resource circularity.
Target: "Require 100% of suppliers and other business partners to be committed to Neste Supplier Code of Conduct and have the best-in-class grievance processes."	Governance	Business Conduct	Ethics and Integrity	Demonstrates governance practices that ensure ethical operations across the entire supply chain.
"Neste's Compliance Function regularly issues newsletters addressing various compliance topics (...). Throughout the year, the newsletters covered subjects such as speaking up, anti-money laundering, privacy, conflict of interest, competition law, and gifts and hospitality."	Governance	Business Conduct	Anti-Corruption Policies	Shows continuous improvement and due diligence in ethics and integrity practices.
"To identify what topics we should particularly focus on in our sustainability efforts, we have conducted a GRI-based materiality assessment once every two years and engaged our key stakeholders in the process."	Governance	Business Conduct	Transparency and Reporting	Demonstrates forward-looking consideration in aligning objectives with stakeholder expectations.
Neste and the other leading energy companies in Finland joined forces to develop an industrial "hydrogen valley". This joint effort creates industrial investment opportunities and supports Finland's and Europe's carbon neutrality goals.	Governance	Business Conduct	Strategic Partnerships	Double materiality principle, impact and financial; In line with European sustainability targets.
"We completed Sedex self-assessment for our refinery in Porvoo, allowing us to thoroughly assess gaps in our management and track four different native languages. Women comprise 25% of all members of the Board of Directors. Regarding age, the members of the Board of Directors are divided evenly between 50 and 67 years of age."	Governance	Business Conduct	Risk Management	Reports due diligence and continuous improvement in the practices across the entire value chain.
"In Finland, Neste joined a green transition campaign by Climate Leadership Coalition (CLC) to highlight the importance and opportunities of the green transition for Finnish businesses and society."	Governance	Business Conduct	Strategic Partnerships	Discloses participation in driving sector-wide and community-focused sustainability efforts.
Neste established a five-year sponsorship for Helsinki University's Centre for Coastal Ecosystem and Climate Change Research (CoastalClim) to further understand how the condition of the seas and climate change are linked.	Governance	Business Conduct	Strategic Partnerships	Showcases effort in direct positive impact through research sponsoring - double materiality.
"Neste published plans to simplify its organizational structure and operational model (...). It is estimated that the planned organizational changes may lead to a reduction of approximately 400 roles globally."	Governance	Business Conduct	Corporate Governance	Forward-looking perspective on organizational changes; Balanced disclosure - reports negative impacts of operations.
"Climate change poses both business risks and opportunities to Neste. Neste is therefore committed to applying the Task Force on Climate-related Financial Disclosures (TCFD) reporting framework to understand and evaluate the potential implications of climate change."	Governance	Business Conduct	Transparency and Reporting	Incorporation of TCFD is a forward-looking approach that shows alignment to global and reliable framework - supported by CSRD.
"In 2023, we increased our internal carbon price to further steer our strategic planning and investment decisions to support meeting our climate targets. We also introduced a new internal policy to further strengthen the requirements and understanding of the GHG impacts of investments."	Governance	Business Conduct	Risk Management	Reports guidance of corporate behavior aligned with climate targets; Consider environmental costs in business decisions - long-term sustainability.
"In 2023, we started collaborating with third-party experts at the Solidaridad Foundation to assess the human rights impacts associated with our Brazilian supply chains."	Governance	Business Conduct	Supply Chain Management	Reports enhancing management of human rights in new sourcing regions (entirety of value chain).
"We use a bespoke, industry-leading country risk assessment methodology from Verisk MapInfo to identify countries or regional areas in which our operations and have raw material supply chains with high sustainability risks."	Governance	Business Conduct	Risk Management	Discloses specific methodologies for country risk assessments across the supply chains.
"The Board of Directors is also diverse in terms of cultural background: the members come from three different countries and speak four different native languages. Women comprise 25% of all members of the Board of Directors. Regarding age, the members of the Board of Directors are divided evenly between 50 and 67 years of age."	Governance	Business Conduct	Corporate Governance	Reports criteria and statistics on diversity; Transparent disclosure on policies regarding corporate (board) structure.
"During the year, performance is evaluated in weekly Management Reporting, the Monthly Business Review, and the bi-annual Common Functions Review. Financials and KPI-related information is evaluated against the strategic goals and business plans."	Governance	Business Conduct	Corporate Governance	Detailed regular reporting and accountability of performance evaluation mechanisms.
Neste's risk management framework and processes are aligned with the internationally recognized best practices for risk management (COSO Enterprise Risk Management - Integrating with Strategy and Performance, and ISO 31000 standard).	Governance	Business Conduct	Risk Management	Disclosure on risk management processes - adherence to internationally recognized standard (COSO framework).
"Neste was recognized as a Leader in Global Child Forum's global children's rights and business benchmark, The State of Children's Rights and Business 2023, reflecting its dedication to integrating children's rights into business practices."	Social	Affected Communities	Human Rights	Implies credibility and long-term benefit to Neste's social perceptions.
Target: "Commit to paying all of our employees at least a living wage; take action to promote living wages in Neste's supply chains; and require strategic contractors and suppliers to pay their employees a living wage by 2030."	Social	Workers in Value Chain	Fair Wages	Forward-looking, target date set, relates to both direct employees and those within supply chain.
Target: "Commit to and promote the Employer Pays Principle, with implementation in high-risk areas by 2030 to ensure that no worker pays for a job and the costs of recruitment are paid for by the employer, not the worker."	Social	Workers in Value Chain	Labor Practices	Retrospective aspect acknowledging past/current challenges and a forward-looking commitment.
Target: "Work together with our stakeholders to increase children's access to education by 2030, and promote respect for children's rights by actively supporting and participating in initiatives aimed at keeping children in school."	Social	Affected Communities	Community Engagement	Focus on company commitment and policy that has a broader impact on a societal issue.
"We support our employees' individual development goals. The average time spent in learning programs for Neste employees in 2023 was 27.2 hours, and our company-wide development programs had more than 1,100 participants."	Social	Own Workforce	Training & Education	Discloses metrics (quantitative data) - transparent and actionable approach.
"Neste's occupational healthcare aims to create a healthy and safe working environment and a well-functioning work community (...). In Finland, Neste also investigates the health and safety factors related to work and working conditions, including office visits, also taking into account exposure agents present at the workplace."	Social	Own Workforce	Health & Safety	Qualitative data on efforts to enhance work conditions and safety measures - both current and planned activities.
"As part of advancing DEI all team leaders were assigned mandatory team value discussions on diversity, equity and inclusion to be carried out with their teams in 2023. By the end of the year, 95% of teams had had a team value discussion. Based on feedback, 88% of managers found the team value discussion useful or very useful."	Social	Own Workforce	Diversity & Inclusion	Quantitative data on participation in development programs and feedback received.
"In 2023, we conducted approximately 2,100 contractor health, safety, security, environment and quality performance evaluations during contract execution, and over 60 contractor safety management system audits provided valuable insights for performance improvement."	Social	Own Workforce	Health & Safety	Discloses number of evaluations and audits conducted - due diligence in managing safety.
"In 2023, the process safety performance rate (PSER, or the rate of process safety tier 1 and tier 2 events per million hours worked) was 1.2 (2022: 1.4), which was in the 2023 target level (1.4)."	Social	Own Workforce	Health & Safety	Quantitative data and adherence to safety processes; Shows actual performance against targets.
"Neste is committed to ensuring 100% of our own operations are covered by robust human rights due diligence systems by 2025 in line with the Consumer Goods Forum's Maturity Journey Framework."	Social	Affected Communities	Human Rights	Reports integration of human rights oversight mechanisms across entirety of operations.
"Through our participation in the Consumer Goods Forum's People Positive Palm Project, we provide training for Neste's PFAD suppliers to help strengthen their management systems for responsible recruitment."	Social	Workers in Value Chain	Supplier Social Assessment	Addresses the broader social impacts of operations throughout the entire value chain.
"In 2023, Neste conducted its first internal living wage gap assessments covering all countries in Neste's global operations, using data provided by the Fair Wage Network."	Social	Own Workforce	Fair Wages	Financial materiality through employee satisfaction and retention, impact materiality by positive contribution to economic stability.
"We engage employees with all the communities close to our operations. In 2023, we offered our employees two full days dedicated to voluntary work, as we believe volunteering activities are a way to build closer ties with our society."	Social	Affected Communities	Community Engagement	Contributing to the social well-being of both employees and society - reflective of impact materiality.
For the tenth year in a row, Neste donated the fuel needed by the Children's Mobile Health Care Center in Latvia, which provides diagnostic and preventive medical services for children.	Social	Affected Communities	Social Investment	Discloses charitable act demonstrating impact materiality.