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Sustainability Standards for Casemet Oy: ESG and CO2 Emissions

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ABSTRACT

The objective of the thesis was to identify an applicable ESG and CO₂ emissions calculation standard for Casemet Oy, a metal manufacturing organization located in Finland and in Estonia.

The research method was a traditional-narrative literature review. A literature search was made to identify EU legislation, ESG standards and CO₂ emissions calculation standards. A quantitative and qualitative analysis was made to identify organizations that are similar to Casemet Oy. Information regarding the ESG standards and CO₂ emissions calculation standards that are either being used or planning to be used by the identified organizations was collected through a survey.

The study identified EU legislation that certain organizations within the European Union must adhere to for reporting sustainability information. Additionally, the study assessed and compared the different ESG standards for disclosing sustainability information, as well as the standards for calculating CO₂ emissions. A recommendation was made to Casemet Oy regarding which ESG and CO₂ emissions calculation standard they should use. Based on the study's findings, the ESRS standard, published by the European Financial Reporting Advisory Group, was the ESG standard recommended and the GHG Protocol standards were the CO₂ emissions calculation standards recommended.

Keywords: sustainability information, ESG, materiality, standard

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1 INTRODUCTION

The term “ESG” first appeared in a 2004 report published by the United Nations Global Compact and the Swiss Federal Department of Foreign Affairs. The report was issued by the International Finance Corporation (IFC) and titled “Who Cares Wins”. (Frecautan & Nita 2022, 109; IFC ESG Guidebook 2021, 13). The IFC's definition of ESG states that ESG encompasses various factors related to the environment, society, and governance. Organizations should review ESG factors when assessing their activities and operations, while investors should consider them when making investments. ESG factors are related to the potential risks, impacts and opportunities that could affect organizations, industry sectors, countries or the broader financial economy. Examples of ESG factors include environmental issues, such as climate change and carbon emissions, social issues, such as the health and safety of an organization’s workers, and governance factors, such as an organization’s risk management. (IFC ESG Guidebook 2021, 13).

Both the public and investors have a growing interest in information regarding the effects organizations have on the planet through their actions and operations (Helfaya et al. 2023, 3; Cort & Esty 2020, 492). Investors, in particular, are increasingly interested in the “sustainability information” disclosed by organizations (Cort & Esty 2020, 492). The Corporate Sustainability Reporting Directive (Directive (EU) 2022/2464) defines sustainability information as information that provides an understanding of an organization’s impact on “sustainability matters”, which are defined as matters related to the environment, society and human rights, employees, governance, anti-corruption and anti-bribery, as well as the effect sustainability matters have on an organization’s development, performance and position (Directive (EU) 2022/2464, 18, 28; Regulation (EU) 2019/2088, 9). As a consequence of this increased demand for sustainability information, the number of organizations disclosing sustainability information, including ESG factors, is growing. The Governance and Accountability Institute reported in 2018 that 86% of S&P500 organizations already publish reports containing sustainability information. (Helfaya et al. 2023, 3)

For certain organizations within the European Union, the requirement to begin reporting sustainability information will soon be legally binding. The Corporate Sustainability Reporting Directive (Directive (EU) 2022/2464) will mandate approximately 49,000 organizations to begin reporting sustainability information in the future. The organizations within the scope of the directive account for roughly 75% of the European Union's total turnover. (Zenkina 2023, 6).

The aim of this study is to determine what Environmental, Social and Governance (ESG) and CO₂ emissions calculation standard is suitable for Casemet Oy, a metal products manufacturing organization. The organization is located in Mikkeli, Finland and in Pärnu, Estonia. (Strong professional... n.d.). In the study, organizations similar to Casemet Oy will be identified and analysed to determine what ESG standards they are currently using or planning to use in the future to report sustainability information required by EU legislation, such as Directive 2014/95/EU and Directive (EU) 2022/2464), as well as what standards they are using to calculate their CO₂ emissions. The study aims to answer three research questions:

1. Which organizations are required by EU legislation to disclose sustainability information in the European Union, now and in the future?
2. What ESG and CO₂ emissions calculation standards are available for organizations to use?
3. What ESG and CO₂ emissions calculation standards are being used by organizations that are similar to Casemet Oy, now and in the future?

2 LITERATURE REVIEW

In this study, a literature review was conducted to identify the legislation that specific organizations of a certain size and type within the European Union must follow regarding the disclosure of sustainability information. Additionally standards were identified that organizations can use to report sustainability information and calculate their CO₂ emissions.

2.1 EU legislation - Directive 2014/95/EU and Directive (EU) 2022/2464

The specific organizations within the European Union that are currently required to report sustainability information can be found in Directive 2014/95/EU.

Currently, only certain large organizations with an average of more than 500 employees are required to report sustainability information. (Directive 2014/95, 4,6). However, Directive (EU) 2022/2464, an amendment of Directive 2014/95, requires an increasing number of organizations to begin reporting sustainability information in the future (Directive (EU) 2022/2464, 63-65).

2.1.1 Directive 2014/95/EU

The disclosure of sustainability information by organizations provides investors and the public with information relating to an organization's potential sustainability risks and their impact on society and the environment. The European Parliament recognized the benefits of the disclosure of non-financial information in resolutions made in 2013 and requested the European Commission to prepare legislation for certain organizations to disclose non-financial information. EU Directive 2014/95/EU requires organizations within a defined scope to disclose non-financial information relating to the environment, social and employee matters, human rights, and anti-corruption and bribery matters. (Directive 2014/95, 1,4).

The Corporate Sustainability Reporting Directive (Directive (EU) 2022/2464) has amended the name and the definition of "non-financial information". Non-financial information should now be referred to as "sustainability information", and the updated definition of "sustainability information" can be found in the introduction and section 2.1.2 (Directive (EU) 2022/2364 – Corporate Sustainability Reporting) of this study. (Directive (EU) 2022/2464, 3).

At the moment, only organizations within a defined scope, presented in Table 1, are required to disclose sustainability information. Organizations required to report must be either a large undertaking or a parent undertaking of a large group and have on average more than 500 employees during the financial year. (Directive 2014/95, 4, 6).

Directive 2013/34/EU defines large undertakings and parent undertakings of a large group as organizations that meet at least 2 out of the following 3 requirements: a balance sheet total exceeding 20 million euros, a net turnover exceeding 40 million euros and an average number of employees during the financial year that is greater than 250. Parent undertakings of a large group are organizations that have authority over their subsidiaries. (Directive 2013/34, 27-28).

Additionally, organizations must be defined as public-interest entities. Directive 2013/34 defines public-interest entities as organizations that either trade their securities or are defined as credit institutions by Article 4, point (1) of Directive 2006/48/EC. Public-interest entities are also defined as insurance undertakings by Article 2(1) of Council Directive 91/674/EEC or are specifically defined as public-interest entities by European Union Member States. (Directive 2013/34, 26, 27). Organizations were required to start reporting their sustainability information for the first time on January 1st, 2017, for the financial year or calendar year of 2017 (Directive 2014/95, 8).

Table 1. Types of organizations required by Directive 2014/95/EU to report on sustainability information. (Directive 2014/95, 1,4,6.; Directive 2013/34, 26-28).

Organization details	Number of Employees	Public-interest entity	Large or parent undertaking
Requirement	The organization must have 500 employees on average during the financial year.	The organization must be a public-interest entity as defined in EU Directive 2013/34/EU	The organization must be a large undertaking or a parent undertaking of a large group as defined in EU Directive 2013/34/EU. To qualify, an organization must fulfill at least 2 out of the following 3 criteria: 1. Balance sheet total: >20 million Euro 2. Net turnover: >40 million Euro 3. Average number of employees during the financial year: >250

2.1.2 Directive (EU) 2022/2464 – Corporate Sustainability Reporting

The EU Corporate Sustainability Reporting Directive requires a larger number of organizations to start disclosing sustainability information in the future (Directive (EU) 2022/2464, 63-65). Issues about the effectiveness of EU Directive 2014/95/EU were brought up in a 2021 report by the EU Commission, with sufficient evidence suggesting that many organizations required to disclose sustainability information do not provide information on important topics, such as the release of greenhouse gas emissions. Additionally, the EU is currently of the opinion that there are no standards or frameworks in existence that meet their requirements for sustainability reporting. It is estimated that there will be a growing disparity between the sustainability information provided by organizations compared to what stakeholders, such as investors, need without political action.

For example, investors require specific information from an organization when assessing the organization's sustainability-related risks and opportunities. If the required information is not provided, a thorough analysis of the organization's risks and opportunities cannot be made. Furthermore, without political agreement regarding the sustainability information organizations should report, the use of multiple standards or frameworks will increase the cost and workload of reporting organizations. (Directive (EU) 2022/2464, 5,13).

In response, EFRAG (the European Financial Reporting Advisory Group) was tasked with preparing the draft EU Sustainability Reporting Standards (ESRS). The ESRS standards require organizations to report all sustainability information required for disclosure by the Corporate Sustainability Reporting Directive. (EFRAG TODAY n.d.; Directive (EU) 2022/2465, 13).

Directive (EU) 2022/2464 amends the scope of Article 19a of Directive 2014/95, requiring a greater number of different types of organizations to report sustainability information to inform stakeholders about how an organization's development, performance and position are affected by sustainability matters, defined as matters related to the environment, society and human rights, employees, governance, anti-corruption and anti-bribery, as well as how an organization has an effect on sustainability matters. The sustainability information must be reported in the organization's management report. (Directive (EU) 2022/2464, 28; Regulation (EU) 2019/2088, 9).

The first reports that comply with Directive (EU) 2022/2464 are to be made for the financial year of 2024, with reports due in 2025. The first organizations required to report must either be public-listed entities, as defined in Article 2 point (1) of EU Directive 2013/34/EU, or issuers, as defined in Article 2 point (1d) of EU Directive 2004/109/EC. The organizations must also be large undertakings or parent undertakings of a large group with an average of over 500 employees during the financial year. (Directive (EU) 2022/2464, 63-64).

In 2026, reports are due from organizations that are large undertakings or parent undertakings of a large group. The following organizations are required to publish their first reports in 2027: public-listed entities or issuers defined as small undertakings or as medium-sized undertakings by Article 3 point (2) and point (3) in EU Directive 2013/34/EU; non-issuers and issuers defined as small and non-complex institutions by Article 4 point (1) in Regulation (EU) No 575/2013, and simultaneously defined as a larger undertaking or as a small or medium-sized undertaking; and non-issuers and issuers defined as either captive insurance undertakings by Article 13 point (2) in Directive 2009/138/EC or as captive reinsurance institutions in Article 13 point (5) of the same directive, and simultaneously defined as either a larger undertaking or as a small or medium-sized undertaking. The organizations which begin reporting in 2027 must not be micro-undertakings, as defined by Article 3 point (2) in Directive 2013/34/EU. (Directive (EU) 2022/2464, 63-65).

Non-EU parent companies with a net turnover greater than 150 million euros for the last 2 consecutive financial years and which either have a large subsidiary undertaking, a public-listed small undertaking, a public-listed medium-sized undertaking or a branch entity located in the EU with a net turnover greater than 40 million euros, are required to publish their first reports in 2028. Table 2 below summarizes when different organizations are required to publish sustainability information in their management reports. (Directive (EU) 2022/2464, 43, 44, 63-65).

Table 2. Organizations required by Directive (EU) 2022/2465 to report their sustainability information. (Directive (EU) 2022/2465, 43, 44, 63-65; Directive 2013/34, 26-28).

Organization type	Reports due
Public-listed entities or issuers that have more than 500 employees on average during the financial year. Must also meet two of the three criteria (Large undertaking): <ul style="list-style-type: none"> • Balance sheet total: >20 million Euro • Net turnover: >40 million Euro • Average number of employees during the financial year: >250 	2025

<p>Public-listed entities or issuers that are parent undertakings of a large group. Combined, the group must have more than 500 employees on average during the financial year. Must also meet two of the three criteria (Large group):</p> <ul style="list-style-type: none"> • Balance sheet total: >20 million Euro • Net turnover: >40 million Euro • Average number of employees during the financial year: >250 	2025
<p>Organizations which meet two of the three criteria (Large undertaking):</p> <ul style="list-style-type: none"> • Balance sheet total: >20 million Euro • Net turnover: >40 million Euro • Average number of employees during the financial year: >250 	2026
<p>Organizations that are parent undertakings of a large group and meet two of the three criteria (Large group):</p> <ul style="list-style-type: none"> • Balance sheet total: >20 million Euro • Net turnover: >40 million Euro • Average number of employees during the financial year: >250 	2026
<p>Public-listed entities or issuers that do not exceed two of the three criteria (Small undertaking):</p> <ul style="list-style-type: none"> • Balance sheet total: >4 million Euro • Net turnover: >8 million Euro • Average number of employees during the financial year: >50 <p>and public-listed entities or issuers that are not small undertakings and do not exceed two of the three criteria (Medium-sized undertaking):</p> <ul style="list-style-type: none"> • Balance sheet total: >20 million Euro • Net turnover: >40 million Euro • Average number of employees during the financial year: >250 <p>*The public-listed entities or issuers must not be micro-undertakings. Micro-undertaking are organizations that do not exceed two of the three criteria:</p> <ul style="list-style-type: none"> • Balance sheet total: >350,000 Euro • Net turnover: >700,000 Euro • Average number of employees during the financial year: >10 	2027
<p>Non-issuers and issuers that are small and non-complex institutions and are also either defined as a large undertaking or as a small or a medium sized undertaking (must not be micro-undertakings)</p>	2027

Non-issuers and issuers that are either captive insurance undertakings or captive reinsurance institutions that are also either defined as a large undertaking or as a small or a medium sized undertaking (must not be a micro-undertaking)	2027
Non-EU parent companies that have a net turnover >150 million euros for the last 2 consecutive financial years and have either a large subsidiary undertaking, a public-listed small or medium-sized undertaking or a branch entity with a net turnover greater than 40 million euros located in the EU.	2028

Organizations that are public-listed small or medium-sized undertakings can choose not to begin disclosing sustainability information for the financial years before January 1st, 2028. If an organization chooses not to report their sustainability information, an explanation must be provided in their management report. (Directive (EU) 2022/2464, 30)

2.2 ESG Standards

Organizations can use ESG standards to report sustainability information. Organizations within the scope of Directive (EU) 2022/2464) will be required to use the ESRS standards developed by EFRAG (Questions and Answers... 2023), or other standards that comply with the Corporate Sustainability Reporting Directive (Directive (EU) 2022/2464).

An ESG standard is not the same as an ESG framework. ESG frameworks do not provide a methodology for the collection and reporting of sustainability information. Instead, ESG frameworks only provide guidance for organizations to take into consideration when deciding to voluntarily disclose sustainability information. ESG standards, on the other hand, provide a detailed methodology for the collection and reporting of sustainability information (Frecautan & Nita 2022, 111). For example, when an organization decides to report using the GRI standards, the standard expresses clearly what is required by the organization to disclose, by using the word “shall” combined with bold font, as seen in disclosure

2-1 Organizational details **“The organization shall: a. report its legal name;”**
(GRI 2: General Disclosures 2021 2021, 7-8).

The use of ESG standards rather than ESG frameworks is preferred because of the increased transparency and comparability of sustainability information disclosed by organizations when organizations use the same collection and disclosure methods. Organizations are also more likely to decrease their carbon emissions while following the methodology provided in ESG standards. (Frecautan & Nita 2022, 111).

2.2.1 GRI - Global Reporting Initiative

The Global Reporting Initiative (GRI) provides standards for sustainability reporting that are available to the public free of cost. Founded in Boston, Massachusetts, in 1997, the first global sustainability reporting framework was published by GRI in the year 2000. In 2016, the first global sustainability reporting standards were published and during the early 2020's, GRI began launching sector-specific sustainability reporting standards. (Our mission and history n.d.)

By reporting sustainability information using the GRI standards, an organization can provide stakeholders with information about the objectives and aims of the organization regarding their contribution to sustainable development.

Sustainability information reported by organizations is of notable interest to investors, particularly the possible financial risks and opportunities related to an organization. (GRI 1: Foundation 2021 2021, 4,5). So far, GRI has published 3 universal standards, 3 sector standards and 32 topic standards (GRI Standards English Language n.d.).

Any organization around the world can use the GRI standards, no matter their sector or size and the first step when starting to report with the GRI standards is to refer to the first of 3 universal standards, GRI 1: Foundation 2021 (GRI 1), where a general introduction to sustainability information reporting using the GRI standards is provided. (GRI 1: Foundation 2021 2021, 4,5). The second universal standard, GRI 2: General Disclosures 2021 (GRI 2), introduces the first set of

disclosures to be reported by all reporting organizations. For example, reporting organizations must disclose the legal name of their organization. (GRI 2: General Disclosures 2021 2021, 5,15).

The third universal standard, GRI 3: Material Topics 2021 (GRI 3), provides advice for the identification of an organization's material topics. GRI defines material topics as topics that represent an organization's most significant impacts on the economy, environment, and people and the impacts on their human rights. For example, after making an environmental assessment, an organization may determine its water usage has a notable impact on the surrounding ecosystem. After identifying water as a material topic, the organization can use the GRI topical standard, GRI 303 Water and Effluents 2018, to disclose information related to the identified material topic. So far, GRI has published 32 topic standards for disclosing information about identified material topics. If there are no GRI topic standards relating to an identified material topic, third-party standards can be used. (GRI Standards English Language n.d.; GRI 1: Foundation 2021 2021, 8; GRI 3: Material Topics 2021 2021, 4, 14, 16).

GRI sector standards provide a list of possible material topics for organizations in a particular industry sector. Organizations can refer to GRI sector standards once they have completed the process of determining material topics by themselves. If any of the topics within the sector standards are not material to an organization, then an explanation must be given. (GRI 3: Material Topics 2021 2021, 15, 16). Currently, GRI has published 3 sector standards: Oil and Gas (GRI 11), Coal (GRI 12) and Agriculture, Aquaculture and Fishing (GRI 13), however, there are plans to create standards for over 40 sectors (Sector Program, n.d.). The sustainability information disclosed using the GRI standards can be published in an organization's annual report, a sustainability report or on the organization's website (GRI 1: Foundation 2021 2021, 4,5).

A joint statement by EFRAG (European Financial Reporting Advisory Group) and the Global Reporting Initiative stated that organizations using the GRI standards are "well prepared" to report to the level required by the Corporate Sustainability

Reporting Directive (Directive (EU) 2022/2464) (04/09/2023 - EFRAG-GRI JOINT..., n.d.).

2.2.2 IFRS Foundation – International Financial Reporting Standards Foundation

The International Financial Reporting Standards Foundation was founded in 2001. In 2003, the International Accounting Standards Board (IASB), the group responsible for the overall management of the IFRS accounting standards, published its first accounting standard. Twenty years later in 2023, the first two IFRS sustainability reporting standards, the IFRS S1 and IFRS S2, were released by the International Sustainability Standards Board (ISSB), an affiliate board. The ISSB manages the development of sustainability standards for the IFRS. Both the IASB and ISSB receive general guidance from the IFRS Advisory Council. (International Accounting Standards Board, n.d.; ISSB: Frequently Asked Questions, n.d.; Who we are, n.d.).

The purpose of the IFRS S1 General Requirements for Disclosure of Sustainability-related Financial Information (IFRS S1) standard is to provide investors, lenders and creditors, defined in IFRS S1 as “primary users of general purpose financial reports”, with relevant information regarding an organization’s sustainability-related risks and opportunities. This information is useful for the “primary users” when they are accessing an organization’s potential production value over the short, medium and long term. (IFRS S1 General Requirements for Disclosure of Sustainability-related Financial Information: 2023, 6,23). Organizations that report sustainability-related financial information using the IFRS standard can report the required information in their management reports (IFRS S1 General Requirements for Disclosure of Sustainability-related Financial Information: 2023, 18).

The main information required to be disclosed in IFRS S1 and IFRS S2 is built upon the Task Force on Climate-related Financial Disclosures (TCFD) framework (An In-depth Explainer with the ISSB on IFRS S1, 2023). Organizations are required to disclose information about their governance, strategy, risk

management and metrics and targets regarding their sustainability-related risks and opportunities (IFRS S1 General Requirements for Disclosure of Sustainability-related Financial Information 2023, 9).

IFRS S1 requires organizations to determine which information related to their sustainability-related risks and opportunities is defined as material information. Simplified, the definition of material information given in the IFRS standard is information that, if omitted, misstated or obscured, could influence the decisions made by the primary users of general-purpose financial reports when they are assessing a report containing an organization's sustainability-related risks and opportunities. Organizations start by consulting any applicable IFRS disclosure standard related to an identified material sustainability-related risk or opportunity. For example, organizations can refer to the standard IFRS S2 Climate-related Disclosures to disclose information about the risks and opportunities related to the climate. If no applicable IFRS disclosure standard is found, the organization is to consider the use of the SASB standards. Other standards that could be used are, for example, the GRI standards or the European Sustainability Reporting Standards (ESRS). (IFRS S1 General Requirements for Disclosure of Sustainability-related Financial Information: 2023, 8, 17, 23, 28, 37; IFRS S2 Climate-related Disclosures: 2023, 5).

So far, only two IFRS standards have been published: the IFRS S1 General Requirements for Disclosure of Sustainability-related Financial Information standard and the IFRS 2 Climate-related Disclosures standard. The ISSB is currently working on the development of 3 new disclosure standards. The topics are biodiversity, ecosystems and ecosystem services, and human capital and human rights. (Consultation now open...2023).

2.2.3 SASB – Sustainability Accounting Standards Board

The SASB Foundation is a non-profit organization founded in 2011 that released 77 industry-specific sustainability accounting standards (SASB standards) in 2018. The International Sustainability Standards Board (ISSB) took control of the SASB standards in August 2022 and has recommended reporting organizations

continue using SASB standards while further IFRS Sustainability Disclosure Standards are developed. Examples of industries that have an applicable SASB standard include coal operations, industrial machinery & goods and biotechnology & pharmaceuticals. (Download SASB Standards, n.d.; INDUSTRIAL MACHINERY & GOODS: 2018, 2,4). The number of companies using SASB standards to disclose sustainability information was 2231 in 2022 (Global Use of SASB Standards, n.d.).

When disclosing sustainability information using the SASB standards, the reporting organization will typically use the SASB standard applicable to their industry, although organizations are allowed to use other SASB standards, particularly if the reporting organization belongs to multiple industry sectors. SASB standards have been developed to communicate sustainability information to investors. Organizations are allowed to disclose sustainability information to investors using a method of their choice, for example, a sustainability report or an annual report. (INDUSTRIAL MACHINERY & GOODS: 2018, 5).

The Industrial Machinery & Goods standard is an example of one of the 77 SASB standards developed for specific industry sectors. The disclosure topics in this particular standard are: energy management, employee health & safety, fuel economy & emissions in use-phase, materials sourcing, remanufacturing design & services, number of units produced by product category and number of employees. (INDUSTRIAL MACHINERY & GOODS: 2018, 6). Organizations have the option to refrain from reporting on a particular disclosure topic, providing an explanation for non-disclosure is given (SASB Standards Application Guidance 2018, 2).

2.2.4 IFC – International Finance Corporation

The International Finance Corporation (IFC) was founded in 1956 and their aim is to promote economic growth in their member countries, the 184 countries that collectively have ownership of the IFC, by investing in private organizations. In 2006, the IFC published the IFC performance standards. The objective of the standards is to avoid, reduce and manage the risks related to the sustainable

business practice of a reporting organization, by proposing methods that are beneficial for all stakeholders, such as investors and the surrounding environment and community. (IFC THE FIRST SIX DECADES n.d., 9,10, 96).

Organizations that are provided with financial assistance by the IFC are required to use the IFC performance standards. The standards can also be used by organizations that do not receive financial assistance from the IFC. The IFC have published 8 IFC performance standards. The topics of the standards are: assessment and management of environmental social risks and impacts, labor and working conditions, resource efficiency and pollution prevention, community health, safety and security, land acquisition and involuntary resettlement, biodiversity conservation and sustainable management of living natural resources, indigenous people and cultural heritage. (Performance Standards on Environmental and Social Sustainability 2012, 1).

The IFC recommends that when reporting on material information, defined by the IFC as information that is used by investors when assessing an organization, the organization explains the process or method used to determine materiality. Sustainability information can be disclosed in the organization's annual report or in a sustainability report. (IFC ESG Guidebook 2021 49,65).

2.2.5 NAF – Nordic Accountant Federation

In 2020, The Nordic Accountant Federation (NAF) began a project to create a suitable sustainability reporting standard for small and medium-sized organizations, called the Nordic Sustainability Reporting Standard (NSRS). The NAF consists of 4 accounting organizations from Sweden (Srf konsulterna), Finland (Talouhallintoliitto), Denmark (Cereda) and Norway (Regnskap Norge) and it was Christine Lundberg Larsen, former CEO of Regnskap Norge, who launched the project. The project was funded by Nordic Innovation. (About NAF n.d.; NSRS Foundation 2021, 4; The History of NSRS n.d.).

The lack of standardization between different sustainability information reporting standards and frameworks meant that the NSRS standard was designed to be

compatible with two well-known sustainability information reporting tools, the TCFD framework and the GRI standard. In addition, the sustainability information required to be disclosed by an organization within the scope of EU directive 2014/95 is covered by the NSRS standard. (NSRS Foundation 2021, 8,18). For the identification of material sustainability information, the standard uses the GRI definition for materiality i.e., the topics that represent an organization's most significant impact on the economy, environment, and people and the impacts on their human rights (NSRS Foundation 2021, 24). Examples of stakeholders that are interested in the sustainability information required for disclosure by the NSRS standard are investors, consumers, banks, governments, insurance companies and the organization's employees (For whom... n.d.; NSRS Foundation 2021, 40).

Organizations that choose to report using the NSRS standard can download the NSRS Implementation Tool and the NSRS Implementation Manual from the NSRS website (www.nsr.eu). The manual provides detailed guidance on how to disclose sustainability information required by the NSRS standard, by introducing the 11 steps to producing an NSRS level 1 sustainability report presented in Table 3 below. (NSRS Implementation Manual 2021, 4).

Table 3. NSRS standard 11 steps to produce a sustainability report. (NSRS Implementation Manual 2021, 14, 24, 30, 36, 42, 132, 140, 146, 156-160, 162-167, 170, 178).

Step 1 NSRS Climate Commitment	Organizations identify the potential risks and opportunities it faces in relation to sustainability and create a plan to tackle the identified challenges. (14)
Step 2 Profile	Organizations prepare to introduce their basic details (24)
Step 3 Stakeholder Inclusion	Organizations identify their stakeholders (30)
Step 4 Materiality Process	Organization's identify their material topics from a predefined list. Examples of material topics are waste,

	energy and greenhouse gas emissions. (36, 42)
Step 5 Climate Risk Self-Assessment	Organizations identify their possible short- and long-term climate-related risks and opportunities (132)
Step 6 Governance Profile	Organizations introduce their governance structure (140)
Step 7 Management Approach	Organizations create a plan to govern their material topics identified in Step 4 (146)
Step 8 Integrated Reporting	Organizations identify any sustainability information disclosures that could be reported in their financial statements (156-160)
Step 9 Finalizing	Organizations collect and present all disclosures in a sustainability report that is ready to be published. Organizations also identify the United Nations Sustainable Development Goals that are applicable to the disclosures made in the report. (162-167)
Step 10 Communication	Organizations publish their sustainability report and share it with their stakeholders (170)
Step 11 Evaluation	Organizations prepare a method to receive and process feedback from stakeholders (178)

The NSRS standard is designed to require organizations to report on sustainability information that is increasingly more difficult and expensive to collect as the organization's experience in sustainability information reporting grows. The NSRS standard refers to this as the NSRS advancement levels.

Currently, organizations using the NSRS standard report at NSRS Level 1, however in the future the standard will develop to allow organizations to report at NSRS Level 2 and Level 3, which will be more expensive and time-consuming for reporting organizations but result in a sustainability report of high quality. (NSRS Foundation 2021, 10-15).

2.2.6 EFRAG – European Financial Reporting Advisory Group

EFRAG (European Financial Reporting Advisory Group) is a non-profit organization that was founded in 2001 by the European Commission to take part in the development of the IFRS standards (International Financial Reporting Standards) and provide professional advice on corporate reporting. In 2021, EFRAG presented a proposal to develop a sustainability reporting standard for the European Union, and in 2022, the EU Corporate Sustainability Reporting Directive (Directive (EU) 2022/2465) gave EFRAG the responsibility of preparing the draft EU Sustainability Reporting Standards (ESRS). (Directive (EU) 2022/2465, 13; EFRAG TODAY n.d.).

Organizations that choose to report using the ESRS standards will disclose sustainability information related to environmental, social and governance matters that is required for disclosure by the EU Corporate Sustainability Reporting Directive. The sustainability information required to be disclosed by organizations has been classified into four different reporting areas, introduced in Table 4 below. (ESRS 1 General requirements 2022, 5,6).

Table 4. ESRS reporting areas and there requirements. (ESRS 1 General requirements 2022,6).

Reporting area name	Requirement
Governance (GOV)	Organizations must disclose their governance processes, controls and procedures used to monitor and manage impacts, risks and opportunities
Strategy (SBM)	Organizations must disclose how their strategy and business models interact with their

	material impacts, risks and opportunities and include a strategy for addressing them
Impact, risk and opportunity management (IRO)	Organizations must disclose the process or processes used by the organization to identify, assess and manage, using policies and actions, impacts, risks and opportunities
Metrics and targets (MT)	Organizations must disclose how they measure their performance towards the targets they have set, including their progress

There are 3 different types of ESRS standards. The first two ESRS standards, ESRS 1 and ESRS 2, are defined as "cross-cutting" standards since these standards cover all reporting areas and must also be used when reporting certain disclosures relating to sustainability topics found in the second type of ESRS standards, topical standards. For example, in the topical standard ESRS E2 Pollution, reporting organizations must describe the processes they have used to identify and assess material pollution-related impacts, risks and opportunities. This information must be reported alongside the disclosures required by Disclosure Requirement IRO-1 in chapter 4 of the ESRS 2 cross-cutting standard, which requires an organization to provide a description of the processes they have used to identify and assess material impacts, risks and opportunities. The ESRS cross-cutting standards are presented in Table 5 below. (ESRS 1 General requirements 2022, 5-6; ESRS 2 General disclosures 2022, 14-15; ESRS E2 Pollution 2022, 5).

ESRS topical standards cover topics that are often cited as sustainability matters. The topics associated with sustainability matters are related to the environment, society, human rights and governance. Examples of the topics that ESRS topical standards cover are: climate change, pollution, workers in the value chain and business conduct. The ESRS topical standards are presented in Table 5 below. (ESRS 1 General requirements 2022, 6, 40)

Sector-specific standards are the third type of ESRS standards, however, they are still under development. Standards are being developed for sectors such as: oil and gas, motor vehicles, energy production and utilities and agriculture, farming and fisheries. (EFRAG Sector Specific ESRS n.d.). Table 5 below presents a list of the available ESRS standards, categorized by standard type (cross-cutting or topical) and the topic the standard is related to.

Table 5. ESRS cross-cutting and topic standards.(ESRS 1 General requirements 2022, 5-6; First Set of draft ESRS n.d.).

ESRS standard name	Standard topic (Environmental, Social or Governance)	Type of Standard (Cross-cutting or topical standard)
ESRS 1 General requirements	Environmental, Social and Governance	Cross-cutting standard
ESRS 2 General disclosures	Environmental, Social and Governance	Cross-cutting standard
ESRS E1 Climate change	Environmental	Topical standard
ESRS E2 Pollution	Environmental	Topical standard
ESRS E3 Water and marine resources	Environmental	Topical standard
ESRS E4 Biodiversity and ecosystems	Environmental	Topical standard
ESRS E5 Resource use and circular economy	Environmental	Topical standard
ESRS S1 Own workforce	Social	Topical standard
ESRS S2 Workers in the value chain	Social	Topical standard
ESRS S3 Affected communities	Social	Topical standard
ESRS S4 Consumers and end-users	Social	Topical standard
ESRS G1 Business conduct	Governance	Topical standard

The disclosures found in ESRS topical standards, other than those that must be reported alongside disclosures found in the ESRS 2 standards, are categorized by their relation to the following topic areas: policies, actions, metrics and targets. The definitions of the topics are provided in ESRS 1. Policies are defined as the strategies or management decisions that an organization has implemented regarding a material sustainability matter while actions are defined as the actions and action plans that have been carried out by an organization to ensure that the organization successfully achieves the targets it has set and manages its material, impacts, risks and opportunities. Metrics are defined as the qualitative and quantitative indicators that an organization uses to assess the effectiveness of its sustainability-related policies and targets over a period of time and targets are defined as the quantifiable objectives that an organization is aiming to achieve in comparison with its material impacts, risks and opportunities. (ESRS 1 General requirements 2022, 8).

Table 6 below provides an example of three different disclosures found in the topical standard ESRS E2 Pollution. The disclosure in row 2 is directly related to a disclosure from the ESRS 2 cross-cutting standard and must therefore be reported alongside other information required by that disclosure. The disclosure in column 3 is an example of a disclosure found in a topical standard that belongs to the policies topic area and a disclosure in column 4 is an example of a disclosure that belongs to the metrics topic area. Sustainability information provided in these disclosures does not need to be presented alongside any information required by ESRS 2 disclosures, however, cross-references may be made when, for example, an organization reports on its policies and actions that cover several sustainability matters found in different topical standards. (ESRS 2 General disclosures 2022, 14-16; ESRS E2 Pollution 2022, 3).

Table 6. Table comparing disclosures found in ESRS topical standards. (ESRS 2 General disclosures 2022, 14-16; ESRS E2 Pollution 2022, 3).

Disclosure name	Reporting area (See Table 4.)	Topic area (Policies/actions targets/metrics)	Required to be reported alongside disclosures found in ESRS 1 or ESRS 2 cross-cutting standards (Yes/No)
Description of the processes to identify and assess material pollution-related impacts, risks and opportunities (IRO-1)	Impact, risk and opportunity management	Not applicable	Yes, must be reported alongside other information required for disclosure in ESRS 2 – IRO 1 (Description of the processes used to identify and assess material impacts, risks and opportunities)
Policies related to pollution (E2-1)	Impact, risk and opportunity management	Policies	No
Pollution of air, water and soil (E2-4)	Metrics and targets	Metrics	No

One of the first steps when reporting using the ESRS standards is to make a material assessment to identify an organization's material impacts, risks and opportunities, during which the organizations must assess all of the ESRS topical standards and determine which topics are material (Educational session...2023). The materiality assessment is made by assessing two different types of materiality that are considered to be related and dependent on one another, impact materiality and financial materiality. Sustainability matters related to impact materiality are defined as material when an organization may have actual or potential, positive or negative impacts over the short, medium and long-term on people or the environment. From a financial materiality viewpoint, sustainability matters are material if they cause or could cause financial effects on the organization, such as an influence on the organization's cash flow or performance. Double materiality refers to the categorization of a sustainability matter as material from both an impact and a financial perspective. (ESRS 1 General requirements 2022, 11, 12, 25).

During their materiality assessment, an organization might conclude that a topic covered by a particular ESRS topical standard is not material, in which case the organization does not need to report on the topic of that standard. They only need to provide a simple explanation of why the topic is not material for them. For example, an organization might conclude that the topic of biodiversity and ecosystems is not material, therefore they will not need to use the topical standard ESRS E4 Biodiversity and Ecosystems, however, an explanation as to why the topic is not material must be provided. (Educational session...2023; ESRS 1 General requirements 2022, 10).

When an organization has determined that a topic covered by an ESRS topical standard is material, it must report on all of the disclosures related to policies, actions and targets. However, if the organization is unable to provide relevant information on disclosures regarding policies, actions and targets because the organization does not have any policies, actions or targets concerning the topic in question, then the organization must state this and can choose to disclose when they are planning to implement them. Disclosures related to metrics do not need

to be disclosed by the organization if they have concluded that it is not material for them. (ESRS 1 General requirements 2022, 10).

Irrespective of the outcome of an organization's materiality assessment, organizations must disclose information required by every disclosure found in both the ESRS 2 cross-cutting standard and the ESRS E1 climate change topical standard. Organizations must also assess the table found in Appendix C of the ESRS 2 standard, which lists a number of disclosures found in various ESRS cross-cutting and topical standards, containing information that is required by EU law to be reported. Additionally, organizations with more than 250 employees must disclose information required by the first nine disclosures (S1-1 to S1-9) found in the ESRS topical standard ESRS E1 Own Workforce. (ESRS 1 General requirements 2022, 9-10; ESRS 2 General disclosures 2022, 28).

Organizations must report the sustainability information required for disclosures by the ESRS standards in their management report. (ESRS 1 General requirements 2022, 21).

2.2.7 Comparison between the ESG standards

Table 7 below provides a comparison of ESG standards that can be used to disclose sustainability information. The table compares the number of universal, topical and sector-specific standards that have been published or are under development by different ESG standard publishing organizations. A universal standard in the context of this table refers to a standard that all reporting organizations must use when reporting with a specific standard. For example, the ESRS cross-cutting standard. (Educational session...2023). How a standard defines the term "materiality" is important. The Corporate Sustainability Reporting Directive (Directive (EU) 2022/2464) requires that organizations report sustainability information under the concept of "double materiality" i.e., sustainability information that is both material from an impact and a financial viewpoint. Standards that only define materiality as sustainability information that is financially material will not be compliant with the Corporate Sustainability

Reporting Directive. (Directive (EU) 2022/2464, 10; ESRS 1 General requirements 2022, 11, 12, 25).

Table 7. Comparison of ESG standards. (Consultation now open...2023; EFRAG Sector Specific ESRS n.d.; ESRS 1 General requirements 2022, 5-6, 11, 12, 25, 40; GRI 1: Foundation 2021 2021, 4,5; GRI 1: Foundation 2021 2021, 8; IFC ESG Guidebook 2021 49,65; IFRS S1 General Requirements for Disclosure of Sustainability-related Financial Information: 2023, 6,23; INDUSTRIAL MACHINERY & GOODS: 2018, 5,6; NSRS Foundation 2021, 24; NSRS Implementation Manual 2021, 14, 24, 30, 36, 42, 132, 140, 146, 156-160, 162-167, 170, 178; Performance Standards on Environmental and Social Sustainability 2012, 1; Sector Program, n.d.

Standards	GRI	IFRS	SASB	IFC	NSRS	ESRS
Universal standards (Yes/No)	Yes	Yes	No	No	Yes	Yes
Number of Universal standards	3	1	0	0	1	2
Topical standards (Yes, No)	Yes	Yes	No	Yes	No	Yes
Number of topical standards	32	1 + 3 in development	0	8	0	10
Sector standards	Yes	No	Yes	No	No	Yes
Number of sector standards	3	0	77	0	0	8 in development
Materiality	Double materiality	Financial materiality	Financial materiality	Financial materiality	Double materiality	Double materiality

2.3 CO₂ emissions calculation standards

Organizations in the European Union that fall within the scope of the EU Corporate Sustainability Reporting Directive will be required to calculate their greenhouse gas emissions when reporting information required by the directive. For example, to report on their greenhouse gas reduction targets, organizations will need to calculate their greenhouse gas emissions (Directive (EU) 2022/2464, 29, 37). An organization can calculate their greenhouse gas emissions using a CO₂ emissions calculation standard.

2.3.1 Greenhouse Gas Protocol Initiative – GHG protocol

The World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD) launched the initiative to develop a standard for the accounting and reporting of greenhouse gas emissions in 1998. The Greenhouse Gas Protocol Initiative, a partnership of businesses, non-governmental organizations, governments, and other organizations brought together by the WRI and the WBCSD, published their first standard in 2001, the GHG Protocol Corporate Accounting and Reporting Standard. The standard is used by different businesses and governments all over the world. (A Corporate Accounting and Reporting Standard. Revised Edition 2015, 2-3)

Although multiple standards have been developed and published by the Greenhouse Gas Protocol Initiative, only two standards will be discussed in this study. The two standards are the GHG Protocol Corporate Accounting and Reporting Standard and the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard. The reason that these standards have been chosen to be part of the study, and other standards have not, is because the two standards have been specifically developed by the Greenhouse Gas Protocol Initiative for businesses and organizations to use when they calculate their greenhouse gas emissions. (A Corporate Accounting and Reporting Standard. Revised Edition 2015, 3 & Corporate Value Chain (Scope 3) Accounting and Reporting Standard 2011, 6). Examples of other standards published by the Greenhouse Gas Protocol Initiative include the GHG Protocol for Cities standard,

which can be used by cities to calculate their greenhouse gas emissions, and the Project Protocol standard, which can be used by businesses, organizations or cities to, for example, determine methods that they could use to reduce their greenhouse gas emissions (GHG Protocol for Cities, n.d. & Project Protocol, n.d.).

The GHG Protocol Corporate Accounting and Reporting Standard can be used by organizations to calculate and report their emissions generated from six different greenhouse gases: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride. An organization using the GHG Protocol Corporate Accounting and Reporting Standard first has to determine their "organizational boundaries", i.e., what operations are controlled or owned by reporting organization. After identifying their organizational boundaries, an organization then determines their operational boundary, which is the direct or indirect emissions released by operations within the organization's organizational boundary. (A Corporate Accounting and Reporting Standard. Revised Edition 2015, 8, 16, 24, 26).

To help differentiate between the two different emission types, Direct and indirect emissions can be categorized by their "Scope". Direct emissions are categorized as Scope 1 emissions and indirect emissions are categorized as either scope 2 emissions or Scope 3 emissions. An organization's scope 1 emissions are greenhouse gas emissions that have been released as a result of activities or operations that are under the control of the organization. For example, the emissions from an organization's factory. An organization's Scope 2 emissions are the greenhouse gas emissions released during the production of electricity that an organization purchases to power its operations. For example, the emissions produced by a coal-fired power station would be classified as Scope 2 emissions if an organization uses the power station, which is not directly owned or controlled by the organization, as a source of electricity for their operations. An organization's Scope 3 emissions are all other sources of indirect greenhouse gas emissions other than the emissions produced during the generation of electricity that an organization purchases to power their operations, for example,

the emissions released during the transportation of a product produced by an organization to their customers or the emissions produced by an organization's employees when they travel to work. (A Corporate Accounting and Reporting Standard. Revised Edition 2015, 25-29).

The GHG Protocol Corporate Accounting and Reporting Standard provides organizations with guidance to identify their possible sources of Scope 1, 2 and 3 emissions. Appendix D on pages 92-93 of the standard has a table, categorized by industry sector, that lists the possible sources of Scope 1, 2 and 3 greenhouse gas emissions for organizations belonging to different industry sectors. (A Corporate Accounting and Reporting Standard. Revised Edition 2015, 92-93). When calculating their greenhouse gas emissions, reporting organizations can choose to access the GHG Protocol Initiative Website (www.ghgprotocol.org) and use the calculation tools that have been developed by the GHG Protocol Initiative for the quantification of greenhouse gas emissions. Businesses and organizations can use the cross-sector calculation tools or/and the sector-specific tools when calculating their greenhouse gas emissions. Cross-sector calculation tools can be used by organizations and businesses that belong to different sectors whereas sector-specific calculation tools have been specifically made for a particular sector. Organizations can use other calculation methods to quantify their greenhouse gas emissions if they choose, as long as the calculation methods have a similar accuracy to the methods for calculating greenhouse gas emissions provided in the GHG Protocol Corporate Accounting and Reporting Standard. (A Corporate Accounting and Reporting Standard. Revised Edition 2015, 42).

The GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard provides additional guidance for the identification and reporting of Scope 3 greenhouse gas emissions. The standard is designed to be used cooperatively with the GHG Protocol Corporate Accounting and Reporting Standard. (Corporate Value Chain (Scope 3) Accounting and Reporting Standard 2011, 4-5).

The number of organizations that are disclosing their greenhouse gas emissions is increasing. Organizations often choose to disclose this information in a stand-alone report or in a sustainability report, however, for organizations within the European Union, an organization's greenhouse gas emissions must be included in the organization's management report. (A Corporate Accounting and Reporting Standard. Revised Edition 2015, 12 & Directive (EU) 2022/2464, 29).

2.3.2 ISO (International Organization for Standardization) – ISO 14064-1:2019

The ISO 14064-1:2019 standard is a standard published by the International Organization for Standardization (ISO) that can be used by organizations to calculate their greenhouse gas emissions at an organizational level.

Organizational level refers to the scope within which an organization calculates its greenhouse gas emissions. To define the scope, reporting organizations first determine their operational boundary, the operational activities directly or financially controlled by the organization, and their reporting boundary, the direct and indirect greenhouse gas emissions that are released by the organization's operational activities within the organization's operational boundary. (SFS-EN ISO 14064-1:en 2019, 5, 6, 14, 15).

Reporting organizations categorize their greenhouse gas emission sources as producers of direct greenhouse gas emissions or as indirect greenhouse emissions. Direct greenhouse gas emissions are produced by activities that are controlled by the reporting organization and indirect greenhouse gas emissions are produced by activities that are not controlled by the reporting organization. After a reporting organization has identified their sources of direct and indirect emissions, a methodology to be used for the calculation of their greenhouse gas should be chosen. The methodology chosen by the reporting organization should produce results that are "accurate, consistent and reproducible". (SFS-EN ISO 14064-1:en 2019, 10, 16, 17).

Reporting organizations should prepare a GHG report if they intend to disclose their greenhouse gas emissions to the public. The report should contain the

organization's direct greenhouse gas emissions, categorized by emission type, as well as the organization's indirect greenhouse gas emissions, in tonnes of CO₂ equivalents. (SFS-EN ISO 14064-1:en 2019, 22). Organizations within the European Union will need to report their organization's greenhouse gas emissions in their organization's management report (Directive (EU) 2022/2464, 29).

3 MATERIAL AND METHODS

The material and methods section describes the methodology used to answer the 3 study questions of this study. The answers to study questions 1 and 2 were found by making a traditional-narrative literature review, while study question 3 was answered by using the information gathered from a survey sent to organizations similar to Casemet Oy.

3.1 Literature review

In this study, a literature review was conducted to identify which organizations are required by European Union legislation to disclose sustainability information and to explore the future requirements. Additionally, ESG standards that organizations can use when reporting sustainability information required by EU legislation were identified. Standards were also identified that can be used to calculate CO₂ emissions. The method used to gather information in the literature review follows the traditional-narrative literature review methodology, by researching the available knowledge on the two specific topic areas and compiling the information to develop an understanding of the topic (Efron & Ravid 2018, 21).

Using the South-Eastern Finland University of Applied Sciences online library, Kaakkuri, a search was made to find background information on the two topic areas. The first area, which is related to the first study question, focused on EU legislation. The second area, which is related to the second study question, focused on ESG and CO₂ emissions calculation standards. Articles included in the first search for literature had to have the keywords "ESG" and "STANDARD"

in their titles. They also had to be peer-reviewed, available with full text and published after 2020. Non-English articles were excluded. In total, 8 articles were found, and one article was included in the study while 7 were not included because they did not provide relevant information.

The article found in the first literature review search introduced three different ESG reporting standards and frameworks that organizations can use to report sustainability information, GRI, SASB and TCFD. The article stated that GRI is a popular standard used by organizations when reporting sustainability information, therefore, in the second search for literature, articles were found that had the keyword “ESG” in their title and the keyword “GRI” in the abstract. (Cort & Esty 2020, 498). Only peer-reviewed and articles available with full text published in English after 2020 were included in the search.

Eight articles were found in the second search for literature. Four articles were included in the study and 4 articles were not included in the study due to lack of relevant information.

Additional information regarding ESG standards and EU legislation was found from online sources, such as the websites of organizations that have published or are planning to publish standards for the disclosure of sustainability information and the European Union law website (EUR-Lex).

For the calculation of CO₂ emissions, the GHG Protocol Corporate Accounting and Reporting Standard, the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard and the ISO 14064-1:2019 standard was introduced in this study. The ESRS E2 Climate change topical standard recommends organizations consider using these standards when they report their Scope 1,2 and 3 greenhouse gas emissions, in disclosure E1-6 of the standard. Every organization within the scope of Directive (EU) 2022/2464 will need to report on this disclosure. (Directive (EU) 2022/2464, 29, 37; ESRS E2 Climate change, 31; ESRS 2 General disclosures 2022, 28).

Casemet Oy also recommended a standard to be included in the survey that was not found in the literature review. This standard was the NSRS standard.

3.2 Search for organizations that are similar to Casemet Oy

To find companies similar to Casemet Oy, it was agreed to use annual turnover as the criterion. The Casemet Group's, Casemet Mikkeli and Casemet Estonia, annual turnover was 33 million euros in 2022 and it was decided to search for companies in the manufacturing industry sector between 0 and 100% of Casemet Group's turnover i.e., 33million euros to 66 million euro.

The search for similar companies to Casemet Oy was made on the website Finder.fi. Finder.fi is a website service provided by Fonecta, a Finnish digital marketing company (Fonecta yrityksenä, n.d.). First, different manufacturing industry sectors were identified from the Statistics Finland.fi. Statistics Finland.fi categorizes the manufacturing industry into six major sectors, metal industry products, chemical industry products, forest industry products, food beverages and tobacco, textiles, clothes, leather and leather products and other manufactured goods. Within the major sectors, smaller sub-sectors can be found. For example, the paper and paper products sector is a sub-sector of forest industry products, which is a major sector. Sub-sectors within the major categories each have an individual classification code, known as a CPA code. (Industrial Output, n.d.). For example, the sub-sector paper and paper product's CPA code is 17 and the forest industry products major sector contains the sub-sectors with CPA codes 16-17 (13mm -- Industrial production by product class, 2021-2022, n.d.).

Similar to Statistics Finland.fi, Finder.fi categorizes organizations based on their industry sector. The equivalent or near equivalent sectors to the sub-sectors found on Statistics Finland.fi were found on Finder.fi., as seen in Table 7 below with an example of the identification of the paper and paper products sector as being a sub-sector belonging to one of the major manufacturing industry sectors using Statistics Finland.fi. The equivalent sector, paper industry, was then

identified on Finder.fi. (Aiheet n.d.). The process was repeated by cross-checking every manufacturing sub-sector found on Statistics Finland.fi, that belonged to one of the 6 major sectors, with the Finder.fi sectors. Equivalent or near equivalent sectors were recorded on a Microsoft Excel spreadsheet.

Table 8. Example of how the equivalent industry sector was found on Finder.fi. (Aiheet n.d., Industrial Output n.d., 13mm -- Industrial production by product class, 2021-2022 n.d.)

A major sector belonging to the manufacturing industry, found on Statistics Finland.fi.	A sub-sector within the major sector, found on Statistics Finland.fi.	An equivalent sector found on Finder.fi.
Forest industry products (CPA 16-17)	Paper and paper products (CPA 17)	Paper industry

Casemet Oy recommended an additional 3 organizations to be included in the survey. The organizations belonged to the metal industry major sector.

3.2.1 Quantitative and qualitative analysis

Quantitative data, data that is countable, was gathered to identify organizations of interest (Franklin 2012, 170). First, within the Finder.fi website's interface, only organizations within the same industry sector were displayed. The number of organizations was narrowed down by selecting to display only the organizations that had an annual turnover in 2022 between 20 and 100 million euros and after a manual review of the organizations, any organization that had a turnover between 33 and 66 million euros was listed on the Microsoft Excel spreadsheet.

The websites of the identified organizations were assessed to find additional details about them. Organizations were excluded from the study if they were either a parent organization or a subsidiary organization of a group, defined as a parent organization and its subsidiary organizations, with a combined group annual turnover, the combined turnover of the parent organization and its subsidiaries, greater than 66 million euros (Directive 2013/34, 9-10). The annual group turnover could be found in most cases on either the subsidiary organization's website or on the parent organization's website. A qualitative

analysis was made by gathering qualitative data, data that cannot be counted, about the identified organizations (Franklin 2012, 170). Organizations were excluded from the study if they were not manufacturers.

3.3 Survey

To gather data from the identified organizations, a survey was created. Surveys are one of the well-known methods of gathering information from a large number of people (Franklin 2012, 171). The survey was made using Google Forms.

The survey was sent to the identified organizations on the 14th of July 2023. Emails were sent to an appropriate person from the organization, such as a sustainability manager. Participants were asked to reply by email to state that they had responded to the survey. Reminder emails were sent on the 18th of August 2023, one week before the survey deadline.

3.3.1 Survey questions

1. What was your organization's annual turnover for the latest fiscal year (2022)?
 - a. <33 million euros
 - b. 33-66million euros
 - c. >66 million euros

The first survey question asks the participants to disclose their latest annual turnover. This question was included in the survey in the case that an organization had an annual turnover of either less than 33 million or greater than 66 million euros, to differentiate their data from the data gathered from participants whose organizations have a turnover between 33-66 million euros, the criteria for companies similar to Casemet Oy.

2. What is your organizations sector?
 - a. Food, beverages and tobacco sector
 - b. Textiles, clothes, leather and leather products sector
 - c. Forest industry sector
 - d. Chemical industry products
 - e. Metal industry products (Includes electrical equipment)
 - f. Other manufactured goods

The second survey question asks the participants to disclose which manufacturing industry sector their organization belongs to. Participants can select multiple sectors.

3. Is your organization required to report your sustainability information according to EU directive at the moment 2014/95/EU?
 - a. Yes b. No c. We are already reporting, although we are not required to
 - d. We are planning to report, although we are not required to

The third survey question asks the participants to disclose if their organizations are currently reporting sustainability information required by EU directive 2014/95/EU.

4. Which standard do you use to report sustainability information?
 - a. GRI b. IFC c. NSRS d. SASB e. another standard f. we don't need to report

The fourth survey question asks the participants to disclose what ESG standard their organization is using to report sustainability information. Participants can choose from 4 different ESG standards that have so far been published. Multiple standards can be selected. ESG standards that are still in development or have only recently published are not included in this survey question.

5. Is your organization required to report sustainability information in the future according to EU directive 2022/2464?
 - a. Yes b. No c. We are planning to report, although we are not required to

The fifth survey question asks the participants to disclose if their organization is required by EU Directive 2022/2464 to report sustainability information in the future.

6. Which ESG standard does your company plan to use in the future to report sustainability information?
 - a. GRI b. EFRAG (currently in draft phase) c. IFRS (published 2023) d. IFC e. NSRS f. SASB g. another standard h. we don't need to report

The sixth survey question asks the participants to disclose what ESG standard their organization is planning to use when reporting sustainability information in the future.

7. Which standard does your organization use to report CO₂ emissions?
 - a. GHG protocol
 - b. ISO 14064
 - c. another standard
 - d. we don't need to report

The seventh survey question asks the participants to disclose what standard their organization uses when reporting their CO₂ emissions.

8. Is the company's environmental, social and governance (ESG) reporting carried out by an internal person or a third party?
 - a. Internal person
 - b. Third party
 - c. We don't report at the moment
 - d. We don't want to disclose
 - e. Cooperation between the company and a third party

The eighth survey question asks the participants to disclose if their ESG reporting is made by an internal person, a third party or cooperation between the organization and the third party.

4 RESULTS

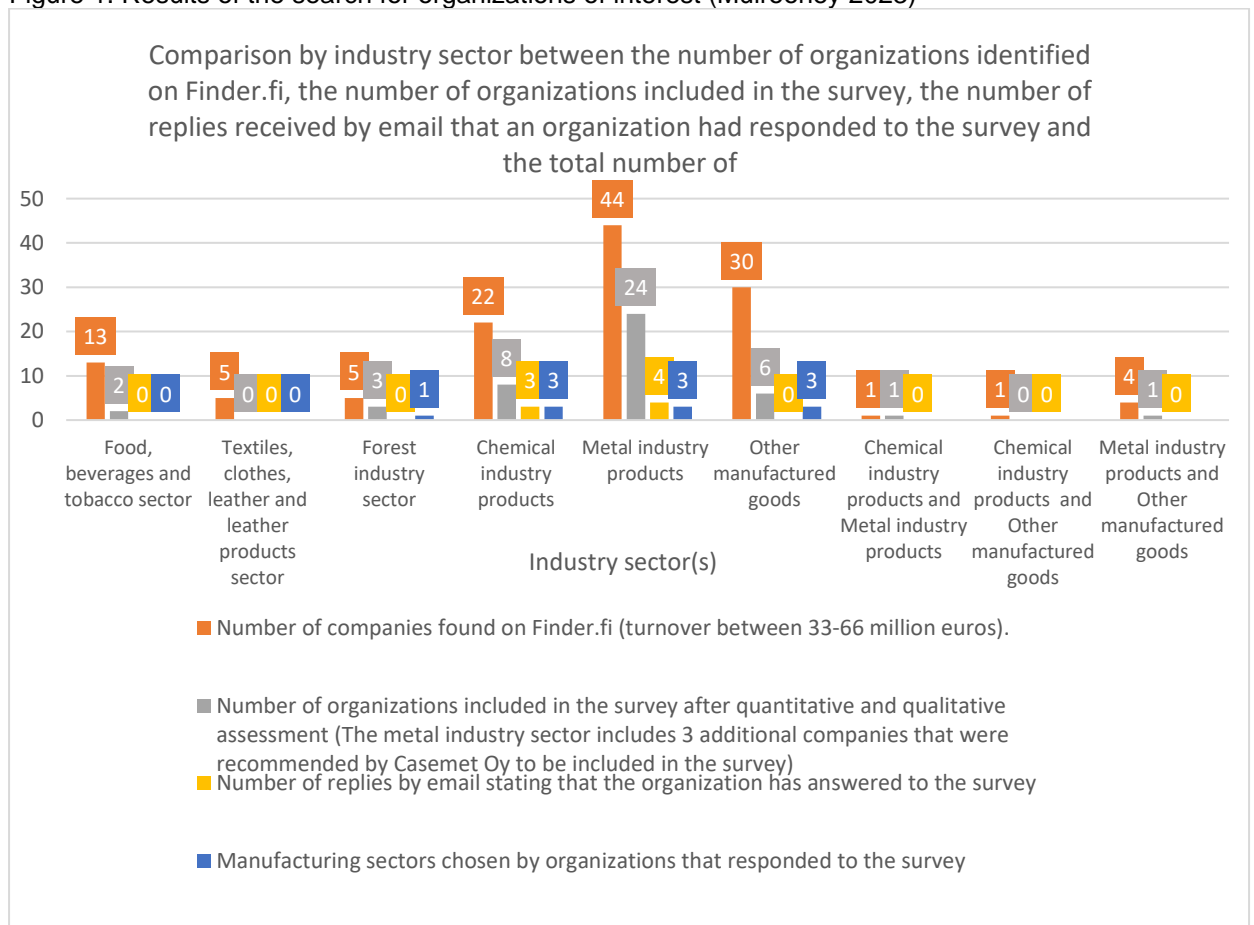
This section presents the results of the search for organizations similar to Casemet Oy, as well as the responses provided by the identified organizations that participated in the survey.

4.1 Search for organizations similar to Casemet Oy

In total, 125 organizations were found on Finder.fi from the various manufacturing industry sectors. Of the organizations found, 119 organizations belonged to one of the six main industry sectors and 6 organizations belonged to two different main industry sectors. After making a quantitative and qualitative assessment, 42 organizations were included in the survey: 2 from the food, beverages, and tobacco sector, 0 from the textiles, clothes, leather and leather products sector, 3 from the forest sector, 8 from the chemical industry products sector, 21 from the metal industry products sector, 6 from the other manufactured goods sector, 1

from the chemical and metal industry sector and 1 from the metal and other manufactured goods sector. Three additional organizations belonging to the metal industry were recommended to be included in the survey by Casemet Oy. Six organizations replied by email stating that they had responded to the survey and one company provided their answers to the survey questions in the email message. The survey received ten responses in total, which is a response percentage of 22.22%. Three organizations that responded to the survey did not reply by email to state that they had completed the survey.

Figure 1. Results of the search for organizations of interest (Mulrooney 2023)



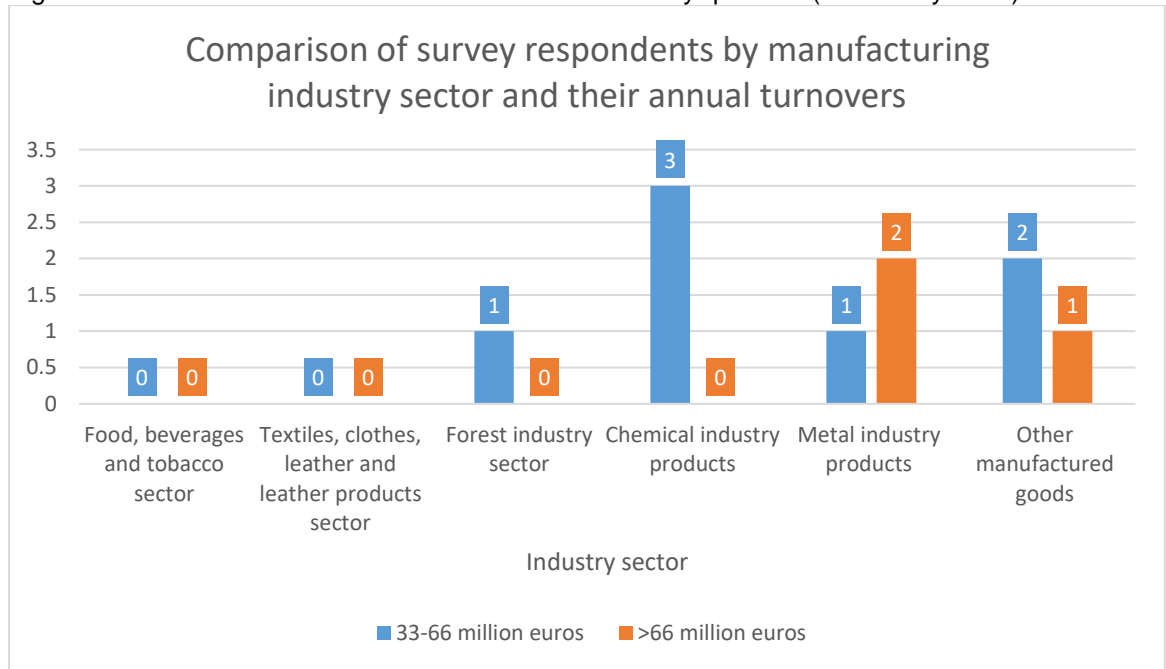
4.2 Answers to the first and second survey questions: What was your organization’s annual turnover for the latest fiscal year (2022)? and What is your organization’s sector?

Seven participants who responded to the survey disclosed that their organization had a turnover between 33-66 million euros and three participants disclosed that their organizations had a turnover greater than 66 million euros. No responses

were received from participants whose organizations had a turnover of less than 33 million euros.

Of the organizations that responded to the survey with a turnover between 33-66 million euros, three belonged to the chemical industry sector, two to the other manufactured industry sector and one from both the metal industry products sector and forest industry sector. Out of the organizations with a turnover greater than 66 million euros, two belonged to the metal industry products sector and one to the other manufactured industry sector. No responses were received from participants whose organizations belonged to the food, beverages and tobacco sector or the textiles, clothes, leather and leather products sector.

Figure 2. Answers received for the first and second survey question (Mulrooney 2023)

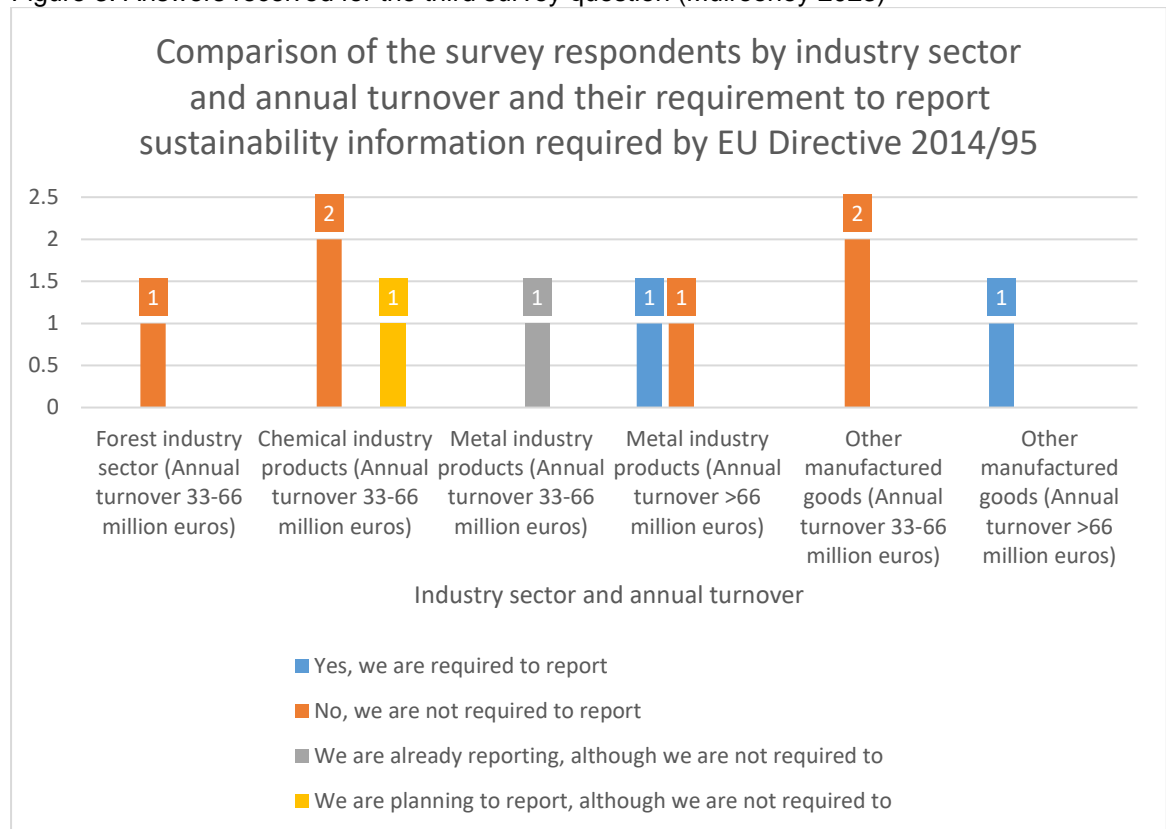


4.3 Answers to the third survey question: Is your organization required to report your sustainability information according to EU directive at the moment 2014/95/EU?

The participants from five organizations with an annual turnover between 33-66 million euros and one participant from an organization with an annual turnover greater than 66 million euros disclosed that their organizations are not currently required to report sustainability information according to EU Directive 2014/95. A

participant whose organization belongs to the chemical industry products sector with an annual turnover between 33-66 million euros disclosed that they are planning to report sustainability information although they are not currently required to. An organization belonging to the metal industry products sector with an annual turnover between 33-66 million euros disclosed that they are already reporting sustainability information even though they are not currently required to report. Two participants whose organization’s annual turnover is greater than 66 million euros, one from the metal industry products sector and one from the other manufactured goods sector, disclosed that they are required by EU Directive 2014/95 to report sustainability information. In total, 20% of the survey participants are currently required to report sustainability information.

Figure 3. Answers received for the third survey question (Mulrooney 2023)



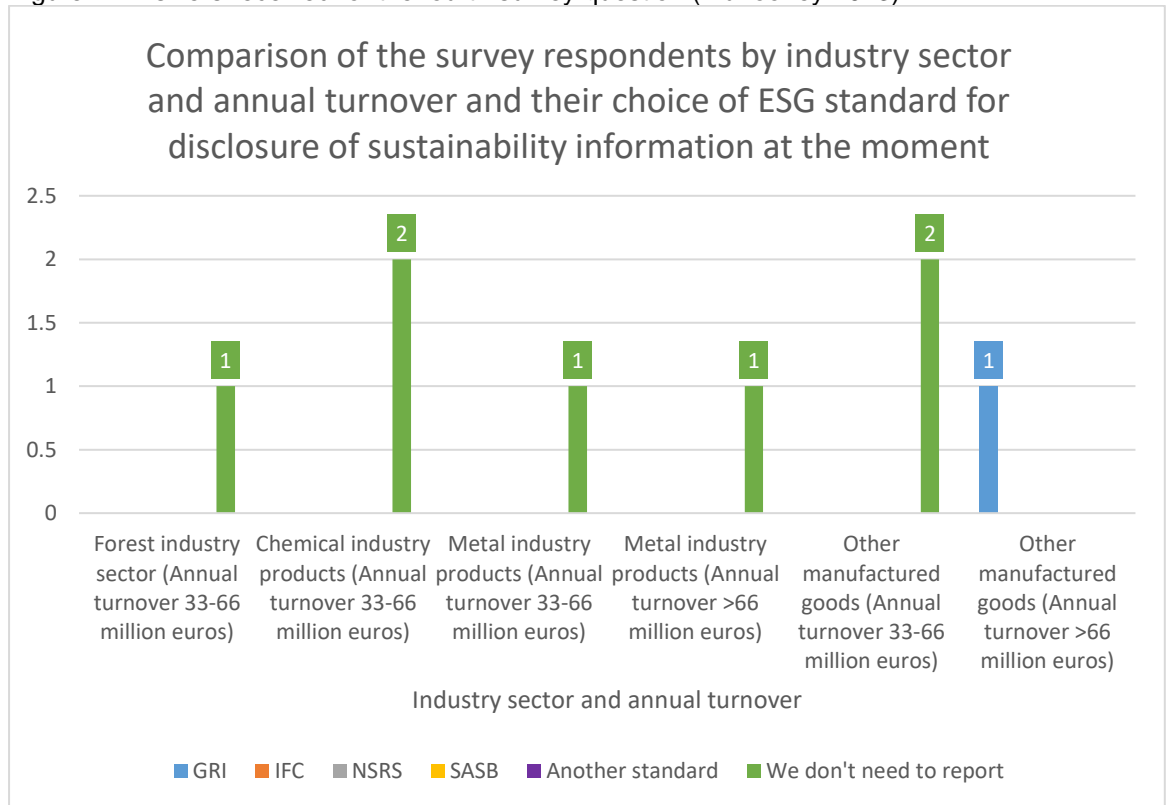
4.4 Answers to the fourth survey question: Which standard do you use to report sustainability information?

An organization from the other manufactured goods sector with an annual turnover greater than 66 million euros disclosed that they use the GRI standard to

report sustainability information. Seven participants disclosed that their organizations do not need to report sustainability information at the moment. Two participants did not provide an answer to this question.

There is an uncertainty in the answer given by the organization belonging to the metal industry products sector with an annual turnover between 33-66 million euros since they disclosed in this question that they do not need to report sustainability information, while in the previous question, they disclosed that they are already reporting sustainability information.

Figure 4. Answers received for the fourth survey question (Mulrooney 2023)

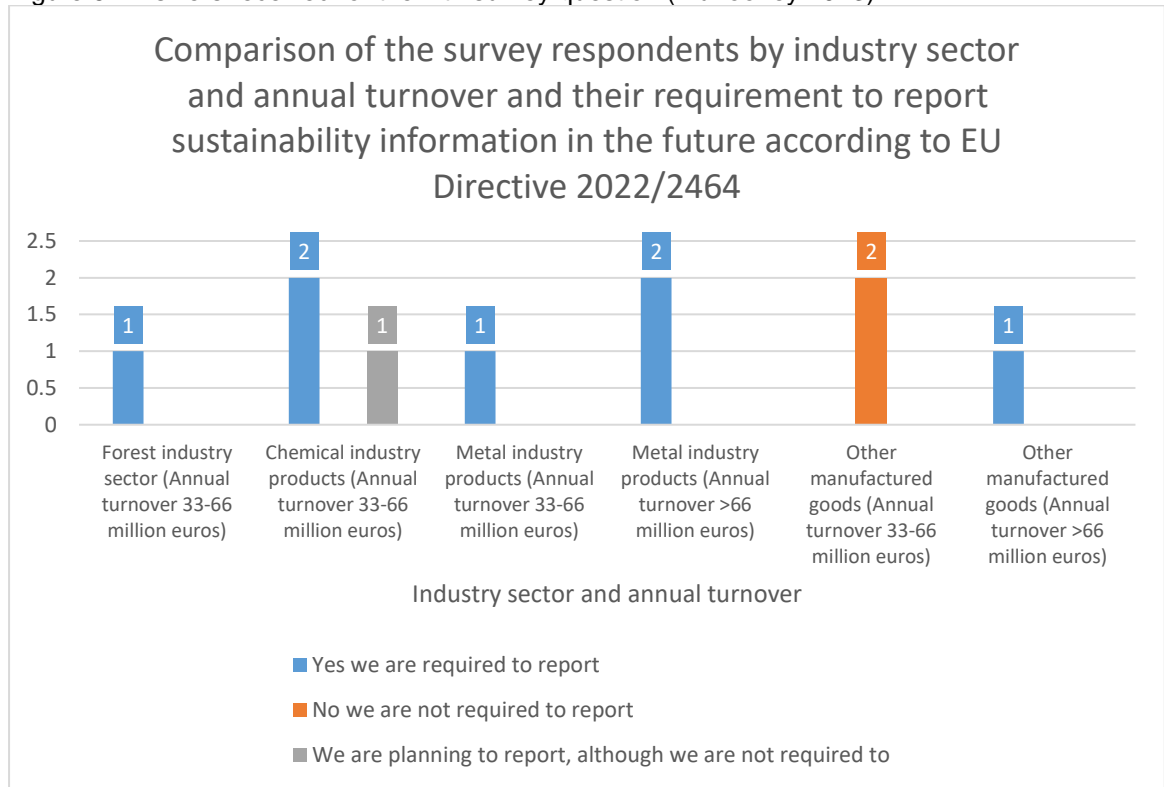


4.5 Answers to the fifth survey question: Is your organization required to report sustainability information in the future according to EU directive 2022/2464?

Seven participants disclosed that their organizations will be required to begin reporting sustainability information in the future according to EU Directive 2022/2464. The percentage increase in the number of survey participants whose

organizations are required to begin reporting sustainability information in the future compared to now is 50%. Two organizations from the other manufactured goods sector with an annual turnover between 33-66 million euros disclosed that they are not required to report sustainability information in the future and one organization from the chemical industry products sector with an annual turnover between 33-66 million euros disclosed that they are not required to report sustainability information in the future but will nevertheless begin reporting.

Figure 5. Answers received for the fifth survey question (Mulrooney 2023)

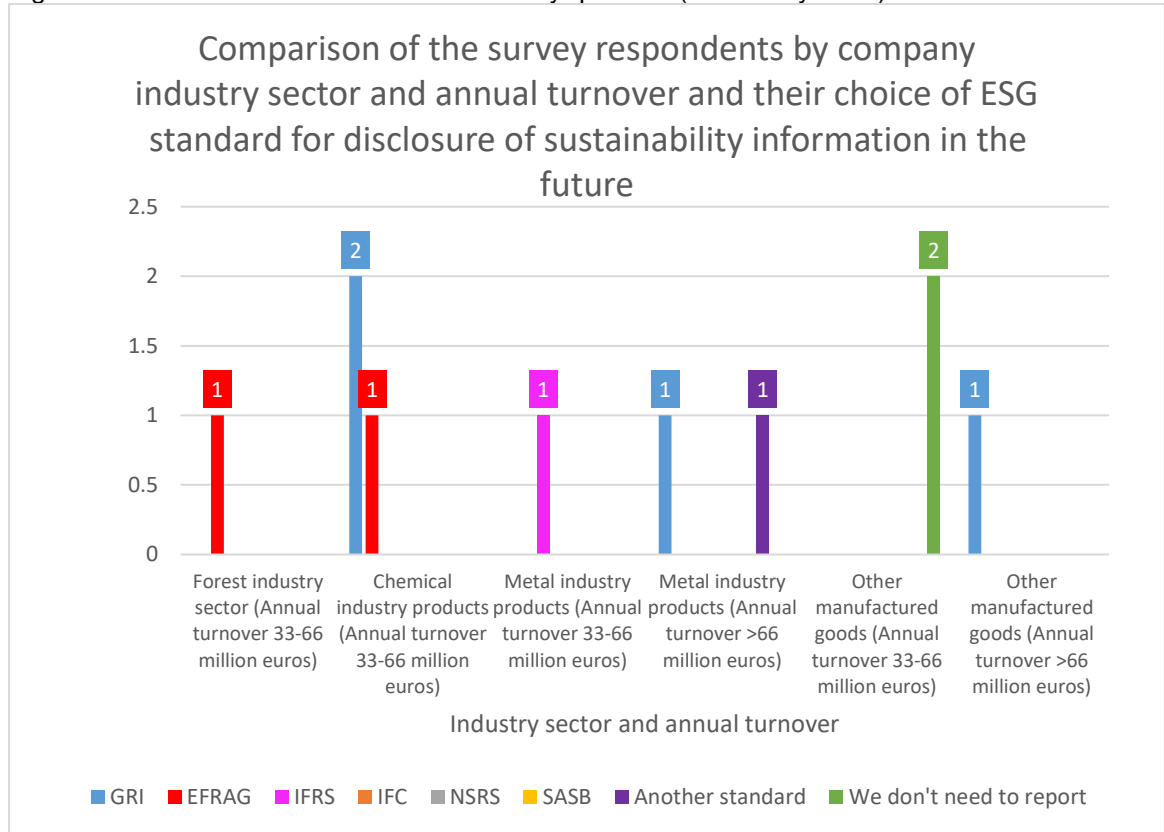


4.6 Answers to the sixth survey question: Which ESG standard does your company plan to use in the future to report sustainability information?

Four participants, two from the chemical industry products sector with an annual turnover between 33-66 million euros and one from both the metal industry products sector and the other manufactured goods sector with an annual turnover greater than 66 million euros, disclosed that their organizations will report sustainability information in the future using GRI standard. Standards published by EFRAG (ESRS) will be used by two organizations with a turnover between 33-66 million euros, one from the forest industry products sector and one from the

chemical industry products sector. IFRS standards will be used by one organization from the metal industry product sector with a turnover between 33-66 million euros. An organization from the metal industry products sector with a turnover greater than 66 million euros will use a standard that has not been included in this study or survey.

Figure 6. Answers received for the sixth survey question (Mulrooney 2023)

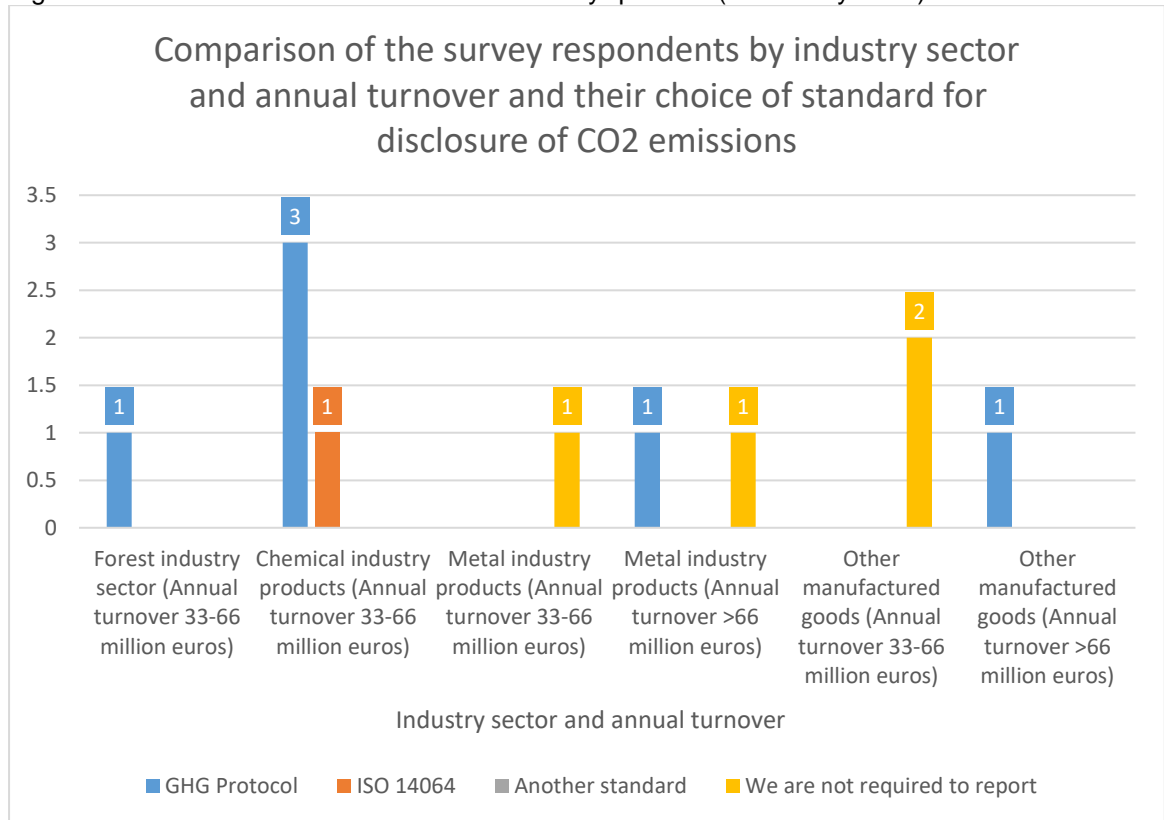


4.7 Answers to the seventh survey question: Which standard does your organization use to report CO2 emissions?

Six participants disclosed that their organizations use the GHG protocol for the reporting of CO₂ emissions. Out of the six, four of the organizations have an annual turnover between 33-66 million euros, one from the forest industry products sector and three from the chemical industry products sector, while two organizations have an annual turnover greater than 66 million euros, one from the metal industry products sector and one from other manufactured goods sector. In total, the GHG protocol is being used by 60% of the organizations that

participated in this survey and 100% of the organizations that calculate GHG emissions. One organization from the chemical industry products sector disclosed that they use both the GHG protocol and the ISO 14064 standard to report CO₂ emissions. Four organizations, three with annual turnovers greater than 66 million euros and one with an annual turnover between 33-66 million euros, disclosed that they are not required to report CO₂ emissions.

Figure 7. Answers received for the seventh survey question (Mulrooney 2023)

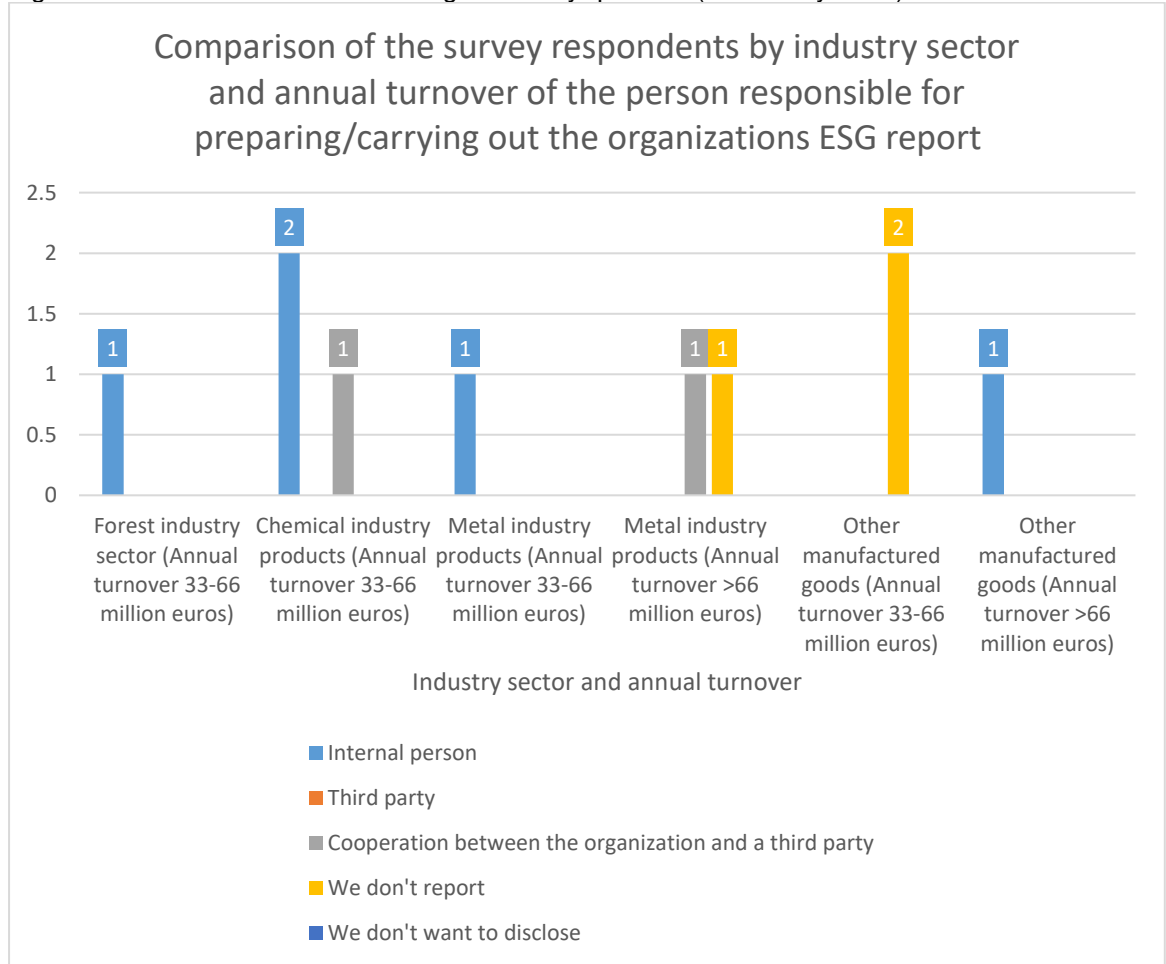


4.8 Answers to the eighth question: Is the company's environmental, social and governance (ESG) reporting carried out by an internal person or a third party?

Five participants disclosed that their organizations will use an internal person to prepare the ESG report for their organization. Of the five organizations, four have a turnover between 33-66 million euros and one has a turnover greater than 66 million euros. Two organizations will prepare their ESG report through cooperation between their organization and a third party. Three organizations do not need to carry out ESG reporting. In total, 50% of the organizations that

participated in the survey will use an internal person within their organization to prepare their ESG report, and 20% will use cooperation between an internal person from their organization and a third party.

Figure 8. Answers received for the eighth survey question (Mulrooney 2023)



5 DISCUSSION

The data gathered in the results section of this study show that the number of organizations in the manufacturing sector that will be required to report sustainability information in the near future is increasing. Twenty percent of the participants disclosed that they are currently required to report sustainability information. However, 70% of the participants disclosed that their organizations will need to report sustainability information required by the Corporate Sustainability Reporting Directive (Directive 2022/2464) in the future, an increase of 50%.

The results of the sixth survey question provide evidence that organizations do not have an aligned opinion on their choice of standard for reporting sustainability information. Out of the eight organizations that disclosed that they are required to report sustainability information in the future, four different standards were chosen among them.

The GRI standards were the most popular choice of standard for reporting sustainability information. Fifty percent of the participating organizations that will report sustainability information in the future intend to use GRI standards. This result was expected due to the popularity of GRI standards. The Global Reporting Initiative has reported that four out of five large global organizations currently report using the GRI standards. (Four-in-five largest global companies report with GRI, 2022).

When comparing all of the organizations in the study, the ESRS standards were the second most popular choice of standard for reporting sustainability information in the future, as two participants disclosed that their organizations are planning to use them. However, when comparing the organizations with a turnover between 33-66 million euros, the ESRS standards were the joint most popular choice of standard for sustainability information reporting in the future alongside the GRI standards. It is understandable that certain organizations have chosen to use the ESRS standards to report sustainability information in the future, as these standards are fully compliant with the Corporate Sustainability Reporting Directive (ESRS 1 General requirements 2022, 5).

One organization is planning to use IFRS standards. However, they will also need to use another standard that discloses sustainability information from a double materiality perspective to comply with the Corporate Sustainability Reporting Directive, since the IFRS standards focus only on sustainability information that is material from a financial perspective (Directive (EU) 2022/2464, 10; IFRS S1 General Requirements for Disclosure of Sustainability-related Financial Information: 2023, 17).

No organizations disclosed that they use either the IFC, SASB or NSRS standards. This result is understandable because IFC performance standards and SASB standards differ significantly in “size” from the other ESG standards introduced in this study. These standards do not cover the entire scope of European Union legislation, such as the Corporate Sustainability Reporting Directive, unlike standards such as the ESRS. (Directive (EU) 2022/2464, 28; ESRS 1 General requirements 2022, 5; INDUSTRIAL MACHINERY & GOODS: 2018, 6; Performance Standards on Environmental and Social Sustainability 2012, 1). It is also understandable why the NSRS standards were not chosen by the participants of the survey. The standard is relatively new, having only been published in 2021, which explains its low popularity (History of NSRS n.d).

The results of the seventh survey question provided evidence to that organizations agree on the best standard for calculating CO₂ emissions. The GHG protocol standard was used by 100% of the participants who disclosed that they calculate CO₂ emissions. This result was expected, as the GHG protocol standards have been widely adopted. The percentage of organizations in the Fortune 500 that used the standards provided by the Greenhouse Gas Protocol Initiative or similar frameworks based on the GHG protocol standards in 2016 was 92%. (Standards n.d.).

One organization disclosed that they use both the ISO 14064 standard and the GHG protocol standard. The reason for this choice may be that while the ISO 14064 standard provides guidance to report CO₂ emissions, it does not provide a methodology to calculate them (SFS-EN ISO 14064-1:en 2019, 16, 17). Therefore, the organization might have chosen to use the methodology provided by the GHG protocol standards.

6 CONCLUSION

Based on the results of the literature review and the survey, I recommend that Casemet Oy adopts the ESRS standards to report sustainability information.

Currently, the ESRS standard is the only standard that is 100% compatible with the requirements of the Corporate Sustainability Reporting Directive (Directive (EU) 2022/2464, 13; ESRS 1 General requirements 2022, 5,6). Additionally, out of the organizations participating in the survey with an annual turnover between 33-66 million euros, the criteria for similarity with Casemet Oy, the ESRS standard was the joint most popular choice of standard for reporting sustainability information in the future.

Furthermore, I recommend that Casemet Oy uses the GHG protocol standard to calculate their CO₂ emissions. The standard is being used by 100% of the survey participants who disclosed that they calculate their CO₂ emissions. Additionally, the GHG protocol standard is recommended by the ESRS standard for calculating Scope 1, 2 and 3 greenhouse gas emissions (Directive (EU) 2022/2464, 29, 37; ESRS E2 Climate change, 31; ESRS 2 General disclosures 2022, 28).

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