Graduation Project – Final Report
Master's in Sustainable Energy Technology

Non-financial disclosure strategies and their implementation in the energy sector: an analysis and inventory of best practices

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Embargo end date: 26 July 2023

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Abstract

Purpose
Motivated by the latest development of the European Union Directive 2014/95 on non-financial and diversity information supplemented with the Task Force for Climate-related Financial Disclosure (TCFD), this research intends to build an inventory of non-financial disclosures and best practices. Further, this research explores the non-financial disclosure strategies and implementation within the energy and utility companies based in The Netherlands.

Design/methodology/approach
This research proposes a mixed methodologies approach to measure non-financial disclosure based on the public reports and examines the strategies to achieve non-financial disclosure best practices. First, the research utilizes in-depth analysis to do the non-financial disclosure frameworks benchmarking and content analysis to assess the public reports. Second, further investigation is conducted through a case study with semi-structured interviews to discover the phenomena in actual practice and serve as a basis to develop recommendations.

Findings
Most energy and utility companies have a high degree of non-financial disclosure maturity based on the EU Directive. In comparison, they have several difficulties in implementing the TCFD recommendations in practice. Furthermore, more in-depth investigations reveal that the challenge lies in the governance process, especially in the management's attention towards non-financial information and the data collection process.

Added value
This thesis suggests a recommended approach to developing non-financial metrics based on the available best practices and integrating the corporates' strategic objectives. Additionally, the research demonstrated the approach to the case studies with the prior conducted assessments from the public reports.

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1. Background of the project

1.1 Introduction

Climate ambition and non-financial information definition

Throughout the world, the Sustainable Development Goals (SDGs) have become a main priority. Concerns about climate change, nature loss, and social unrest have also influenced how businesses and industries operate. To keep track of progress towards these ambitions, corporations, investors, and other relevant stakeholders rely on non-financial information in addition to the traditional financial performance indicators. Non-financial information has become increasingly important following the emergence of the stakeholder capitalism movement (Berle & Means, 1991; Denning, 2020), as evidenced by the recent World Economic Forum 2020 Agenda: Measuring Stakeholder Capitalism (World Economic Forum, 2020b). Stakeholder capitalism challenges the traditional capital market's view, which assumes that companies are solely responsible to their shareholders (Friedman, 1970). Non-financial information enables the accountability for the corporates' impacts in a broader set of stakeholders. Companies have acknowledged environmental, social governance (ESG) as a strategic tool to grow and create social capital. At the same time, investors are eager to know how exactly profits are generated by companies (Amel-Zadeh, 2018). Thus, companies, investors, and other stakeholders are driving the primary interest in the development of non-financial information.

In general, non-financial information covers the scope of environmental, social, and governance aspects of corporates' activities. Climate change is one of the subsets of the environmental scope of the non-financial information. Typically, the timelines of business, political cycles, and technocratic authorities like central banks do not address climate change risks (Carney, 2015). Up until the Task Force on Climate-Related Financial Disclosure (TCFD) released a report in 2017 that demonstrated the framework and commitments from the various organizations. The elements in the report include the importance of pricing risk transparency and climate-related risks consideration to support the decision-making or efficient capital allocation (TCFD, 2020). Furthermore, the science-based target lays out the pathways and emissions trajectory to prevent the increase of global average temperature to 2°C above the pre-industrial level. The 2°C scenario became a common reference point aligned with the Paris Agreement and investors' evaluation of the scale and time frame of transition-related implications across sectors (TCFD, 2017).

The role of the energy sector

One of the critical sectors for realizing climate ambitions and the SDGs is the energy and utility sector. According to Our World in Data, a non-profit organization and collaboration of the University of Oxford and Global Change Data Lab, the energy and utility sector is the largest global greenhouse gas (GHG) emitting sector (with an absolute amount of 35.56 billion tons CO_2-eq) and accounted for 72% of the total global GHG emissions. The energy and utility sector covers a broad subset of activities, including carbon-intensive activities such as oil and gas (from exploration, production, midstream, refining, and services), coal operations, electric utilities, power generators, gas utilities & distributors, and renewable sources (biofuels, solar or wind technology). This sector thus covers the activities across the entire value chain. More specifically, most emissions come from 24.5% of energy use in industry (electricity & heat sector), 16.2% of transport (direct and indirect emissions from burning fossil fuels), 17.5% of energy use in buildings (residential and commercial), and 13.8% of unallocated fuel combustion and energy production (production of electricity from biomass, combined heat, and power, oil and gas, coal) (Our World in Data & Climate Watch, 2020). To be aligned with the Paris Agreement, the sector must transition from high-carbon revenue streams to low-carbon alternatives, integrating sustainability metrics into their core strategies (Shaw & Donovan, 2019). Non-financial disclosure may thus help companies in the energy sector monitor and report progress towards the long-term sustainability goals.

Although in 2020, the pandemic caused a decline in global emissions, this was not enough yet to guarantee a future sustainable energy scenario (Birol, 2020). IEA expects the global energy demand will bounce back to 2019 levels in 2022 in their Stated Policies Scenario. It assumes that the world will bring Covid-19 under control. In the Delayed Recovery Scenario that considers prolonged damage to economic development, global energy demand would be back at pre-pandemic levels in 2025 (IEA, 2020).

Metrics for non-financial information

Over the years, the absence of one aligned standard is the main challenge to implement non-financial information metrics. According to Eccles and Kruz, the problem is perceived the most by companies and investors (Eccles & Krzus, 2015). Companies experience a strong push for accountable measurements of their impacts by their customers, social activists, and the government. Investors demand these metrics to monitor long-term sustainable investments and transparency on their portfolios' material issues (Klimenko & Eccles, 2019). The terms "material" or "materiality" refer to information that is important, relevant, and critical to long-term value creation (World Economic Forum, 2020b). These terms are used widely in the available standard frameworks and regulation levels. Several organizations have developed frameworks, including the Global Reporting Initiative (GRI) and the World Economic Forum framework, that attempted to integrate with available standards (Eccles, 2020). However, the increasing number of guidelines mainly complicated the interpretations of ESG indicators (Eccles & Saltzman, 2011; Eccles & Youmans, 2015). It is a challenge for companies to understand which metrics they can best use to track their performance. Both corporations and investors have raised concerns about the high number of frameworks and potentially contradictory impact-type disclosures (WBCSD, 2019). For example, the International Accounting Standards Board's Chair underlined this challenge in his speech: "First, there are simply too many standards and initiatives in the space of sustainability reporting. This leads to a lot of confusion among users and companies themselves. […] Moreover, with so many standards, the potential for disclosure overload is enormous. Consolidation is clearly needed" (IFRS, 2019).

The maturity level of non-financial disclosure and strategic sustainability objectives

This section defined the maturity level on non-financial disclosure based on several key aspects: innovation & technology, stakeholder collaboration, sustainability reporting, specific ESG-related topics, and governance (Baumgartner & Ebner, 2010; Meza-Ruiz et al., 2017). Baumgartner coined three defined maturity levels to distinguish how differently sustainability objectives integrated into the strategies and how the sustainability aspect can occur in a company. These three maturity levels are compliance-driven, positive impacts on society, and integrated value creation.

Compliance-driven means that the companies are in the early phase to comply with the existing laws and regulations. Their sustainability reporting is a one-way communication channel with limited relevant collaboration between relevant business partners such as suppliers and customers. In terms of ESG-related topics, they will start assessing or identifying the impacts of their actions and conformity within the national laws and regulations. In addition, they focus on the mandatory framework for corporate governance.

In the later stage to produce positive impacts on society, the companies are more aware of their initiatives. They invest more in sustainability-related R&D or initiatives than their peers or industry average. The scope of the stakeholder collaboration is growing larger, including more diverse stakeholders such as business partners, NGOs, institutions, and R&D entities. Their sustainability reporting is well-structured, with clearly defined goals and measurements of the identified aggregate environmental and social impacts. They move from conforming to the laws and regulations to producing positive impacts through their initiatives. Furthermore, these companies start to settle their measures to ensure corporate transparency and business processes to support sustainability issues ~~and~~ take more voluntary participation in other reporting frameworks.

Finally, the companies integrate their sustainability objectives across their business activities and internal stakeholders in the integrated value creation stage. They have significantly higher efforts in sustainability development than the industry average. There is a consequent two-way communication and close collaboration between stakeholders (business partners, institutions, and R&D, and other stakeholders). The companies have a leading and proactive role regarding sustainability issues. Moreover, the report is structured clearly and concisely, mapping the company's strategic objectives, value chain, goals and measure the progress of each element of relevant ESG topics. The mandatory and voluntary framework will supplement the report towards the accountable corporate governance process with a higher level of non-financial information transparency.

At the highest maturity level of non-financial disclosure, sustainability objectives are not separate entities from the corporate strategic objectives. Instead, the sustainability topics are integrated into the business to oversee the strategy and monitor progress. The integration occurs within the whole value chain with the dedicated governance structure (Kurznack et al., 2021; Visser & Kymal, 2015).

Problem definition and knowledge gap

The absence of standard metrics for non-financial reporting presents a knowledge gap. Further, several researchers also found a lack of awareness among the academics regarding how accounting non-financial metrics can further support the UN SDGs' accountability (Bebbington & Unerman, 2018). Moreover, this research explores further the suggestions based on the potential in the climate-related financial reporting towards sustainability accounting in terms of accounting for the climate risks and opportunities. Notably, it integrates the main themes of the reporting alignment with other sustainability reporting frameworks between the EU Directive guidelines and challenges in implementing climate-related financial reporting (O'Dwyer & Unerman, 2020).

This research seeks to align different policies and internationally recognized standards by building the inventory of best practices through a systematic review of industry best practices, interviews, and case study research. The research results suggest standardized metrics that allow companies to incorporate sustainability objectives in their strategic objectives.

1.2 Research objective

The first primary outcome of the thesis is an analysis of the companies' maturity level on non-financial disclosures, namely in the energy and utility sector within Europe, and a focus on the Netherlands region regarding EU Directive and TCFD recommendations for the climate-related disclosure. Second, the thesis will investigate further the current practice in the field through semi-structured interviews on selected case studies. The results of the interviews will provide deeper insights into the strategies and critical processes for sustainability reporting and key performance indicators (KPIs) that companies use to achieve the best practices in the context of EU regulations and TCFD recommendations.

1.3 Research questions

The following two research questions (RQs) guide the research:

> **RQ 1.0.** How to measure and analyze the maturity level of non-financial disclosure and corporate strategies towards sustainability in the energy sector?
>
> **RQ 2.0.** What are the strategies to achieve non-financial disclosure best practices for the companies in the energy sector?

Thus, there are derived intermediate questions that can help to answer two main research questions,

RQ 1.1. What are the available current best practices of the non-financial disclosure framework?

RQ 2.1. What are the further implications of non-financial disclosure for the companies' internal strategy?

1.4 Scientific and practical relevance

Based on Eccles and Shaw's findings, the disclosures and reportings of energy companies have improved since the initial release of TCFD recommendations in 2017. Most of the major oil players have started diversifying into new technologies or low carbon portfolios (e.g., wind power, thermal, carbon capture, hydrogen, energy efficiency management). These companies have positioned themselves to be ready for a low-energy transition, while the TCFD recommendations structured the context and suggestions of these low carbon technologies implementation (Eccles & Krzus, 2018; Shaw & Donovan, 2019). However, there is still a lack of exploration of TCFD reporting substantively in the academic works of literature (O'Dwyer & Unerman, 2020; The Reporting Exchange, 2020).

Once these companies have identified the climate-related risks and opportunities, both companies and the finance sector need to incorporate the risk and opportunities information into their corporate management process and risk analysis. This situation presents a significant challenge when corporations are committed to reporting based on TCFD principles. O'Dwyer et al. suggested focusing more research into several themes of sustainability reporting (TCFD recommendations) aligned with the research area of the reporting alignment and implementation themes: resilience assessments and strategic-decision making process related to external reporting (O'Dwyer & Unerman, 2020).

The scientific relevance of this research covers two main points. First, this research will contribute to non-financial reporting and build an inventory of best practices from the existing developed frameworks with the primary reference of EU Directives and TCFD guidelines. Then, this research will employ the diagnostic methods to assess the maturity level based on public reports and in-depth case studies. Second, a step-by-step recommendation to develop non-financial metrics is suggested and demonstrated in the case studies. This proposed recommendation will offer a unique approach to integrate the sustainability objective with the corporate strategic objectives.

Improvement of the non-financial information data collection will enhance the companies' management to make informed decisions enhanced with sustainability objectives that prioritize a broader group of stakeholders' values. Thus, this research will contribute to a study to drive the company's strategic objective supplemented with sustainability objectives that lead to a sustainable business model or technological change. The targets and ambitions embedded in the company's strategic objectives will be translated into long-term investments for the new project initiatives and programs that encourage the process and product innovations such as lower carbon or the alternatives for sustainable energy technology.

1.5 Internship objective and added values

The role of big accounting firms such as PricewaterhouseCoopers, as the partner of this thesis research, mainly serves two functions related to sustainability reporting (Eccles & Krzus, 2015). First, as a service provider, assisting companies to prepare and publish their integrated report (financial and non-financial disclosure) provides external assurance for their corporate strategy to sustainable practices. On the other hand, the advisory practices offer the knowledge and know-how to the companies to help them achieve the integration of ESG metrics into their internal operations and strategy. They tend to be a "meaning maker" to influence the definition of non-financial reporting.

The second one is a more significant push of advocacy to develop a global standard and raise the urgency of developing the holistic standardized integrated reporting framework. Within the capability and the global scale to conduct audits of the world's total largest corporations – the Big Four accounting firms are essential to ensure the quality of the information investors to make decisions (Eccles & Krzus, 2015). Furthermore, there was already a concrete global action within these four global companies in 2020 to acknowledge the sustainability accounting issue and supporting it in the World Economic Forum (WEF) white paper (World Economic Forum, 2020a).

2. Literature review and theoretical background

2.1 Frameworks for sustainability reporting

It elaborates the core strategies of the organizations to create long-term value creation to the three pillars of environmental, social, and governance (ESG). After the UN General Assembly adopted the 2030 Agenda for "Plan of action for people, planet, and prosperity" (United Nations General Assembly, 2015), a large number of organizations ranging from non-profit, for-profit companies have set up ambitious SDG targets. Various internal or external factors influence an organization's ability to identify its sustainability issues and report its sustainability targets (Hahn & Kühnen, 2013). Sustainability reporting plays a part in tracking organizations' actions and ambitions into tangible actions and impacts. There are several types of sustainability reporting: the corporate social responsibility report, sustainability report, climate reporting, and integrated reporting. More recently, there is a trend to link the sustainability impacts to the financial performance of the organizations, namely integrated reporting. Integrated reporting has served a primary function to communicate a company's behavior and commitment towards a more sustainable society to the internal and external stakeholders and as feedback to bring change more actively (Eccles & Krzus, 2015). In essence, the whole sustainability reporting supports the Paris Agreement goals (UN Climate Change, 2017) practically in standards for reporting on enterprise value and as a tool to help organizations or companies transitioning into sustainable practices.

2.1.1 Policies developments of sustainability reporting

The EU Directive (Directive 2014/95/EU), also called the non-financial reporting directive (NFRD), presents a major milestone for sustainability reporting. The directive mandates non-financial and diversity information disclosure by companies and pushes companies to include non-financial statements in their annual reports (EU Commission, 2020b). The directive was further strengthened by EU Guidelines 2017/C215/01 to ensure disclosing high-quality, comparable ESG-related information and linking related metrics to sustainable growth and transparency (Manes-Rossi et al., 2018).

The subset of the EU Green Deal on sustainable finance further established the sustainability reporting in 2020. Later, the EU Commission formed an extended report on EU Taxonomy Regulation in June 2020. The regulation established six environmental objectives related to climate change, circular economy and resources, and pollution biodiversity problems (EU Commission, 2020a). The EU sustainable finance taxonomy applies to all companies, not only to the financial sector. All companies covered by the regulations must provide non-financial information and classify their turnover or expenditure if they are sustainable (PwC, 2020). The earliest obligation for the taxonomy regulation implementation is set for January 2022 for two main objectives: climate mitigation and climate adaptation (Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the Establishment of a Framework to Facilitate Sustainable Investment, and Amending Regulation (EU) 2019/2088, 2020).

2.1.2 Overview of the standards and frameworks

Starting from early 2020, the IFRS (International Financial Reporting Standards) and IFAC (International Federation of Accountants) have acknowledged the critical need for standards for non-financial information. The large significant progress has been developed by the key foundational work of five NGOs (The Five) and Task Force to establish a global set of standards for companies to report on their non-financial information:

- TCFD (Task Force for Climate-related Financial Disclosure)
- CDP (Climate Disclosure Project)
- CDSB (Climate Disclosure Standards Board)
- GRI (Global Reporting Initiative)
- IIRC (International Integrated Reporting Council)
- SASB (Sustainability Accounting Standards Board)

Although each NGO has a unique approach to the ESG standards and reporting, the progress is complementary rather than overlapping. This step was demonstrated clearly by "The Five" by publishing "Statement of Intent to Work Together Towards Comprehensive Corporate Reporting" facilitated by the World Economic Forum, Deloitte, and Impact Management Project.

Based on Eccles' discussions with the CEOs from the five NGOs, all five expressed the sense of urgency as the primary driver to deliver harmonized standards as companies and investors have been expressing confusion regarding various frameworks and standards. The Statement can set up the foundation to build collaboration, rationalization, and harmonization between these five and bring decision-ready ESG information to the capital market (Eccles, 2020).

2.1.3 Standards and frameworks development

- TCFD (Task Force for Climate-related Financial Disclosure)

The Financial Stability Board established the Task Force on Climate-related Financial Disclosures (TCFD) in 2015, initiated by G20 Finance Ministers and Central Bank Governors. TCFD selected 29 members from various organizations from large banks, accounting, and consulting firms (Financial Stability Board (FSB), 2016). They released the framework in 2017 to link climate risks and opportunities with financial impacts and scenario-based analysis (TCFD, 2017). The TCFD 2020 status report mentioned that nearly 700 organizations supported the recommendations, and up to 1700 companies have consistently reported over three years. TCFD recommendations were also integrated into its "Guidelines on Reporting Climate-related Information" by EU Commissions in June 2019 (TCFD, 2020).

Upon the release of the TCFD recommendations, several academics have investigated the first assessment of the corporate readiness towards the implementation of TCFD's recommendation. Eccles et al. argued from the "field experiments" of the 15 largest oil & gas companies in 2018 by market capitalization. Most of the companies made relatively modest and progressive disclosures. Few companies performed according to the recommendations (Eccles & Krzus, 2018). The assessment was conducted by including four broad themes aligned with TCFD final report: governance, strategy, risk management, metrics, and targets. However, the disclosure also posed substantial risks in governance and materiality, especially in adjusting the board's thinking about material issues and legal risk if someone would suffer a loss based on inaccurate information disclosures (Ali, 2017; Brooksbank, 2017). From the results of this assessment, there are three companies that year provided the most robust disclosures: Eni, ExxonMobil, and Statoil (Equinor). Eni addressed the four high-level disclosure recommendations, while Statoil elaborated the connection between compensation and environmental-social target. ExxonMobil also reported on asset impairment risks, research, and investments in new technologies and energies consistently with TCFD recommendations (Eccles & Krzus, 2018).

Shaw et al. analyzed further the development of preparedness of these major oil companies in 2019 by comprehensive public data (annual reports, strategy statements, press releases). Based on the analysis, the positions are changing in terms of climate risk strategy. Equinor, Shell, and Total are the most prepared company in line with TCFD guidelines. Shell and Total have been actively involved in disclosure reports in the implementation and metrics & targets parameters, which offered concrete actions and insights to investors to reduce the 'greenwashing' factors (Shaw & Donovan, 2019).

- GRI (Global Reporting Initiative)

In general, there are five different non-profit organizations and initiatives that have been developed globally. It is traced from the Global Reporting Initiative (GRI), founded in Boston, the USA, in 1997 and then relocated to Amsterdam. GRI has provided several guidelines from G1 (2000) until the latest GRI Sustainability Reporting Standards (2016) that include several revisions of guidelines. GRI guidelines focused on measuring the environmental, social, and economic impact of a company on sustainable development, which is aimed at broad stakeholders and investors (Global Reporting Initiatives, 2020).

- CDP (Carbon Disclosure Project)

Carbon Disclosure Project (CDP) was launched in 2002 as an extension of the GRI's concept of environmental disclosure. CDP is a global non-profit charity focused on environmental reporting (climate, water, forest) and collecting datasets from corporates and states or region levels (Carbon Disclosure Project, 2020). The project further developed into the Climate Disclosure Standards Board (CDSB), an international consortium of business and environmental NGOs founded in 2007. CDSB established the first Climate Change Reporting Framework in 2010, focused on risks and opportunities of climate change for an organization's strategy, financial performance, and conditions. Further, it has expanded the scope of its framework to include environmental information and natural capital. (CDP worldwide, 2019)

- IIRC (International Reporting Council)

The International Integrated Reporting Council (IIRC) was later formed in 2010, a global coalition of regulators, investors, NGOs, and other stakeholders aiming at the value creation process. Their primary target audience is the provider of financial capital (investors), although it is also mentioned for the benefit of other stakeholders (International Integrated Reporting Council (IIRC), 2021). The focus of IIRC is an Integrated Reporting <IR> framework that provides principles-based guidance for companies and wishing to prepare an integrated report. It is clearly defined that <IR> Framework does not suggest specific key performance indicators (KPIs).

- SASB (Sustainability Accounting Standards Board)

In the following year, the Sustainability Accounting Standards Board (SASB) was founded in 2011 by Jean Rogers based in San Francisco, US (Rogers, 2019). SASB is a non-profit organization with a mission to connect businesses and investors on the financial impact of sustainability (SASB, 2020). Their primary focus is ESG issues that have a financially material impact on the company that serves investors' needs. Furthermore, they developed market-informed and industry-specific standards with the investors as the primary audience. SASB released its codified standards at the end of 2018. However, they suggested complementing the other available framework, such as the GRI standard (SASB, 2020).

- World Economic Forum: Measuring Stakeholder Capitalism

In the 2020 Annual Meeting located in Davos, more than 100 world's largest corporates supported the initiative to develop standard metrics and disclosures non-financial information to the investors and other stakeholders. The project developed and led by the International Business Council (IBC), a community of over 100 global CEOs, and produced a follow-up report for the consultation. Apart from that, IBC also collaborated with Deloitte, Ernest & Young, KPMG, and PwC to support the process of identifying a set of universal and material non-financial metrics. They recommended disclosures that can be used in the mainstream companies' annual reports on a consistent and timely basis across industry sectors globally. The project presented its conclusions by 21 core metrics (more established or critically important qualitative metrics for the information reported by many firms) and 34 expanded metrics (less well-established in the practice or standards and have a broader scope of the value chain).

These recommended metrics are designed under the four pillars of Governance, Planet, People, and Prosperity and aligned with the United Nations SDGs (World Economic Forum, 2020b).

- Statement of Intent to Work Together – CDP, CDSB, GRI, IIRC, SASB

The statement of intent was produced as a response from the five standards-setting institutions to resolve the confusion and demonstrate the commitment to working towards a comprehensive corporate reporting system. There are several outputs provided from the Statement of Intent report by these five organizations. First, the report elaborated on the concept of dynamic materiality, meaning that the sustainability topics that a company considered immaterial can become material based on their impacts on the environment, people, and economy. Second, the relationship between the standards and framework according to the dynamic materiality concepts. Last, providing connections of mapped disclosures from these frameworks in combination with the four pillars of the Task Force on Climate-related Financial Disclosures (Impact Management Project et al., 2020).

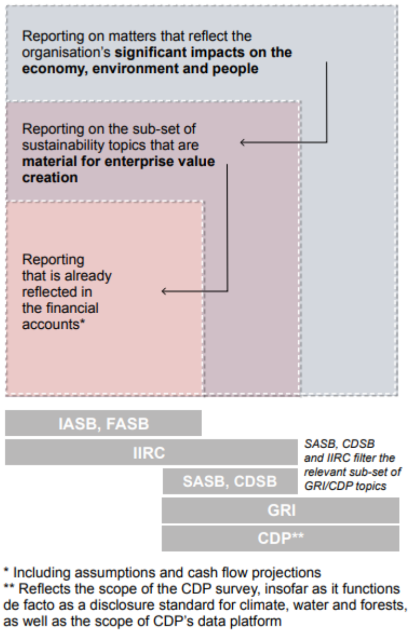


Figure 1. Dynamic materiality concept with the addressed standards (Source: Statement of Intent to Work Together Towards Comprehensive Corporate Reporting, 2020)

3. Research methodology

The research methodology consists of two phases. The first phase is to create a benchmark using the available frameworks for companies in the energy and utility sector based in The Netherlands. In the second phase, this research selected specific corporations as a case study for a detailed analysis, further investigation from an internal perspective, and applying the recommendations.

Phase 1. Analysis of publicly available reports

The primary data is gathered through publicly available reports of the companies such as sustainability reporting, corporate social responsibility (CSR) reports, annual reports for the companies that have been listed on the three primary sources. These three main data sources are Amsterdam Stock Exchange, Transparency Benchmark, and GRI database. Then to assess the implementation or maturity level, the compliance index and content analysis are used to analyze the compliance of non-financial disclosure regarding the EU regulation and TCFD guidelines. Manes-Rossi has conducted comparable analysis for all sectors based on the literature reviews and available public documents (Manes-Rossi et al., 2018). They were contrasting the key principles of the framework between three entities: European Guidelines, Integrated Reporting Framework, and GRI. Therefore, this analysis will fill a research gap to assess the maturity level of the companies' reporting based on TCFD recommendations.

This phase will focus on answering the first research question. To assess the critical points of the strategies and implementation metrics of the companies, goal-mining process, a thematic content analysis approach is used to extract specific activities from the reports (Anton & Earp, 2004; Bradford et al., 2017). By this approach, this research evaluated the alignment of company goals with the sustainability reporting frameworks and specific activities for all the samples. It served as input to the structured interviews (Bradford et al., 2017). Bradford, 2017 has used a similar method to analyze the alignment of corporate sustainability reporting and stakeholder concerns. The result of the phase is a list of ranked companies' maturity levels based on the compliance index of specific frameworks.

Phase 2. Case study and recommendations

Based on the first phase analysis outcomes, several companies will be selected for the specific test cases (Yin, 2018). The selection will also be based on the availability of project direct contact sources from the internship company partner to ensure the availability of further primary data. After that, the semi-structured interview will be conducted with direct contacts to determine the comprehensiveness of the reporting or opportunities of specific activities or metrics and develop recommendations (Farneti & Guthrie, 2009; Momin & Parker, 2013; Montecalvo et al., 2018).

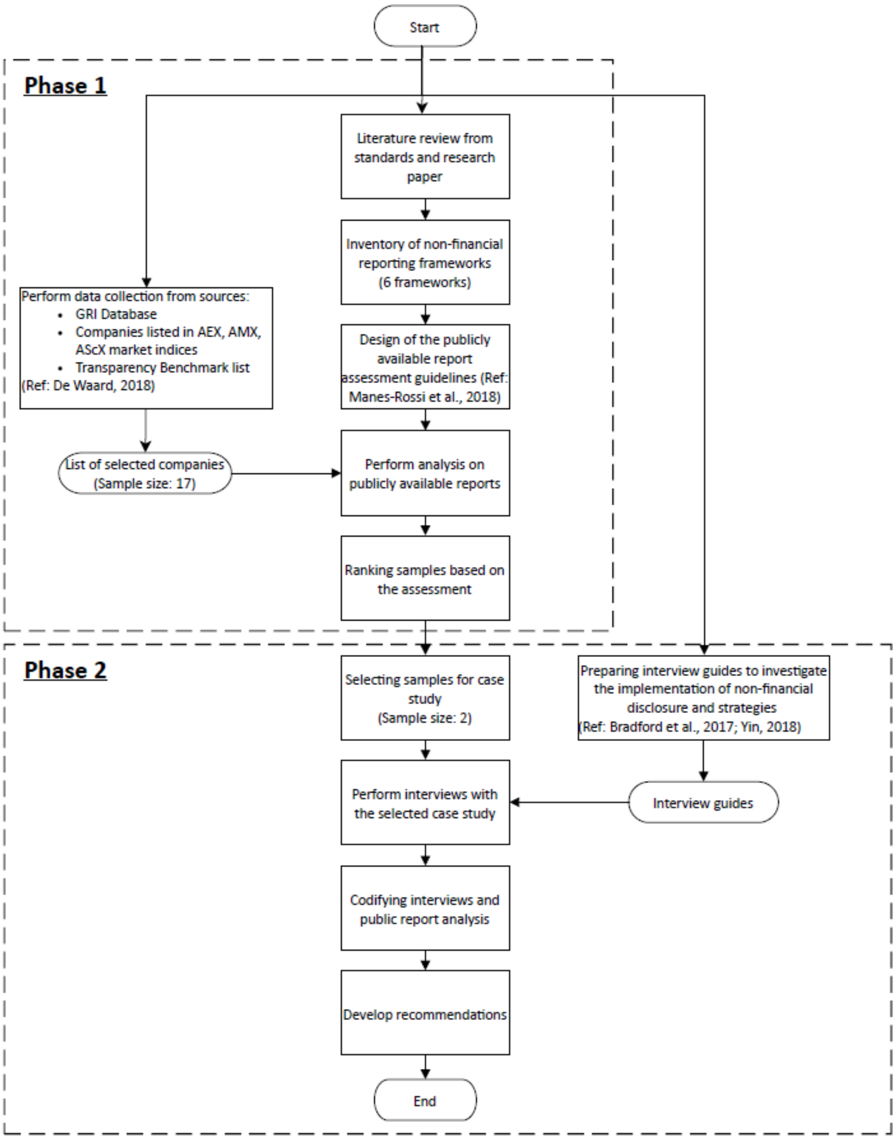


Figure 2. Flowchart thesis research process

More detailed points for the research methodology are explained in the next following section.

3.1 Benchmark of the available frameworks

This research adopted three reference frameworks as a basis for comparison for identifying the best practices, namely the EU Directive Guidelines, the Task Force on Climate-related Financial Disclosures (TCFD) recommendations, and the Global Reporting Initiative (GRI) guidelines. These reference frameworks are selected because they influence the non-financial information standard development and the most commonly used frameworks (De Villiers et al., 2017; Idowu et al., 2016; Monciardini et al., 2017; O'Dwyer & Unerman, 2020; Venturelli et al., 2017).

Based on the methodological point of view, several researchers have conducted the benchmark of the available frameworks through the in-depth analysis of the frameworks (Idowu et al., 2016; Mio & Fasan, 2017; Monciardini et al., 2017). This thesis research further extends the benchmark analysis to the TCFD recommendations. The references were gathered from the frameworks' official sources (websites and reports) (EU Commission, 2020b; GRI, 2020; TCFD, 2017, 2020). Each framework has its way of expressing the information, from qualitative responses to detailed quantitative measurements. By definition, the way to transmit the information is termed by key principles. While the detailed methodology to disclose certain topics and specific information is defined by the content elements. Therefore, this thesis research compares the three frameworks by the key principles (see Table 7) and later the detailed content elements in the analysis of the maturity level of the public reports.

3.2 Analysis of the maturity level of the publicly available reports

This study analyzed the extent to which the publicly available reports from the companies adhere to the non-financial reporting requirement as laid down in the EU Directive and Task Force on Climate-related Financial Disclosure. This research identified whether the companies disclose their content elements required by the EU Directive or TCFD recommendations using the content analysis methodology. Content analysis is described as "a technique for gathering data that involves codifying qualitative and quantitative information to derive patterns in the presentation and reporting of information" (Guthrie & Abeysekera, 2006). The assessment of the presence or absence of particular information items is one of the most commonly used variants of content analysis (Patten, 2002; Setia et al., 2015).

Analysis of the content elements

In this assessment, the content analysis was executed manually by systematically reading the publicly available reports in their entirety. This approach is also referred to as the compliance index method (Krippendorff, 2018; Venturelli et al., 2017). This research used the compliance index to quantify the completeness of the non-financial disclosure elements (Busco et al., 2020; Manes-Rossi et al., 2018).

A range of score numbers is developed to quantify the degree of the absence or presence of information. This range further extends the dichotomous coding system of 0 and 1 that previous studies have conducted (Almasan et al., 2016; Incollingo & Bianchi, 2017; Venturelli et al., 2017). The assessment attached a range of 0 (No mention of the related element) to 3 (Fully disclosed element) to quantify the information. Then, the compliance index is employed to quantify the compliance of the reports with the EU Guidelines and Task Force on Climate-related Financial Disclosures (TCFD).

Table 1. Scoring reference for the checklist

Score number	Description
0	No mention of the related element
1	Disclosure only in one section/paragraph
2	Partial disclosure from the referenced points (qualitative)
3	Full disclosure from the referenced points (quantitative and qualitative)

Then, the score is divided by three and put into the respective element. Each element has a final scoring ranged from 0 (Low) to 1 (High).

Based on European Directive 2017 on Non-Financial Reporting Disclosure (NFRD) guidelines, six elements are required to be published:

1. Business model
2. Policies and Due Diligence
3. Outcomes
4. Principal Risks and Their Managements
5. Key Performance Indicators
6. Thematic aspects:
    a. Environmental matters
    b. Social and employee matters
    c. Respect for human rights
    d. Anti-corruption and bribery matters
    e. Board diversity disclosure

The summary of the point in each disclosed element is listed in the following table.

Table 2. Reference of disclosure elements from EU Directive Guidelines (EU Commission, 2020b)

Disclosure elements	Description
Business model	• Disclosure of business environment • Disclosure of organization and structure • Explanation about their market operations • Disclosure of company's objective and strategies • Disclosure of main trends and factors that affect future development
Policies and due diligence	• A company may disclose relevant information on how it identifies, assesses, and manages climate-related risks and/or natural capital (TCFD cross-reference) • Climate-related matters disclosure • Explanation to ensure carbon emission below a certain level • Disclosure of avoiding the use of hazardous chemicals, substances, biocides • Policies on R&D and safe alternatives • Assessing the quality safety and environment • Referencing the available recognized frameworks (e.g., REACH, ILO, OECD)
Outcomes	• Disclosure of targets, comparisons, and developments over time quantitative and qualitative • Disclosure of mitigating effects of policies implemented • Explanation of natural capital impacts and dependencies • Disclosure of the reduction/removal of the usage of hazardous chemicals or biocides
Principal risks and their managements	• Disclosing material information on climate-related impacts on its operations and strategy take into account specific circumstances - assessment of the likelihood and use of scenario analyses (TCFD cross-reference) • Disclosure of principal risks on how they are managed and mitigated, including operations, productions, and services • Providing explanations or narratives about why the KPIs are evolving, changed, decreased, or increased and how they might evolve in the future • Disclosure with the usage of appropriate perspective short, medium, principal long-term risks with the correlation how the risks affect their business model, operation, financial performance, and impact of the activities
Key performance indicators	• Consistent with the metrics used by the company in its internal management and risk assessment processes • Connecting qualitative and quantitative information and providing linkages

	• Providing explanations or narratives about why the KPIs are evolving, changed, decreased, or increased and how they might evolve in the future • Disclosure in the context of targets, past performance, comparison with other companies • Disclosing consistently from one reporting period to another to provide reliable information on progress and trends
Environmental matters	• Disclosing the use and protection of natural resources such as water, and, and related protection of biodiversity • Disclosing the impacts and dependencies on natural capital and biodiversity • Disclosure of the waste management (e.g., recycling rate) • Disclosure of the development of the green products and services (Commission recommendation 2013/179/EU product environmental footprint cross-reference) • Disclosure of the extraction of the natural resources such as conflict minerals (e.g., the supply chain for tin, tantalum, tungsten, gold from high-risk areas) • Environmental impact from energy use, energy performance, energy consumption from non-renewable sources, and energy intensity • Material disclosures on pollution prevention and control • Environmental impacts from transportation or the use and disposal of products and services • Disclosure of emissions from other pollutants that measured in absolute value and as intensity
Social and employee matters	• Disclosure of gender diversity and other aspects of diversity • Disclosure of employees that entitled to parental leave • Explanation of the following health and safety information and workplace policies • Disclosure of resources allocated to the risk management, information, training, monitoring, auditing, cooperation with local authorities and social partners • Disclosure of employee turnover, the ratio of employees working under temporary contracts by gender, average hours of training per year per employee • Disclosure of workers who participate in activities with a high risk of specific accidents or diseases, number of occupational accidents, types of injury, or occupational diseases
Respect for human rights	• Ensuring the supply chain is free from trafficking in human beings • Disclosure of occurrences of severe impacts on human rights relating to its activities and decisions • Disclosure of process for receiving and addressing complaints, mitigating, and providing remedies to human rights violations • Disclosure of processes, measures for preventing trafficking in human rights in forms of exploitation, forced or compulsory labor and child labor, precarious work, and unsafe working conditions as regards geographic areas at higher risk of exposure to abuse • Explaining how accessible their facilities, documents, and websites for people with disabilities are • Respect for freedom of association and engagement with relevant stakeholders
Anti-corruption and bribery matters	• Disclosure of anti-corruption policies, procedures, and standards • Explanation of criteria used in corruption-related risk assessments • Disclosure of internal control processes and resources allocated to preventing corruption and bribery • Disclosure of the use of whistleblowing mechanisms, the number of employees who received appropriate training, the number of pending or completed legal actions on anti-competitive behavior
Board diversity disclosure	• Preparation of description of their board diversity policy that will be included in the corporate governance statement • Disclosure of diversity aspects, to specify which diversity criteria are applied and explaining the reasons for choosing them

	• Providing sufficient diversity views and understanding of current affairs and long-term risk opportunities • Disclosure of age, gender, educational or professional backgrounds that are relevant due to the company's geographical presence and operated business sector • Disclosure of selection of candidate based on the defined diversity criteria • Disclosure of objectives of their diversity policy as taken into consideration in succession planning, selection, nomination, and evaluation

The EU Directive compliance index (ECI) is formulated as follows:

$$ECI = \frac{\sum_{i=1}^{m} d}{m}$$

while the $\sum_{i=1}^{m} d$ is the total of the content found in the analyzed reports according to the EU Guidelines, and m is the maximum number of contents obtainable (10). The ECI will aggregate the score from each assessment of the elements and providing the result ranged from 0 (the lowest compliance level) and 1 (the highest compliance level).

In the next part, the analysis is focused on the correlation of the report to the climate disclosure that aligned to the Task Force on Climate-related Financial Disclosures (TCFD). The scoring system for each element also follows the reference from Table 1. TCFD recommendations distributed the elements into four different categories. Table 3 summarizes the details of the description based on the TCFD recommendations report.

Table 3. Reference of disclosure elements from Task Force on Climate-related Financial Disclosure (TCFD) recommendations (TCFD, 2017)

Category	Disclosure elements	Detailed description
Governance	Board's oversight	• Disclosure of process and frequency where the board and/or board committees such as audit, risk, and other committees are informed about climate-related disclosures • Explaining the consideration of climate-related issues by the board and/or board committees when reviewing and guiding strategy, major plans of action, risk management policies, as well as setting the organization's performance objectives • Disclosing how the board monitors and oversees progress against goals and targets for addressing climate-related issues
	Management's role	• Disclosure of whether the organization has assigned climate-related responsibilities to management-level positions or committees

		• Disclosure of the description of the associated organizational structures • Disclosure of processes by which management is informed about climate-related issues • Disclosure about how management monitors climate-related issues through specific positions and/or management committees
Strategy	Climate-related risks and opportunities	• Disclosure of the climate-related opportunities that can be categorized as resource efficiency, energy source, products and services, markets, and resilience • Linking the climate-related risks with the financial impacts that are reflected in the income statement or balance sheet
	Impact of climate-related risks and opportunities	• Disclosing the impacts on climate-related risks can be categorized as transition and physical risks. Transition risk includes policy and legal, technology, market, and reputation risks. Where physical risks can be divided into acute and chronic risks
	Resilience of the organization's strategy	• Disclosure about the description on how resilient their strategies are to climate-related risks and opportunities • Disclosing where they believe their strategies may be affected by climate-related risks and opportunities • Explaining how the companies' strategies might change to address such potential risks and opportunities • Consideration of climate-related scenarios and associated time horizons
Risk Management	Process for identifying and assessing	• Explaining whether they consider existing and emerging regulatory requirements related to climate change • Disclosure of the process for assessing the potential size and scope of identified climate-related risks and definitions of risk terminology used or references to existing frameworks

	Process for managing	• Explaining how they make decisions to mitigate, transfer, accept or control those risks, process for prioritizing climate-related risks, including how materiality determinations are made
	Integration into overall risk management	• Disclosing about their process for identifying, assessing, and managing climate-related risks are integrated into overall risk management
Metrics & Targets	Metrics used to assess	• Disclosing the metrics on climate-related risks associated with water, energy, land use, and waste management where relevant • Explaining whether and how related performance metrics are incorporated into remuneration policies • Providing their internal carbon process where relevant and historical periods to allow for trend analysis. Additionally, a description of the methodologies used to calculate or estimate climate-related metrics
	GHG emissions	• Disclosing Scope 1, Scope 2, and Scope 3 (if appropriate) about the greenhouse gas (GHG) emissions and the related risks
	Targets	• Describing the targets used by the organization to manage climate-related risks and opportunities and performance against targets • Explaining the list of elements: whether the target is absolute or intensity-based, time frames over which the target applies, a base year from which progress is measured, and KPI used to assess progress against peers

The TCFD compliance index (TCI) is formulated as follows:

$$TCI = \frac{\sum_{i=1}^{m} d}{m}$$

while the $\sum_{i=1}^{m} d$ is the total of the content found in the analyzed reports according to the TCFD recommended framework, and m is the maximum number of contents obtainable (11). The TCI will aggregate the score from each assessment of these detailed disclosure elements and providing the result ranged from 0 (the lowest compliance level) and 1 (the highest compliance level) categorized within four dimensions (Governance, Strategy, Risk Management, Metrics & Targets).

Furthermore, this research also analyzed the availability of the external assurance for the non-financial report, either in the separate sustainability or CSR (Corporate Social Responsibility) report and the annual report. This assessment provides additional interesting insights regarding the legitimacy theory. The legitimacy theory suggested that "organizations continually seek to ensure that they operate within the bounds and norms of their societies" (Brown & Deegan, 2012). In this case, companies will focus on increasing the quality of non-financial information if these actions empower them to create a good perception in their report. Notably, the availability of external assurance helps to improve the credibility and perceived quality of non-financial information in the produced reports (Manes-Rossi et al., 2018; Setia et al., 2015). The decision to select an external provider to assure the non-financial information disclosed in the annual reports supposed to improve the credibility of the information (Kolk & Perego, 2008; O'Dwyer, 2011). Previous studies have shown a positive effect of external assurance on the quality of non-financial information for the report users (e.g., investors, financial analysts) (Brown-Liburd & Zamora, 2015; Pflugrath et al., 2011). The external assurance providers are typically the Big 4 firms (PricewaterhouseCoopers, Deloitte, Ernest &Young, and KPMG) or specialized sustainability and environmental consulting firms.

Supporting data to assess key principles

This section explains the additional methodology to quantify the companies' reports against several key principles (Fair, balanced and understandable, Comprehensive but concise) provided by the reference frameworks, namely EU Directive and TCFD recommendations (see Table 7). This method employs the quantification of text complexity. By definition, text complexity would suggest a relative difficulty reading, writing, or understanding a document. Several researchers argued that complex report writing might be an attempt to cover up companies' poor performance or to obscure critical information (Li, 2008; Lo et al., 2017). This research measured the relative difficulty of reading a text using the Gunning fog index (Gunning, 1952). The fog index or Gunning fog index is a numerical score assigned to the input texts where larger values indicate the greater difficulty reading the text. It is calculated as the weighted sum of the average number of words per sentence and the average number of complex words (Anand et al., 2020). A complex word is categorized as a word with three or more syllables. The fog index is structured as follows:

$$\text{fog index} = 0.4 \times \left[\frac{\text{all words}}{\text{all sentences}} + 100 \times \frac{\text{complex words}}{\text{all words}} \right]$$

Table 4. Score reference for the developed fog index methodology

Grade	Fog index
Sixth grade	6
Seventh grade	7
Eighth grade	8
High school freshman	9
High school sophomore	10
High school junior	11

Grade	Fog index
High school senior	12
College freshman	13
College sophomore	14
College junior	15
College senior	16
College graduate	17

The assessment conducted using a Python script to process the annual reports' textual content. First, all of the annual reports in pdf format were pre-processed and converted into raw ASCII texts. Then, the complex words were identified using the regular expression (regex) functions to determine the number of syllables in a word and the number of words in a given sentence. Finally, the calculation was performed according to the fog index formula given above.

3.3 Data sources for the analysis

The data used for this research is sourced from three different categories, focusing on companies based in The Netherlands. The approach used in this thesis is inspired by a similar analysis performed for carbon-reporting of Dutch listed and non-listed companies in 2016 – 2017 annual reports (De Waard, 2018; De Waard et al., 2020). Then, this research extended previous works by including the GRI database for companies in the energy and utility sector in Europe and The Netherlands. Therefore, it will capture broader insights and more companies' publicly available reports. The categories are explained below as follows:

1. The first group is the companies listed in the GRI database in the energy and utility sector scope. These companies adopted the GRI standard and G4 framework within the size of large and multinational enterprises. This category covers Europe or The Netherlands region with a total of 11 companies (The Netherlands) and 190 companies (Europe)
2. The second category consists of companies listed in the three market indices of the Amsterdam Stock Exchange in the energy and utility sector (AEX, AMX, AScX). This category covers a total of 8 companies (The Netherlands).
3. The third group consists of companies listed in the Transparency Benchmark 2021 by the Ministry of Economic Affairs and Climate Policy Netherlands in the energy and utility sector scope. These companies were chosen because of the high level of transparency and the quality of disclosure related to the Dutch disclosure environment. This category contains 17 listed companies.

The unique list of companies was arranged (see Table 5). The selection was made by reporting year and language limitation. The latest reporting year was selected from the list within the latest period of 2019 or 2020. Further, this research restricted the analysis only to the reports that were written in English. The list consists of 17 companies with the respective reporting period in the following table below.

Table 5. List of selected companies based in The Netherlands

No.	Company name	The latest recorded year in the GRI database	Available report
1	Royal Dutch Shell	2019	2020
2	ATM Moerdijk	2016	2019
3	Core Lab	2016	2020
4	Renewi	2019	2020
5	SBM Offshore	2017	2020
6	ALFEN	-	2020
7	Koninklijke Vopak N.V.	2019	2020
8	STEDIN	-	2020
9	Eneco Groep	2016	2020
10	Enexis	2017	2020
11	E. ON Benelux	2014	2020
12	GasTerra	2017	2020
13	GasUnie	2017	2020
14	TenneT	2017	2020
15	SIF Holding	-	2020
16	PZEM N.V.	-	2019
17	Alliander	2017	2020

The information of the latest recorded year was last updated in December 2020. GRI team suspended the further update due to the ongoing database review and registration process. However, all of the historical information is still accessible (GRI, 2021). Based on the observation of the most recent samples' annual reports, six of them were not following the GRI framework. This finding would indicate that these six companies might stop using the GRI framework as their disclosure methodology. At the same time, eleven companies were not recorded in the GRI database because of the pending registration process or delayed by the database review. Section 4.2 will explain more details regarding the GRI database.

3.4 Case study design

The goal of the selected case studies is to assess in detail the current practice of non-financial disclosure in the company and how companies can leverage the non-financial information to develop companies' strategies towards their sustainable strategic objectives. This research adopts case study research as a qualitative approach to conduct a deep investigation of phenomena in their real-life context (Yin, 2018). According to Cooper and Morgan, a paradigmatic case study is "a case selected to establish a new perspective or theoretical understanding" (Cooper & Morgan, 2008). The case study structure follows the paradigmatic case study to understand more about the new perspective of the corporations and approach in terms of non-financial reporting preparations, design, and framework adoption. Several studies have adopted the paradigmatic approach in auditing and measuring the organization's performance (Pentland, 1993; Townley et al., 2016). The paradigmatic case was applied to this research to analyze one of the key areas of "actual practices, including the details of significant activities that may be ordinary, unusual, or infrequent" (Cooper & Morgan, 2008). In the last part of the assessment, this research offered and demonstrated a step-by-step approach to developing non-financial metrics based on the observed available best practices in the first phase of the research. These steps ensured that the development of the non-financial metrics followed the suggestions based on the primarily available frameworks and integrate the sustainability strategy with the company's strategic objectives.

Interview process design

The following section describes the data collection methodologies for the selected case study. The selected methods were documentary review and semi-structured interviews(Momin & Parker, 2013; Qu & Dumay, 2011). First, the interview guide was designed based on the findings from the previous analysis. The interview guide listed the areas explored and clarified during the interviews with the people in the CSR or Sustainability areas functions. By design, the interview guide would focus on the three main elements listed below:

1. Company or functional background
   This element covered the role or responsibilities of the interviewee in the company, direct experiences within the company activities related to the non-financial disclosure preparations, and exploring several primary motivations to disclosure non-financial information. This section intended to gain insights into the performed activities or planned activities related to non-financial disclosure within the company.

2. Methodologies in practice
   The second point investigated the specific selected methodologies or frameworks to prepare the non-financial information for the public reports, such as annual reports or sustainability reports. In addition, this point assessed the focus of the disclosure topics and clarified the findings from the previous analysis based on the company's public reports.

3. Correlation between non-financial information and corporate strategy
   The last part examined how the non-financial information integrated into the corporate strategy. It covered the management discussion, governance process to ensure the non-financial information data quality, how non-financial information could assist the strategy

development and implementation as a metric to monitor impacts. This third point would offer beneficial insights into the challenges and practices in actual practice.

Next, a draft set of questions guide was arranged based on the three selected elements. The researcher later consulted the draft set of questions guide with the academic and internship supervisors for further refinements and clarity. Then, we finalized the set of questions guide (See Table 6) after three feedback sessions.

Table 6. Questions guide for the semi-structured interview

Researched points	Guides
Profile	• How many years have you worked in the company? • What are your current position in the company and its relation to the non-financial disclosure?
Reasons	• Could you tell me about the most important reasons are to disclose non-financial information in your company?
Content (EU Directive or TCFD)	• What are the topics that emphasized the most for the non-financial information category?
Methods for presenting non-financial information	• What are the selected methodologies or frameworks used in the company to present the non-financial information? • Are there any preferred frameworks or approaches that emphasized the most? • What is the process to select that framework?
System of internal and external controls (Governance)	• What processes are involved to ensure the activities and results achieved in the ESG (Environmental, Social, and Governance) fields across the business units? • How important is it to have external assurance for non-financial information?
Strategy development	• How do you include non-financial information as a part of the strategy development process?
Strategy implementation	• How do you include non-financial information as a part of strategy implementation processes? *(in terms of internal control and monitoring*)

For the following process, this research selected two companies as the basis of the case study, namely Stedin Group and Enexis Group. Stedin Group is a regional Dutch network operator based in Randstad. Their business activities include grid management and non-regulated activities. During the previous year, they generated revenue of around €1,2b. Enexis Group is also a grid operator serving electricity and gas grid headquartered in s' Hertogenbosch, The Netherlands, with the business activities of renewable energy power distribution. Enexis generated revenue of around €1,5b in 2020.

This research selected the two companies for investigation based on the appearance of the previously designed samples list and the availability of contacts. Furthermore, they operate within the same sector and business activities (network grid operator). They have demonstrated the developments for integrating environmental, social, and governance elements into their strategic objectives over their reporting periods. Based on that, their performance and current practices act as a comparable benchmark study in terms of maturity and implementation of non-financial metrics.

After the contacts were confirmed, the researcher conducted an in-depth analysis and further documentary reviews of the particular companies based on findings from the first phase. The further documentary review included collecting all information from various sources such as the company's websites, press news, releases, additional corporate social responsibility, or sustainability reports. This step ensured the accuracy and detailed analysis of the selected case study and served as the preparation for the interview. Figure 3 describes the summarized findings that consist of a short description of the company, compliance scores related to the EU Directive and TCFD reference, comparison to the other samples in the closer rank, TCFD compliance score profile based on the four elements, and the key takeaways or suggestions.

Next step, the researcher arranged a time with the interviewee via email exchanges. The email content consisted of the introduction and background of the research, the purpose of the interview, the time/date, channel, interview duration, and asking for permission to record the interview that respecting the GDPR compliant process. Both interviews were conducted via Microsoft Teams video calls and lasted around 35 to 50 minutes.

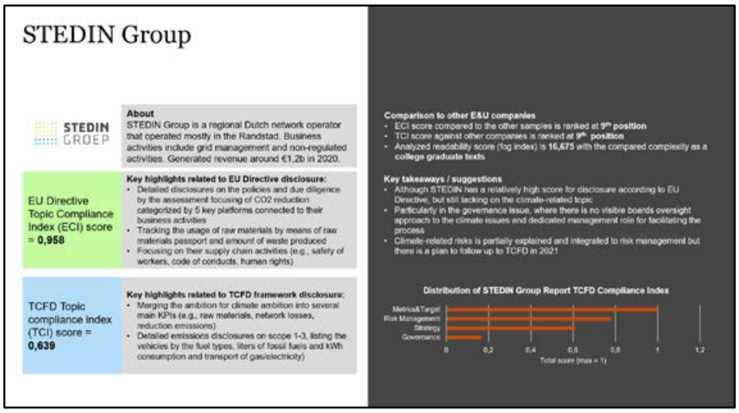


Figure 3. Detailed findings for STEDIN Group

Furthermore, the interview agenda was following the structure below:

- Introduction of the interviewer and the interviewee
- Recap of the research progress, general findings, and purpose of the interview
- Discussion based on the designed interview guides
- Presentation of detailed findings from the first research phase
- Feedback discussion

The researcher placed the presentation of detailed findings in the last part of the interview session. This process ensured to avoid any bias to the interviewee when they answered the set of questions (Qu & Dumay, 2011; Schensul, 1999). The interviews later were recorded, transcribed, and analyzed to identify three main elements explained before: company and functional background, non-financial disclosure methodologies in practice, and correlation to the corporate strategy. Furthermore, the researcher kept conscientious records during the analysis process and discussing the issues in the analysis and findings with the supervisors. These actions would further ensure the reliability and validity of the analysis. In addition, the role of the interviews was predominantly to enrich and clarify the findings gained from the conducted extensive data analysis in the first phase.

4. Results and discussion

The following section will discuss the results based on the designed methodologies: benchmark analysis of the main frameworks, general samples overview from the GRI database, analysis of the energy and utility companies' reports in the Netherlands, and findings from the detailed two case studies.

4.1 Benchmark of the available frameworks

This section elaborates the differences and similarities related to the key principles and the content elements of the three main framework references, namely EU Directive, TCFD recommendations, and GRI Standard guidelines.

Format and location of disclosures

The GRI Standard framework aims to be a common language for organizations and stakeholders in which the organization's impacts can be communicated and understood through Sustainability reporting. GRI Standard allows a higher degree of flexibility in terms of the format and the location of the non-financial disclosures. Companies (report preparers) can provide their disclosure through a dedicated standalone sustainability report or various locations and formats (electronic or papers). This format is described in their Reporting Principles and focusing on material topics (GRI, 2020). At the same time, the EU Directive guidelines ask companies to disclose their non-financial and diversity information in annual financial statements, consolidated statements, and any related reports. However, the EU Directive further suggested gives significant flexibility concerning how companies disclose their relevant information in the way they consider helpful. EU Directive may allow companies to include the non-financial disclosure in a separate report (European Commission, 2017). On the other hand, TCFD recommendations strongly suggest providing the disclosures in the mainstream (public) annual financial filings. Since the Task Force believes the climate-related disclosures in annual financial filings will ensure the appropriate controls that govern the production and disclosure of required information (TCFD, 2017).

Assessment of the key principles

Through the in-depth analysis of the three frameworks, the observed key principles converged to six points: f*air, balanced, and understandable*; *strategic and forward-looking*; *consistent and coherent*; *comparable among organizations; provided on a timely basis; reliable*, *verifiable, and objective.* On the contrary, the differences lie in three principles: *comprehensive but concise*; *stakeholder orientated*; and *disclosure of material information*.

Table 7. Key principles from three frameworks of non-financial disclosure

Principle	EU Directive	TCFD recommendations	GRI Guidelines
Disclosure of material information	✓	✓	≠
Fair, balanced, and understandable	✓	✓	✓
Comprehensive but concise	✓	✓	≠
Strategic and forward-looking	✓	✓	✓
Stakeholder orientated	✓	≠	✓
Consistent and coherent	✓	✓	✓
Comparable among organizations within a sector, industry, portfolio	✓	✓	✓
Reliable, verifiable, and objective	✓ (Reflected in fair balanced and understandable)	✓	✓
Provided on a timely basis	✓	✓	✓

Arguably, the fundamental difference between these frameworks is how to treat *materiality*. Each framework defines its concept of materiality differently, depending on the user of the reports. According to GRI Standards, the materiality should “reflect the reporting organization’s significant economic, environmental and social impacts or substantively influence the assessment and decisions of a wide range of stakeholders” (GRI, 2020). It underlines further the materiality defined by the combination of internal and external factors. The internal factors cover the organization’s overall mission and competitive strategy.

In comparison, the external factors refer to the concerns expressed by the stakeholders. The assessment of the material topics also should consider the expectations of internationally recognized standards and be measured by the significance of the impact (GRI, 2020). Meanwhile, the EU Directive holds the concept of materiality as “the information that is important for understanding a company’s development, position, and impact, considering specific context and circumstances” (European Commission, 2017). The GRI perspective on materiality thus uses a broader scope than the EU Directive, which focuses on the specific company and its context.

Consequently, regarding *comprehensiveness*, the GRI Standards offer two options for preparing a report: Core (contains the minimum information required to understand the nature of the organization) or Comprehensive (including additional disclosures on the organization’s strategy, ethics, integrity, and governance (GRI, 2020). In comparison, EU Directive prefers the report in a comprehensive but concise manner to avoid “immaterial (generic or boilerplate)” information (European Commission, 2017).

Relationship between EU Directive and TCFD recommendations
Since the European Directive provides a bridging guideline from the EU Directive for non-financial information reporting (2017/C 215/01) to the climate-related reporting that will also be in force in 2022 for the companies in all sectors. The following graph describes the mapping correlation between EU Directive requirements and TCFD recommended framework (Guidelines on Non-Financial Reporting: Supplement on Reporting Climate-Related Information, 2019).

TCFD Recommended Disclosures		EU Directive for Non-Financial Report Disclosure Elements (10)					
		Business model	Policies and due diligence	Outcomes	Principal risks and management	KPI	Thematic aspects
Governance	Boards oversight		✓				• Environmental matters • Social and employee matters • Respect for human rights • Anti-corruption and bribery matters • Board diversity disclosure
	Managements role		✓				
Strategy	Climate related risks and opportunities				✓		
	Impact on climate related risks and opportunities	✓					
	Resilience on the organization's strategy	✓					
Risk Management	Process on identifying and assessing				✓		
	Process for managing				✓		
	Integration into overall risk management				✓		
Metrics & Targets	Metrics used to asses					✓	
	GHG emissions			✓			
	Targets			✓			

Figure 4. Connections between the EU Directive for Non-Financial Report Disclosure and TCFD recommended disclosures (Source: author’s documentation derived from Guidelines on Non-Financial Reporting: Supplement on Reporting Climate-Related Information, 2019*)*

Table 8 summarizes the differentiation between the EU Directive and TCFD recommendations approach. In addition, each of these two frameworks also has its distinctions between three concepts. These distinctions cover the reporting location, the concept of materiality, and disclosure elements related to its materiality definition.

Table 8. Considerations between EU Directive and TCFD recommendations perspectives

Concept	EU Directive	TCFD Recommendations
Reporting	Allowing member states to publish their non-financial statement in a separate report under certain conditions	Proposing that its recommended disclosures are published in the company's "annual financial filings[1]" or management reports
Materiality	Materiality perspective covers both financial materiality and environmental and social materiality that is reflected in the "thematic aspects" section	Covers only in the scope of financial materiality, which means all information considered material from TCFD should also be material from the perspective of EU Directive
Disclosure elements regarding materiality	Certain information required by TCFD is not required or necessary according to the EU Directive	States that its recommended disclosures related to "Strategy" and "Metrics and Targets" should be subject to a financial materiality assessment While the disclosures on "Governance" and "Risk management" should be made irrespective of materiality (implicitly)

1) Financial filings are defined as annual reporting packages in which organizations are required to deliver their audited financial results under certain jurisdictions in which they operate.

TCFD underlines that the definition of materiality is limited to financial materiality as they believe that climate-related issues are or could be material for the organizations (TCFD, 2017). This consideration occurs because the primary target audience for the TCFD recommendation is the investors, although they also mention other stakeholders. The main goal is to increase the engagement between investors, boards, and senior management. In comparison, the EU Directive uses a more extensive scope, including social and environmental aspects.

4.2 Overview samples from the GRI Database

Analysis of the GRI Database provides some insights into the level of reporting within European countries. The total number of reports in the reporting period from 2013 to 2020 is 541 reports. As shown in Figure *5*, the most significant GRI-referenced disclosures in European companies were prominent in 2016. Then, the graph indicates a declining trend from the period of 2016 onwards. There are two arguments to explain why this trend happens.

First, the GRI Database mentioned that they have ongoing reviews of the database and its related registration process. The latest update of the information was in December 2020, and reports after that year will not be further populated. GRI also stated they uploaded just partial data in reporting periods 2018 to 2020 to have disabled the search filter through the Report Year criterion. The GRI conducted the data collection and collaborated with other 41 Data Partners, ranging from accounting firms, consultancy or sustainability advisory firms, and non-governmental organizations. Their Data Partners cover primarily five regions (Africa, Asia, Europe, Latin America & the Caribbean, Northern America, and Oceania) and responsible for collecting more than 40% of reports from the database (GRI, 2021). Consequently, the data during the 2018-2020 reporting period might not fully represent the actual trends or conditions.

Second, the number of companies reporting using the GRI framework has been indeed decreasing. This fact is valid during the 2013 to 2017 reporting period. Further, companies might have opted for different frameworks as more standards developed during 2017 and onwards. Although, based on the observed samples, we found that the most recent annual reports cited the GRI Standards however they did not appear in the database.

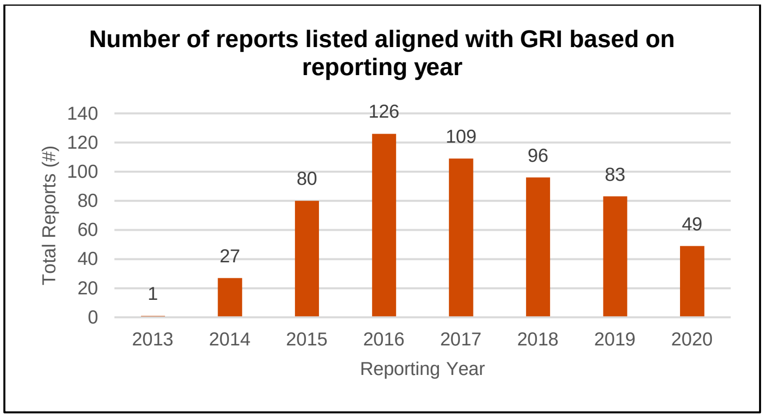
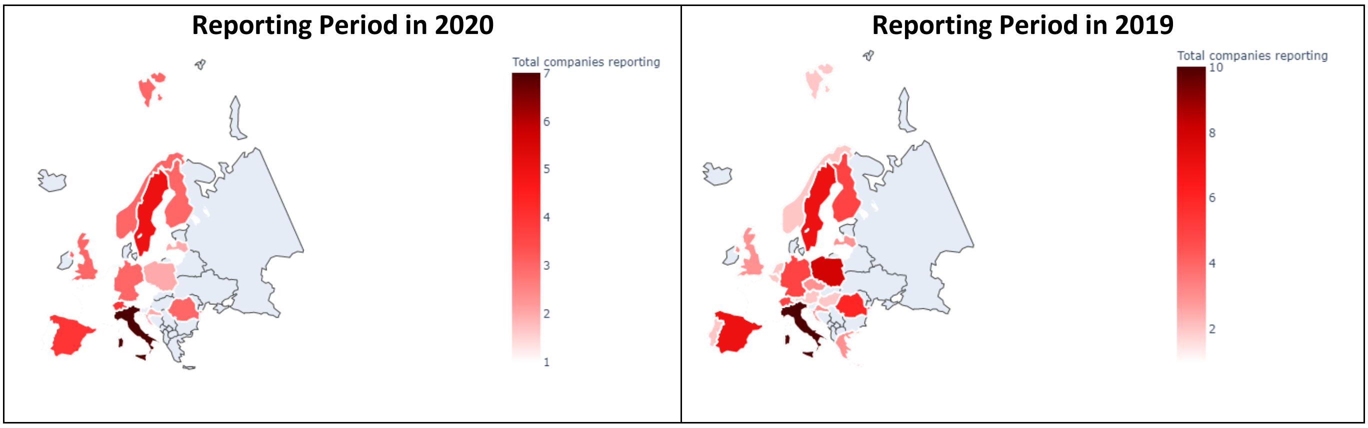


Figure 5. GRI-referenced reports distribution over the years

Additionally, based on the geographical distribution in the most recent three years (See Figure 6), Italy has dominated the most published reports for each year. At the same time, we see a noticeable increase in adoption during these three years in the Northern Europe region. Companies in Central Europe and Western Europe have constantly cited their reports within the GRI framework as well. Next, if we look at the most cited GRI reports disclosure in 2016, we can observe that Italy still has the most published reports, followed by Germany and Spain. The result aligns with the (Mion & Adaui, 2020) findings that conclude a significant correlation between the number and quality of the sustainability reports for German and Italian companies by introducing compulsory non-financial disclosure in their legal systems after implementing the EU Directive.

GRI also provided the linkage document for the EU Directives with the relevant GRI Standards and Disclosures points (GRI, 2017). This action leads to an increase in the adoption of GRI frameworks indirectly as the sustainability reports quality and harmonizing frameworks between cross-countries.



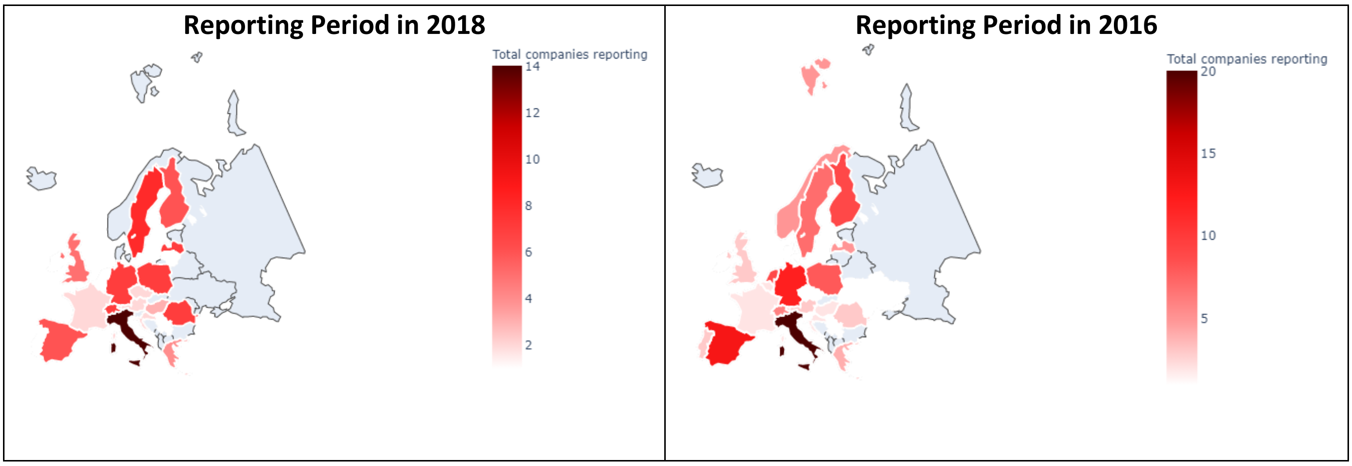


Figure 6. Geographical distribution of GRI-referenced reports over the last three years and most reporting periods (2016)

4.3 Annual reports analysis for energy and utility companies in The Netherlands

This section elaborates the findings based on the annual report analysis for the companies focused on The Netherlands region. The analysis used the EU Directive and TCFD recommendations perspectives as the primary references. Figure *7* described the overall non-financial reporting landscape in the energy and utility sector in The Netherlands.

In the context of the usage of the GRI framework, six out of 17 companies were not using the GRI framework as their disclosure methodology for their most recent reporting period. At the same time, eleven companies have adopted either the core GRI disclosure or topic-specific disclosure in their reports. However, they were not recorded in the GRI database due to the pending registration process or delayed by database review.

The overall analysis of the 17 companies in The Netherlands indicates that the level of compliance within the EU Directive (ECI) is far higher than the disclosure complied with the TCFD recommendations (TCI), particularly for the context of the climate-related disclosure. The level of EU Directive compliance has an average score of 0.788, and the TCFD recommendations compliance averaging at 0.564. However, by looking further at the score distribution of these two indexes. The EU Directive compliance score is distributed relatively higher than the TCI counterparts. ECI score has the first quartile of 0.750 and third quartile of 0.958, and further with the minimum and maximum score of 0.450 and 0.983, respectively.

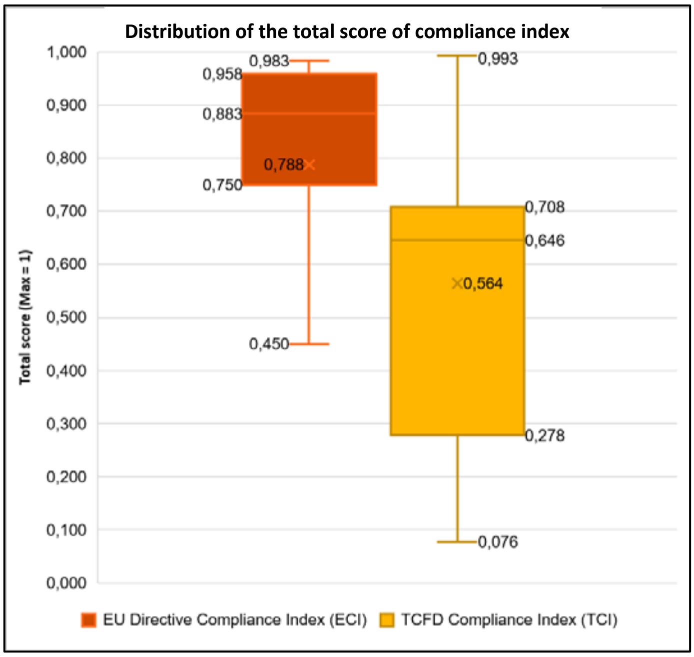


Figure 7. Score comparison EU Directive and TCFD recommendations compliance index

On the other hand, the TCI is distributed relatively lower than the ECI scores. It has the first quartile of 0.278 and the third quartile of 0.708. However, in these samples, we can find two extremes of the climate reporting landscape. There is a very high score of climate-related disclosure with a maximum score of 0.993. According to the TCFD recommendation perspective, the company complied thoroughly and provided tangible metrics for the investors and stakeholders to track their climate mitigation and adaptation progress. In contrast, the lowest level of disclosure is 0.076, which represents that the related company barely or almost did not comply with any of the TCFD recommendations elements.

Performance against EU Directive guidelines

Table 9 provides the ranks of the selected samples from the highest compliance score to the lowest one. The top three companies with the highest compliance level are SBM offshore, Royal Dutch Shell, and Koninklijke Vopak, with scores of 0.983, 0.975, and 0.967. In contrast, the three companies with the lowest disclosures level of the EU Directive are PZEM N.V., Alfen, and GasTerra, with scores of 0.450, 0.400, and 0.367, respectively.

Table 9. Score results for EU Directive Compliance Index (ECI)

No	Company	EU Directive Compliance Index (ECI)
1	SBM Offshore	0.983
2	Royal Dutch Shell	0.975
3	Koninklijke Vopak	0.967
4	Eneco Groep	0.958
5	Stedin	0.958
6	Alliander	0.950
7	GasUnie	0.925
8	Enexis	0.892
9	TenneT	0.867

10	E.ON Benelux	0.817
11	SIF Holding	0.800
12	Renewi	0.783
13	Core Laboratories	0.750
14	ATM Moerdijk	0.483
15	PZEM N.V	0.450
16	ALFEN	0.400
17	GasTerra	0.367

Several reasons for the arguments of the lower disclosure level are based on their relatively smaller size and the nature of the business activities and trends. For example, GasTerra, a gas trading company between the public-private partnership of Dutch organizations, has been phased out starting in 2018. Since the Minister for Economic Affairs and Climate Policy has deployed the Gas Act and the Mining Act to end the gas extraction in Groeningen, largely the key activities of the GasTerra will be phased out as well. In 2020, they had arranged for a phase-out plan to determine how GasTerra's activities will be discontinued and complete by December 2024 (GasTerra, 2021).

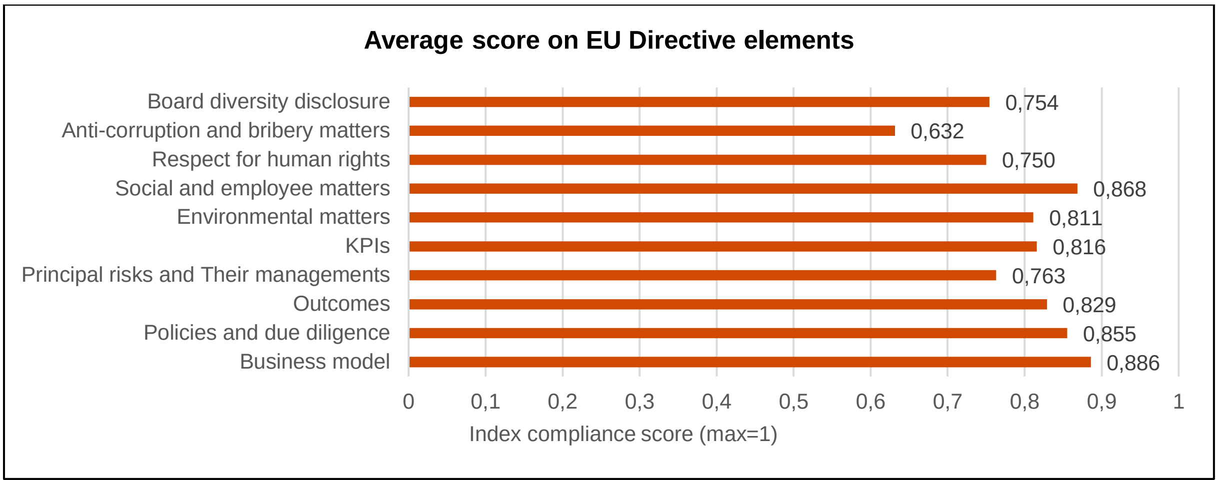


Figure 8. Score distribution on EU Directive elements

Looking further for the overall average score for the detailed elements in the EU Directive framework, there are indications of a relatively higher score in the *Business model*, *Social and employee matters*, and *Policies and due diligence.* In contrast with the lower compliance scores in the *Anti-corruption and bribery matters*, most companies at the fundamental level have the system for responding to corruption and bribery issues, whistleblowing policies, and employees' or suppliers' code of conduct. They moderately lack quantitative representation as for the number of cases found or any indicators to measure if their policies have effectively mitigated the issues or not. Thus, it leads to lower accountability and lower compliance scores.

Social and employee matters are mainly driven due to the higher safety factors that reflect companies in the energy and utility sector. Considering most of the employees will engage in a high-risk environment, the companies ensure the safety of the employees as the number one priority and reporting it in a detailed manner. Conversely, most companies have robust disclosure on their business models since they have to provide solid justifications for the following progressing marketing trends and position themselves strategically within the measure risks in place. Furthermore, introducing more information about diversity and inclusion in the employee numbers strengthens the Social and employee matters element. The diversity and inclusion topics include the scope of education diversity, age, cultural background, and gender diversity. *Policies and due diligence* also have a relatively high compliance score. The energy and utility companies operate in a highly regulated environment and high exposure with the government to maintain the infrastructure. These companies have provided comprehensive policies and due diligence for each of their projects and decisions influenced by government regulations and affected many public customers.

Performance compared to TCFD framework

In the TCI index score, the top three highest companies with thorough climate-related disclosures are Royal Dutch Shell, E.ON Benelux, and SBM Offshore. These companies have performed better than their peers because of the disclosure details according to the TCFD recommendations points. Royal Dutch Shell has implemented a clear governance structure and processes to track climate change and energy transition progress. On the management level, they have the sustainability committee in place reporting directly to the board management. On the lower level currently, they have lower monitoring functions in the *Safety and Environment Leadership Team* and continued to develop other organizational review structures in 2020 to ensure the implementation of strategy updates regarding climate-related issues across the business functions (Shell, 2021).

Table 10. Score results for TCFD compliance index (TCI)

No	Company	TCFD Compliance Index (ECI)
1	Royal Dutch Shell	0.993
2	E.ON Benelux	0.975
3	SBM Offshore	0.958
4	GasUnie	0.843
5	TenneT	0.736
6	Enexis	0.708
7	Alliander	0.687
8	Vopak	0.680
9	Stedin	0.638
10	Eneco Groep	0.625
11	SIF Holding	0.534
12	Renewi	0.513
13	GasTerra	0.277
14	Alfen	0.250
15	ATM Moerdijk	0.201
16	Core Laboratories	0.152
17	PZEM N.V	0.076

Higher scored companies have implemented scenario analysis into their strategy development and considerations on the project level. For example, E.ON has leveraged the climate scenarios to determine their business activities. The used scenarios include the IEA Sustainability Development Scenario and their internally developed scenario (E.ON, 2021). Further, Royal Dutch Shell also has specific exploratory energy transition scenarios derived from the IEA and IPCC scenarios data. They have published a separate report discussing the three assessed scenarios with the energy usage forecast from various sources and different energy mixes (Royal Dutch Shell, 2021). These disclosures align with the TCFD recommendations to use the scenario process as climate-related risk management and strategy formulation tool. TCFD even has published guidance on scenario analysis for non-financial companies, encouraging the majority of the companies to use it.

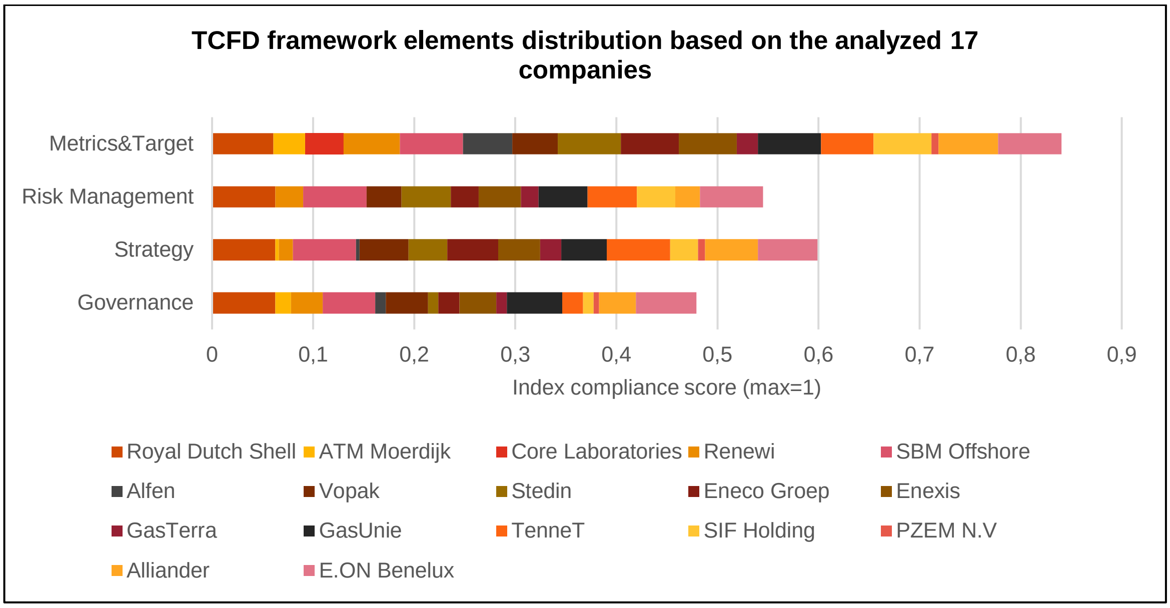


Figure 9. Score distribution on TCFD framework elements

Upon a closer look, the metrics & target element was assessed according to their CO_2 emissions reporting and detailed breakdown into three different scopes. Figure 9 describes the distribution of scores for each element based on the 17 samples. Based on the graph, the metrics & targets element has outperformed the other three elements. In comparison, the governance element has a lower compliance score with a total score of 0.48.

The following list explains the differentiation between each scope:

- Scope 1 includes direct emissions from the controlled sources or owned facilities
- Scope 2 covers the indirect emissions (purchased electricity, cooling, steam).
- Scope 3 includes all other indirect emissions in a company's value chain (emissions because of business travels, waste)

Furthermore, most companies have set their next year's target and long-term target aligned with the international standards and analyses. Historically, the disclosure of the quantitative data over the previous period also gives an additional point for the metrics and target dimension.

In contrast, the governance dimension has the lowest score compared to other elements. The governance category covers the board's oversight and management's role, which means most companies do not have a dedicated committee to report the non-financial metrics to the boards. The practice has integrated some internal control and monitoring for the non-financial metrics in their risk management process or have some developments to build data lakes that can track the company's performance in pursuing the quality data to track the progress towards the targets.

Correlations between EU Directive and TCFD framework disclosure
This section observes the correlation between the disclosure based on the EU Directive index (ECI) and the TCFD recommendations compliance score (TCI). The EU Directive serves as the reference since it covers the climate-related issues in the subset of an environmental thematic topic. Furthermore, the TCI score has a positive trend following the ECI score, as indicated in Figure 10. Although, there are several fluctuations in the several companies whose climate-related disclosures have slightly declined. The graph indicates that PZEM and Core Laboratories have lower scores and other groups, including Stedin, Alliander, and Koninklijke Vopak.

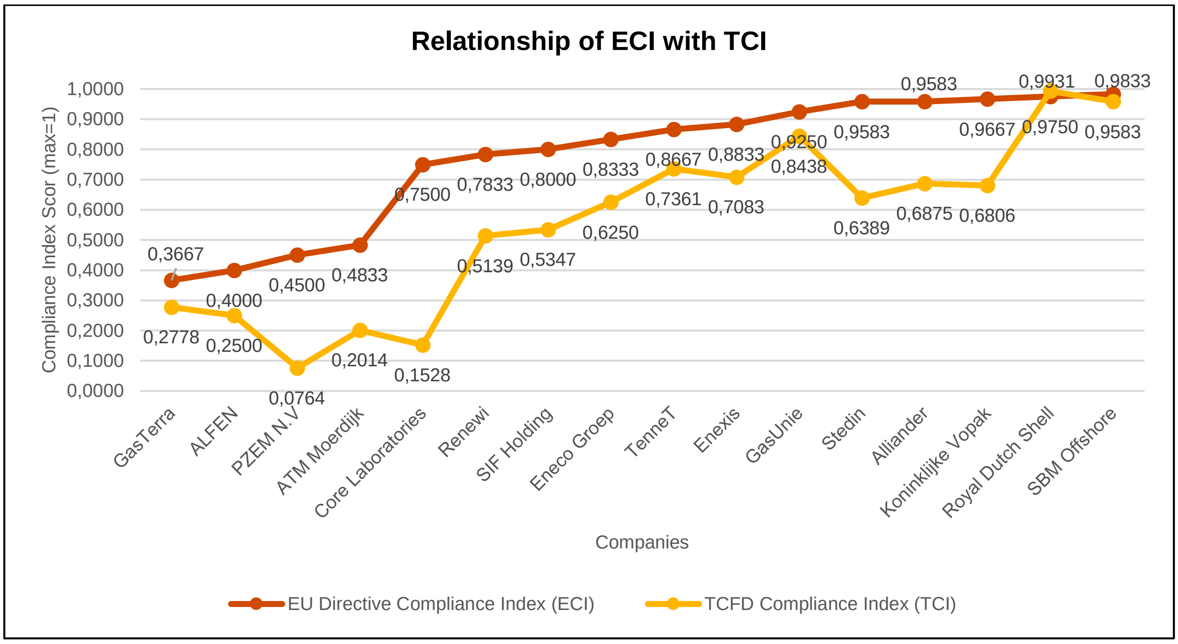


Figure 10. Correlation between EU Directive and TCFD Compliance Index

Furthermore, Pearson's correlation coefficient measures the strength of the association between two scores. The calculated Pearson coefficient between ECI and TCI is 0.856. The Pearson's coefficient value quantifies the relationship between two elements into two extremes. First, a value of -1 indicates a perfect negative relationship. Second, the value of +1 indicates a perfect positive relationship, while a zero score indicates no relationship between two variables. Thus, the Pearson's coefficient value between ECI with TCI indicates a relatively strong positive correlation, which can be observed from the pattern of the graph as well.

While we also observe the correlation between the length of the report and the score of the disclosures. It is also important to underline that the assessment is limited to the annual report only. However, the companies can provide citations or linkages about the content of their non-financial disclosures to the other reports or information on their websites. Based on Figure 11, we can observe a slightly positive correlation between the length of the reports with the TCI or ECI scores. Although, there are several different trends with PZEM, ATM Moerdijk reports, and SBM offshore.

The Pearson's correlation coefficient between ECI and report length is measured at 0.721, while the coefficient between TCI and the report length scores at 0.748. This result further indicates there is a slightly stronger correlation between TCI and the reporting length. In general, the increase of compliance scores leads to more comprehensive reports to describes their non-financial performance to the respective stakeholders. The average report length from the analyzed 17 samples is 78,290 words.

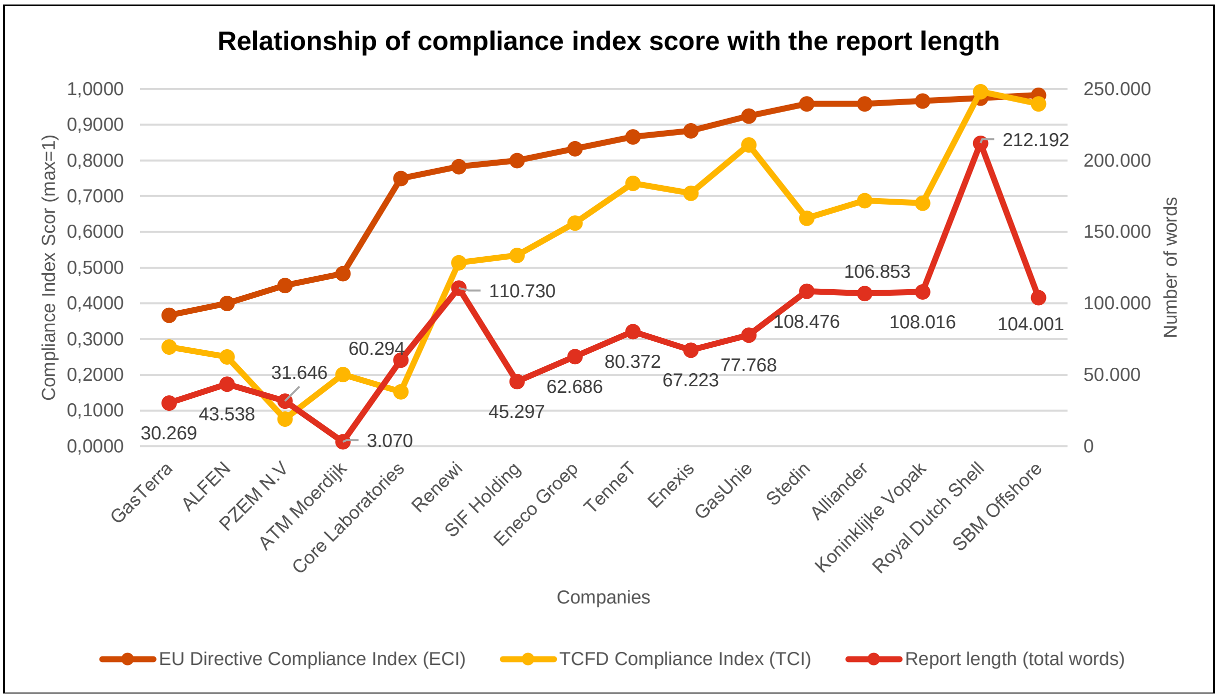


Figure 11. Correlation of compliance index with report length

While there is no correlation between the text complexity metrics (Gunning fog index) and both compliance scores (ECI or TCI), the text complexity scores have a flat trend and fluctuating between the lowest score of 14.2 to the highest score of 20.6. These scores reveal that the complexity of the company's annual report ranged from the college sophomore text level to college graduate-level text level.

The average text complexity score of 17 annual reports is 18.51. This average score indicates no substantial relationship where the higher performance of disclosures leads to a more complex reporting approach. However, all these annual reports shared the same difficulties in reporting their non-financial performances across the investors and stakeholders. Figure 12 illustrates each report's trend of text complexity with the compliance scores, ECI and TCI, respectively.

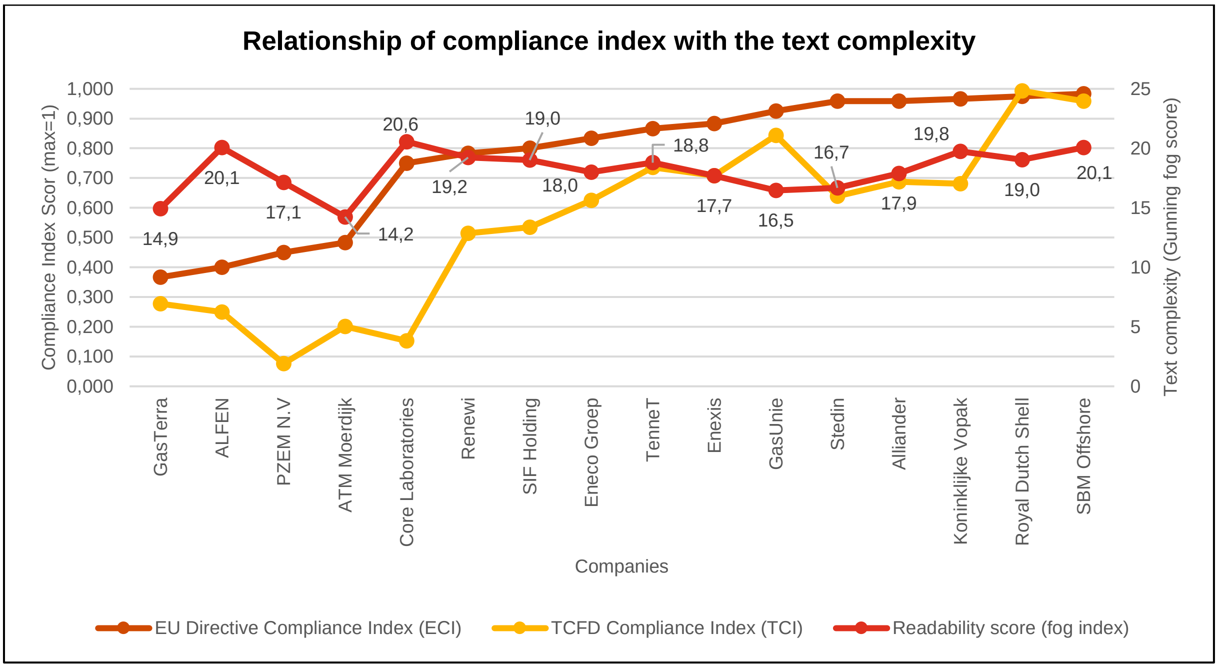


Figure 12. Correlation between disclosure index with text complexity

The availability for external assurance

Table 11 concludes the analysis of the publicly available reports. It indicates that 9 out of the 17 sampled companies have received external assurance for the non-financial information they provide in the public reports. In selecting the external provider, all of these companies selected a Big Four accounting firm as their external assurance provider. These findings would later indicate an increase of the major accounting firms to address the importance of non-financial information and extend their services further in non-financial disclosure or sustainability accounting. Additionally, the nine companies with external assurance have a relatively higher compliance index than their peers. Thus, the selection of the external provider indicates the companies' commitment to the quality of non-financial information by establishing more legitimacy.

Table 11. Availability of external assurance

External assurance		
Yes		No
Big 4	Others	
9	0	8

4.4 Case study

4.4.1 STEDIN Group

Observations based on public reports

STEDIN Group is a Dutch network operator that serves 2 million customers and covering the region mainly in Randstad, Utrecht, and Zeeland provinces. Its main business activities consist of grid management and non-regulated activities (e.g., developing heat grids with NetVerder, steam, and biogas network). It has generated revenue of about €1.2 billion in 2020.

For most of the assessed elements, STEDIN Group has performed relatively high scores. The EU Directive Compliance Index (ECI) results put STEDIN Group in the fifth position out of 17 benchmarked companies with an index score of 0,958. However, the report indicates that the board diversity disclosure is limited to the gender category. STEDIN Group has mentioned the ambition for the board's diversity in its composition, but it has not been reflected yet in the assessment and recruitment process for the following year. One of the strong points is the connectivity between the KPIs and outcomes within the value creations then assessed by the impact measurements on society. Providing the connectivity describes the initiatives from the low level, differences in previous target and implementation, and target for the next year to demonstrate its level of ambition.
While on the TCFD compliance index, STEDIN has ranked ninth position out of 17 with an index score of 0.639. It has a lower score than the EU directive counterparts. One of the strengths of the STEDIN Group sustainability disclosure is the Metrics and Target aspect. By the TCFD recommendations, companies need to disclose the scope 1, 2, and 3 of the GHG emissions and the related risks, the disclosure of the targets used to manage climate risks and opportunities, and performance against targets. STEDIN Group has provided detailed disclosure in CO_2 emissions from scope 1,2, and 3 with the methodologies used to calculate the intensity of the emissions. Apart from that, the aggregated values showing the historical data from the last three years allow for trend analysis.

Meanwhile, the governance part has the lowest score compared to the other assessed elements. TCFD framework requires the companies to prioritize the climate issues utilizing describing the oversight and the management's role and process in assessing and managing climate-related risks and opportunities. STEDIN Group has explained the governance roles and processes related to the long-term strategy, company's operation, and financial objectives. However, the report does not explicitly mention their management towards the climate-related issues.

Content and reporting methodologies

This section tries to validate the findings from observing the external reports and further investigates the relationship between the company strategy and the non-financial disclosure. In this case, the researcher interviewed the senior non-financial & sustainability controller in the STEDIN Group. For privacy purposes, the interviewee's name is anonymized by the initial A1. A1 is responsible for the non-financial data and current impact measurements. Furthermore, A1 has an expert track record of around ten years in sustainability reporting since the STEDIN Group still operated with Eneco Group.

From the observations, there are various reasons why non-financial information disclosure is essential for energy and utility companies. The Dutch law adopted the European Directive into force in 2016 (Staatsblad van Het Koninkrijk Der Nederlanden (PbEU 2014, L 330), 2016) and requiring all of the listed public interest organizations based on the nature of business, turnover, and employee size. A1 argued that the disclosure is mandated and required by the law since STEDIN Group is considered a Public Interest Organization (OOB: Organisatie van Openbaar Belang). As A1 stated:

> "*To disclose the non-financial information because it is requested by law. We are an OOB (Public Interest Organization). We are a very important organization for the Netherlands or for a certain part of the Netherlands because we are a grid* […]" (A1)

The various available frameworks also indicate that the companies prefer and emphasize using the Global Reporting Initiative (GRI) framework. While the non-financial reporting tailored towards the EU Directive, the GRI framework frames the specific details around the disclosure and methodologies. A1 expressed his practical experience within the STEDIN Group.

> "*We are linked with the EU directive, of course. Then, we use it now for ten years. (First) we used it in the Joulz period, but also now in the STEDIN period. […] I use GRI 3.1, I think then GRI 4, and now it is GRI Standards.*" (A1)

One of the main reasons to adopt GRI into the framework is the potential to benchmark with peers in the same industry-specific sector. This adoption would allow collecting more data points and encourage more adoptions by other firms. GRI has developed its guidelines since the GRI G1 launched in the year 2000. Furthermore, it has aligned with the Sustainable Development Goals framework since 2012.

> "*The reason why I said we should follow GRI because it is like globally. There is a possibility for global standardization. To see how we score on a certain topic within a company. It is worldwide. It is the world's largest (most used) framework. That is why we use this GRI*" (A1)

While on the climate reporting perspective, STEDIN Group is still exploring the implementation of the TCFD recommendations. These findings aligned with the TCI (TCFD Compliance Index) score. STEDIN Group scored lower but has several components to support the foundation of TCFD recommendation. On the other hand, it has another strategy for the 2020 reporting year regarding the publishing date of the annual report. Additionally, the peers in the same sector influence the reporting method and framework selection. For example, in this case, A1 has been in contact with several practitioners in Aliander. Aliander is a utility company that distributes energy to almost one-third of the Netherlands and had 5.8 million customers in 2020. If we look at the ranks between these two companies in the previous analysis, they have a relatively close gap. These ranks would reflect that the factor of benchmarking with peers is crucial for them.

"*We are still in the searching mode, but we have our one planets strategy that is based on the climate, policy of the government, and this year. For the first time, we also showed how our science-based targets impact, but we do not follow exactly this. […] because I know the CFO asked me to do some research. I was also in contact with Aliander, and I heard it is doing something, where they will inform, get the TCFD. So, we do not follow exactly the TCFD. That is the next step. We are in the research now and with Alliander.*" (A1)

"*[…] for this year's reports, we did not do it because we had other tactics and strategies to create our yearly reports. Because normally, they came out at the beginning of April or the end of March with our yearly reports. Now we managed to release it five weeks earlier, including several activities. There is no time to do some research on the new frameworks, like TCFD and others.*" (A1)

Observations about Governance and Strategy

From the previous outside-in analysis, STEDIN Group has a weak score in the governance process, namely in climate-related disclosures. This result has been investigated more through the discussion with A1. Although STEDIN Group has some internal control on the non-financial topics, the data collection process only comes up on an annual basis during the preparation of an annual or sustainability report. A1 has acknowledged this issue of data quality and control in the governance process. According to A1, they have evaluated the issue, discussed it with the management team (CFO), and planned to develop more accurate and mature ESG reporting.

"*[…] at this moment, we have some internal control on some non-financial topics. There are also some. I will talk topics that only come up for the yearly reports. If somebody says, okay, you have, we have so many solar panels or whatever, then we just believe it. We do not control it, but we had an evaluation, create an evaluation last week Thursday with the CFO and limited communications director, and finance director, and my finance manager. Everybody agreed that they need to take the next step to become more adultery (mature) in all these aspects.*" (A1)

External assurance is the next step ahead after developing the control governance process. As observed from STEDIN Group, it planned to build internal assurance or build the foundation of governance control before conducting the external assurance. While the advantage of conducting internal assurance is the financial savings when hiring the external sustainability auditors.

"*[…] and assurance is also one of the next steps. It starts with internal assurance because, like the accountants are very expensive. If you let the accountant do all the work, then you will also know that you will get a very high bill. So, we have to be adults (mature) on this topic, and if you have a first, second, or third level degree of control management, then where that third level is like internal audit, the accountant can also work on the results of internal audits and also save the bill for the external questions that we have. We have to go to that situation.*" (A1)

A1 explained the progression of the shifting perspective within the organization. The topics of non-financial or ESG metrics have also gradually become more critical than before. While at first the management team focused on the financial topics because of the good grades and reputation, they are increasingly aware and get more attention from the investors, roundtables seminars, and media about their accountability of societal and environmental performance. Besides, including non-financial and financial metrics can help the company to deliver compelling and integrated storylines about their performances to the outside world.

"*Well, I think that the mindset of everybody in the company has changed. Because our strategy is, since 2017, I think it is not 2017 and 2018, but at least it is already more than three years old,* *maybe four years. So, but like the CFO, the former CFO, who is now retired, and my finance departments, nobody cares what I did in the financial area because everybody was busy with the financial topics and financial data and figures or whatever. Then they were also sure that they could manage the non-financial, the whole shebang, to get good grades. But now they see our ideal CFO. He is invited for some seminars or roundtables or whatever, or goals or newspapers.*

Then he got questions about "Okay, how many solar panels do you have? How many wind parks do you connect, and how, what is the percentage of sustainable energy in your grades?" If you cannot answer that, then it looks like a fool. It does not mean (that) we have to be adultery (mature) on all these topics. Our highest financial man is also now the highest non-financial spokesperson in this energy, transition, sustainability world that we are living in now. Yeah, you see that the attention is going from the left more to the right. But the main (point), it is shifting, and more people are involved now from other departments.

To make it all better and to make it more like a real story, also integrate the story but that you can prepare. Okay. Why does safety or security cost so many millions? Yeah. Because our accidents rate is very low, for example. We put a lot of energy into it. Another, as it could also be. Yeah. Because we had a very big accident and it costs us a lot of money. You can declare, financial and non-financial." (A1)

There is a significant challenge in the strategy implementation of the sustainability information, namely in data management. The challenge can be identified in the data quality of the non-financial sustainable information, as the owners are not sure about the accuracy of the data itself. In addition, the frequency of data collection also plays a vital role in ensuring data quality.

> "*We can retrieve the data, but some of the data, not only data creators but also data, managers. They also say, okay, this is my data, but I am not sure. It is 100 percent correct. Then, because they are not sure that it is 100 correct, it is because they got the question at the end of the year and nobody asking every month or every three months, every quarter. "Show me the data, show me the data. Let me see, what are we talking about?"* (A1)

This result also indicates that management attention is another challenge in the non-financial information reporting related to the governance process. As ESG metrics or non-financial topics increase quickly, the management team needs to keep following the market and investors' demand, consumer trends, and the updated international or local regulations. On the other side, they need to communicate and align the importance of providing non-financial information in the top-down organizational layers. Most of the time, A1 expressed there are several roadblocks when requesting non-financial information. A1 had to convince and re-iterate the purpose of the request of non-financial data in every discussion within their internal departments.

> "*Yeah, it is the management's attention. So, all these departments they make every month, their reports about certain topics, but are these not ancient topics? What are the new modern topics that we can also implement and measure, and show every month [..] this whole transition of data, information, data topics. As long as there is no question top-down […] they have to address all these topics, then the people on the lower (position) will not do it because they say, "who is asking? because I don't get to ask a question for my boss?". Then I said, "it's very important because the boss of the boss, the CFO, he wants it."*
>
> *So, they replied, "Okay, I have to put some work aside". All these discussions, that is pretty annoying and unnecessary, we should make our lives easier if somethings are on the agenda and maybe, with a lot of efforts, but okay. Make data lakes, et cetera, and everything in between, to restrict information. Then, we can spend more time on doing analytics. What is*

that data now saying? What does it mean? What is the benchmark? You get to the next level of also communication, how with the internal and the external partners, that is how I see it." (A1)

Recommendation for non-financial metrics development

There are three steps to determine STEDIN recommended metrics for non-financial information. First, the relevant material topics for STEDIN need to be determined. These material topics can be found in the annual report and synthesized based on the discussions of their stakeholders. STEDIN defined its term of material topics as the topics that are essential for achieving their mission and strategy and are directly linked to the control framework and risk management. STEDIN has provided its materiality matrix as suggested by the GRI 101 Standards on reporting principles of materiality. In this example, three material topics are selected from the matrix.

Table 12. Selected STEDIN material topics

STEDIN material topics
Safety at work and in the environment
Investing in infrastructure
Contributing to the energy transition

Second, it is crucial to building a connection between material topics, stakeholders, and the impacts made. This step consists of discussing with the stakeholders through representative interviews, dialogue or focus group discussions, and surveys. After the company has collected relevant inputs from these stakeholders, the company can refine the definition of each material topic itself and determine which SDG factors are relevant and have a high impact on the stakeholders. In addition, the company can revisit the strategic objectives to determine which points in the value chain contribute to the progress of the material topic.

Table 13. Mapping of material topics with the stakeholder groups and impact

Material topic	Stakeholders group	Impact (SDG)
Safety at work and in the environment	• Employees • Customers	SDG 8. Decent work and economic growth
Investing in infrasturcture	• Investors • General public	SDG 9. Industry, Innovation, and Infrastructure
Contributing to the energy transition	• Investors • Government • General Public	SDG 13. Climate action SDG 7. Affordable and Clean Energy

The third step is to build an exhaustive list of the key performance indicators (KPIs) based on the available frameworks. In this case, the KPIs are selected based on the industry-specific sector of the suggested framework. GRI categorized the business activities conducted by STEDIN as the electric utility sector. In contrast, according to SASB, it is categorized as the infrastructure sector with the industry-specific sector of electric utilities and power generators. GRI and SASB provided detailed methodologies for the indicators for the specific industry sector. In comparison, the TCFD and CDP emphasize the disclosure structure within the environmental or climate-related scope.

Table 14. Inventory of relevant KPIs based on material topic

Material topic	Suggested KPIs	
	GRI	SASB
Safety at work and in the environment	• GRI 402: Labor/Management Relations	• Total recordable incident rate (TRIR) • Fatality rate

	o 402-1: Minimum notice periods operational change • GRI 403: Occupational Health and Safety o 403-9: Work-related injuries o 403-10: Work-related ill-health • GRI 404: Training and Education o 404-1: Average hours of training per year per employee o 404-2: Programs for upgrading employee skills	• Near miss frequency rate
Investing in infrasturcture	• GRI 203: Indirect Economic Impacts o 203-1: Infrastructure investments and services supported o 203-2: Significant indirect economic impact	• Percentage of electric load served by smart grid technology • Customer electricity savings from efficiency measures by market
Contributing to the energy transition	• GRI 302: Energy o 302-3 – Energy intensity • GRI 305: Emissions o 305-1: Direct GHG emissions o 305-2: Indirect GHG emissions o 305-3: Other indirect GHG emissions o 305-4: GHG emissions intensity o 305-5: Reduction of GHG emissions o 305-6: Emissions of ozone depleting-substances o 305-7: NOx, SOx, and other significant air emissions	• GHG emissions associated with power deliveries • Percentage covered under emissions-limiting regulations and emissions-reporting regulations • Air emissions of the pollutants NOx, SOx, PM10, Pb, Hg

In the end, the selection and refinement of the indicators is an iterative process that involves many discussions within the organization's internal side. While the standard KPI suggested by these frameworks is applicable in the sector, the organization also needs to consider leveraging the existing non-financial KPIs, terms, and definitions to integrate them within the corresponding material topic. The implementation of technology to build a database for non-financial information address the accountability and governance issues and further optimize the organization's processes to ensure the quality of the captured non-financial information.

4.4.2 Enexis Group

Observations based on public reports

Enexis Group is a Dutch regional grid operator that serves electricity and gas grids based in s'Hertogenbosch, The Netherlands. Their business activities cover renewable energy power distribution, regional distribution grids, and national transmission chains. In 2020, it had accomplished a total revenue of €1.5 billion and achieved 1.67% revenue growth compared to its 2019 performance.

Within the EU Directive compliance index frame, Enexis supplemented its annual report with the high level of transparency and connectivity of each initiative, value chain, and total impacts. However, they have limited reporting information in terms of board diversity disclosure, anti-corruption, and bribery.

From the perspective of the TCFD framework, the Enexis group has conducted a good practice of disclosing the methodologies and assumptions for emissions calculations. This finding indicates a strong point for the Enexis Group in describing primary data, conversion rate, and other indicative factorizations. However, from the TCFD perspective, Enexis still lacked historical data of the complete scope of the emissions on the historical basis several years back. Therefore, Enexis provides a structured thought process for the audience of the report. In addition, there is some room for improvement in the governance process for monitoring the climate progress both from the lower project level and the aggregated result in the management level and being accountable with the public stakeholders' group.

Content and reporting methodologies

This section tries to validate the findings from the observation of the external reports. It investigates further the relationship between the company considerations about the strategic decision and the non-financial disclosure reporting. The researcher interviewed with the senior advisor corporate strategy in the Enexis Group. For privacy purposes, the researcher anonymized the interviewee's name by the initial A2. A2 is responsible for the sustainability strategy for the Enexis Group, related to the sustainable development goals and their contribution towards the society or environment. Furthermore, A2 has an expert track record of around six years within the sustainability topic.

Based on the A2 perspective, the most important reason to pursue the improvement in the non-financial disclosure is Enexis's position in society. Since Enexis is a semi-public company, it is responsible for the shareholders and more significant stakeholders such as municipalities and provinces in the Netherlands. Another reason, it improves the transparency and accountability of the data as traditional financial reporting cannot capture the perspective for delivering public goods.

> "*I think it has a lot to do with, like, our position in society. Enexis is not like a commercial company. I do not know what about the background of Enexis, but it is semi-public or hybrids. This means that we do have shareholders, but they are all municipalities and provinces here in the Netherlands. Our profits go pretty much to the provinces and the municipalities, which can, and they can use our profits to invest in other public goods. And we are also delivering a public good. That means pretty much all the money flowing around in our organization is public money that it is coming from pretty much everyone in our areas […]*
> *I think from that perspective. It really makes sense that we try to, well put in quite a lot of nonfinancial information to be just transparent about like our public role on how we spend public money […] but the other grid companies like Alliander and STEDIN, they are also pretty far ahead in the game of, nonfinancial reporting, for example, Alliander, Enexis. You would like to talk to their positions in the crystal price, transparency benchmark thing for that.*" (A2)

In this case, A2 also stated that they used the GRI framework for the non-financial disclosure preparation. The GRI frameworks enabled them to focus on the Sustainable Development Goal (SDG) targets and create a structured mapping of the impacts and stakeholders by value creation model approach. A2 acknowledged that adopting a rigorous GRI framework is a huge step towards improved transparency and insights about how the company operates, although not necessarily improving the performance in the short term. However, it is one step towards monitoring and steering strategy.

"I think that SDGs are really starting to take off in that sense in earlier and rule reports, I think in 2018 and maybe even 2019 I am not completely sure. We also used the value creation model with the six capitals and stuff. The thing was you get in the GRI the reporting guidelines. It is something that you will get points to use the value creation model, but internally we do not really use the value creation model in our strategy or anything.

That's why we're a bit shifting to the SDGs and also, well, kind of conscious making the decision that maybe from like a GRI point of view we're not like improving our performance, but in improving like actual transparency insight in like how our organization actually functions. That is a big step for us to move towards the SDGs, even though that is like, as much GRI proof as it would be if we just keep using that value creation model. I would say that the SDGs are also internally a red or common framework for us to structure the different activities that we do." (A2)

While in the implementation of the EU Directive, A2 expressed that several parts of the recommendation of the EU Directive are not applicable within the business activities and the specific details on which part to disclose. For example, the distinction of the electricity producer and grid operator impacted to which information need to be disclosed since the EU Directive explains more on the surface level. In terms of climate reporting, A2 shared that their team is aware of the climate-related risks and justifies the mitigation for those risks in the steering part. However, they have not taken any concrete measures yet and still exploring the implementation to adopt the TCFD framework.

"I think I am not completely sure that we try to align with those guidelines as much as possible, but that we are also not using them as I would say as the gold standard if it does not make sense for us as a company to follow them […]. Sometimes there is just something like an EU directive that would probably make sense for an electricity company that produces electricity, for example. But at an EU level, it is not as clear that those two are separate. In many countries, the producer is the same party as the critical operator, and here in the Netherlands, that is already well split up quite well." (A2)

"[…] *sometimes leads to situations in which the EU Directives do not completely make sense. We just make it our own way, but it is definitely what we are trying to do to follow it as much as possible. But at the same time, I have to be honest because I had two weeks ago, the new update published, for example. And, I am not completely sure whether the people at our reporting department, for example, are already reading through and checking in the impact of it. That is also something what are our accountants researching. Well, those recommendations about like, they know all of these directives, we, I would say no them on the surface, but we do not get all the specific details."* (A2)

Observations about governance and strategy

Reflecting on the governance process of the non-financial data and monitoring of the outcomes, A2 emphasized the importance of improving the data control processes. There is a planning and control cycle for the strategic goals into key performance indicators for the financial information. However, A2 elaborated that they developed the control for non-financial information still on the specific project level. They have planned to pursue aggregated data collection to get the complete scope of the results.

"At Enexis, we have something like the PRC cycle, planning, or our control cycle, which is like a result of our strategy plan. And, well, it pretty much translates like the strategic goals into KPIs and that, to get like, pretty much like PDCA cycles or planned check acts, they get monitored. And, well, goals get changed if necessary and stuff like that. And, like quite a lot of like SDG ESG relate themes are part of our strategic plan, so they are already involved in the

PRC cycle. It is not like we have this separate governance process going on financial themes, but also, it is not like every theme is completely covered. For example, if we look at carbon emissions at the project level – we have the cycles in place.

We know that we take measures. We know, do they work? Do we need to take our measures? Should the project goal reach that is completely clear and in a very clear governance cycle, but if you look at like the aggregation of that, so like the complete carbon emissions over the next year. I would say like the sum of all those little projects. There is no actual governance process in place about who is responsible for the total amount of carbon. We have like lower responsibilities, like lower in your organization as a project level.

That is something I am working on because I am not completely sure yet if that is something we need to do. What I feel like there is work to do there also to aggregate that (non-financial information) a little bit and get more control over the total sum instead of just looking at specific parts of the total amount." (A2)

Recommendation for non-financial metrics development

The metrics selection of non-financial metrics for the Enexis group also follows the same principle as the previous assessment. By utilizing three steps approach, the relevant indicators are determined and providing comparable metrics. Enexis's material topics are available on their annual report and described by the materiality matrix updated once every two years and detailed assessment every four years. Three material topics are selected from the material topics list.

Table 15. Selected Enexis material topics

Enexis material topics
Innovation, digitalization, and information security
Employment and contribution to economic growth
Reliable and accessible energy supply

The second step consists of the relevant material topic, stakeholder group, and impact assessments. Table 16 describes the connection between the three elements.

Table 16. Mapping of material topics with the stakeholder groups and impact

Material topic	Stakeholder group	Impact (SDGs)
Innovation, digitalization, and information security	• Customers / general public	SDG 8. Decent work and economic growth
Employment and contribution to economic growth	• Employee	SDG 9. Industry, Innovation, and Infrastructure
Reliable and accessible energy supply	• Customers / general public	SDG 13. Climate action SDG 11. Sustainable cities and communities

Third, the inventory of suggested KPIs is built based on the GRI and SASB framework within the industry-specific classification. Enexis's business activities are classified as electric utilities. The indicators are adjusted from the relevant material topics and based on the importance of the stakeholders.

Table 17. Inventory of relevant KPIs based on material topic

Material topic	Suggested KPIs	
	GRI	SASB
Innovation, digitalization, and information security	• GRI 418: Customer Privacy	• Number of incidents of non-compliance with physical

	o 418-1: Substantiated complaints concerning breaches of customer privacy and losses of customer data • GRI 404: Training and Education o 404-1: Average hours of training per year per employee o 404-2: Programs for upgrading employee skills	and/or cybersecurity standards or regulations • Grid resiliency: SAIDI, SAIFI, CAIDI, inclusive of major event days
Employment and contribution to economic growth	• GRI 203: Indirect Economic Impacts o 203-1: Infrastructure investments and services supported o 203-2: Significant indirect economic impact • GRI 403: Occupational Health and Safety o 403-9: Work-related injuries o 403-10: Work-related ill health	• The total recordable incident rate • Fatality rate • Near miss frequency rate
Reliable and accessible energy supply	• GRI 302: Energy o 302-3 – Energy intensity • GRI 201: Economic Performance o 201-1: Direct economic value generated and distributed o 201-2: Financial implications and other risks and opportunities due to climate change • GRI 305: Emissions o 305-1: Direct GHG emissions o 305-2: Indirect GHG emissions o 305-3: Other indirect GHG emissions o 305-4: GHG emissions intensity o 305-5: Reduction of GHG emissions	• Average retail electric rate for residential, commercial, industrial customers • Typical monthly electric bill • Number of residential customer electric disconnections for non-payment percentage • Customer gas savings from efficiency measures by market • Percentage of gas utility revenue from rate structure

Based on the findings, Enexis is still facing the challenge of the data centralization and aggregation process. They can potentially address the issue by streamlining the data processing from the smaller-scale project level into the aggregated level. In addition, there have to be clear roles and descriptions in place to ensure the responsibilities of the data owner and the quality of captured data. Finally, the indicators can be further refined based on the rigor inputs internally and management discussions.

4.5 Discussion

Over the past decades, one can observe a movement to produce a standard industry practice in non-financial reporting. It is starting from the earliest organization in sustainability reporting pioneered by Global Reporting Initiative until the Task Force for Climate-related Financial Disclosure (TCFD) aligned with the regulations set up by the EU Directives. Further, during the crises, the market demanded more transparency and realized that corporates have to perform better and put the wider stakeholder groups rather than focusing only on the shareholders' priorities. Thus, this led to the advancement of the search of the standard of non-financial disclosure that materializes in the World Economic Forum discussion that hundreds of the world's largest corporates agree about the rigid core of metrics to measure the non-financial impact on the environment and society. International accounting standard setter organizations also have pushed the agenda to build a robust sustainability-related reporting standard that oversees the elements of non-financial information from the environmental and societal perspective (IFRS, 2021; Jones, 2021; Thomas, 2021).

Further, this research presented the findings of the maturity level of non-financial disclosure energy and utility companies in The Netherlands, referencing EU Directive and TCFD framework. The results indicate that most of the samples have outperformed in compliance level in the EU directives. Since then, the EU Directive has been pushed into mandatory legislation at the European level and adopted by local regulations such as non-financial information decree in the Netherlands (Besluit bekendmaking niet-financiële informatie) (KPMG, 2019; Rijksoverheid, 2017). Therefore, companies comply more with EU Directive rules and requirements. However, the EU Directive also presents a challenge for companies in determining the necessary disclosure for specific industry-sector. Some companies felt that they are not fit within the given classifications in the EU Directive framework.

The unfamiliarity with the TCFD framework presented another challenge in the implementation of the framework itself. TCFD structured its frameworks based on the four main elements. Upon closer investigations, most companies have underperformed in one of the main elements, the governance part. In comparison, the compliance index score for the TCFD framework is lower than the EU Directive compliance index score. Previous case study results suggested that they were still exploring the possibilities or conducting a feasibility study to prepare non-financial disclosure according to the TCFD recommendations.

The findings also imply that the higher level of compliance to the EU Directive framework will lead to a higher score of the TCFD compliance level. This phenomenon later underlines the effectiveness of the renewed regulations since the revision made in the EU Directive 2019 emphasized the climate-reporting perspective into the preparation of non-financial information following the TCFD recommended disclosures (Guidelines on Non-Financial Reporting: Supplement on Reporting Climate-Related Information, 2019). The TCFD recommendations would enrich a specific part of the disclosure mandated by the EU Directive. At the same time, there are also several considerations regarding the reporting format and the company's definition of materiality. Additionally, one of the main concerns from the TCFD perspective is the robustness of the governance process. The governance process covers from the board's oversight to monitor the track of the climate-related progress until the dedicated management structure within the organization to ensure that companies considered climate risks and opportunities in their strategies.

The conducted case studies also offered valuable insights regarding the real challenge faced by the companies in terms of implementing the non-financial disclosure best practices. Collectively, two points deterred the development of non-financial information. First, the management attention to focus on non-financial information issues. Second, the data collection and aggregation to get a broader view of the company's impact on society or the environment. Management attention is crucial to realizing informed-decision making by considering the non-financial information into the process. It also encourages within the functions in the company about the importance of collecting high-quality data. These two findings highlight the previous conclusion in the cause of the lower score of compliance index within the TCFD recommendations, ultimately in the governance element.

Overall, the process to design non-financial metrics involved many inputs from internal and external stakeholders. In principle, it is an iterative process that allows for improvement throughout time. Figure 13 depicts the summary of the design of the non-financial metrics.

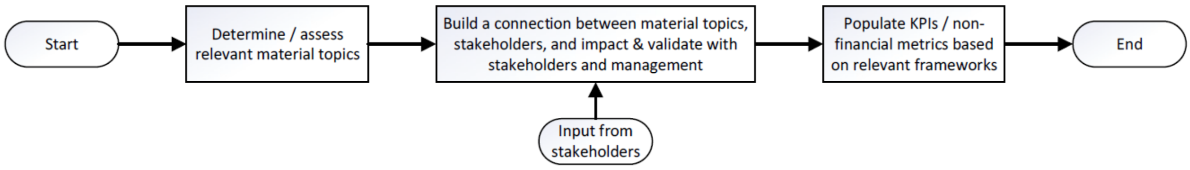


Figure 13. The process to design non-financial metrics

The selection process of relevant material topics is a vital ground factor to determine the non-financial metrics. As explained by the Statement of Intent by the five standard publisher organizations and World Economic Forum 2020 report, materiality is a dynamic concept. The companies are encouraged to start tracking their progress from the smaller scope at the earliest opportunity. Further, the ambition is to expand their coverage to capture the impacts of their operations on the planet and society across the value chain (monetary value of impacts), as described in Figure 1.

The first step is to determine material topics that relevant to the business activities. Based on the previous explanation, the material topics can be changed over time as the business activities expand and constantly following the market needs. These changes can impact both the social and environmental aspects and be considered material or non-material over time. Therefore, the discussion about renewing the material topics is conducted periodically in a similar manner over the company's strategic decision. The duration can vary from 2-years or 4-years period, according to the suitable needs.

Second, as the material topics are determined, the material topics definitions and targets are refined through the discussion between the internal or external stakeholders. There are different ways to communicate with these stakeholders from the survey or questionnaire, focus group discussions, and in-depth interviews with the direct stakeholders (e.g., suppliers, business partners, investors) to gather all of their input, build common ambitions, and target material topics.

Finally, leverage all of the available standards and frameworks that have existed and developed over the years. The World Economic Forum (WEF) report on Measuring Stakeholder Capitalism suggested 21 core metrics to report on the non-financial metrics, allowing the integration of the frameworks and standards of the five standard-setter organizations. Furthermore, more mature companies can expand their impact metric based on the suggestions of industry-specific metrics from Global Reporting Initiative Standards and SASB Standards as a starting point.

Pursuing best practices in non-financial disclosure would lead to more robust monitoring metrics and satisfy the designed ambitions. Companies can leverage the additional insights that are not captured by the financial information alone to make informed decisions into their strategies. As there are more pressures from various stakeholder groups, namely government, non-governmental organizations (NGOs), social activists, investors, and the general public, companies need to consider their actions to incorporate the priorities to the larger stakeholder groups. This prioritization process includes the iterative discussions with the stakeholders that translated into the company's ambition to positively impact the environment or society with an accountable governance process. Furthermore, companies translated this increase in progress throughout their project-level initiatives, product innovations, process optimizations in their entire value chain.

The discussion started from the management level is prioritized and translated into companies' initiatives in a broader scope. These continuous discussions lead to the improvement of the sustainable business model innovation (Morioka et al., 2016) and technological innovation in terms of product or process in a sustainable way. With sustainability as the driver, the decision and technological change made by the companies are encouraged by all stakeholder groups (Seebode et al., 2012; Vieira & Radonjič, 2020). For instance, investors group would invest more in renewable and green technologies to offset the carbon emissions. The government would encourage the corporates by green tax credits and rewarding the initiatives that opted for the lower carbon emissions technology or minimize the climate-related risks. Public perceptions and NGOs also play a crucial role in shaping the company's ambitions and targets.

5. Conclusion

The development of the standards for non-financial disclosure has resulted in significant progress over the last years. Companies, investors, and other stakeholder groups urged the market to design robust frameworks and metrics in non-financial reporting. Several organizations have focused on developing their technical methodologies and terminology to measure non-financial information in recent years.

This research analyzed current best practices of non-financial disclosure through the benchmark studies of the available frameworks. By the time of the research, five organizations and one task force group have worked together to build a common set of metrics to standardize the non-financial information within the companies. After leveraging the existing industry-standard frameworks and practices, this research has proposed and demonstrated the maturity level in non-financial disclosure for the companies in the energy sector. The assessment used the content analysis methodology with the compliance index scoring referencing the EU Directive and TCFD recommendation to quantify the companies' performance in their non-financial reporting.

In practice, most energy and utility companies in the Netherlands have a mature stage of non-financial reporting aligned to EU directives by the average score of 0.78 out of 1. These are reflected based on the comprehensiveness of the non-financial information disclosed, transparency, completeness of the topics, and the effort related to the outcomes and monitoring the progress. However, on average, these companies have not fully prepared for climate-related financial disclosure yet. They scored with an average score of 0.56 out of 1.

More profound observation concluded that the weak governance process causes a lower score of climate-related reporting within the climate-related disclosure framework. Most companies lack the governance structure to ensure the management or board's view to oversee the progress related to the non-financial performance. In contrast, they have fully developed metrics and meaningful targets to track climate-related performance (e.g., emissions in terms of direct, indirect, and other indirect sources). These findings correlate to the further investigations from the case studies that suggested at the moment they have control systems for data control in place in the lower level, but not yet in the form of aggregated data from the whole business units or activities. Thus, the management and boards will not have sufficient insights with the absence of the aggregated data. They will face difficulties in integrating the strategic objectives with achieved impact or progress.

Furthermore, to underline the strategies to achieve non-financial disclosure available best practices, this research proposed and demonstrated a guideline to populate non-financial metrics based on the available recognized standards aligned with the EU Directive and TCFD. The selection of non-financial metrics is an iterative process with a thorough discussion across the internal or external stakeholders. Then, the discussions prioritized the issues from the larger stakeholder groups and integrated them into the companies' strategic objectives. The companies must consider the corporate strategic objectives when selecting the relevant material topic for them. This alignment ensures that all selected topics are within the influence of their business activities and value chain and can significantly progress towards society and the environment. Finally, the further implications of non-financial disclosure for the companies' internal strategy can be observed through the risk management and governance process. Although they still need to improve significant steps to increase the data collection and data quality of non-financial information, the results can refine its internal decision-making processes and capture additional insights beyond the traditional financial metrics. Furthermore, the companies can consider the long-term value creations and continuously produce positive impacts for the broad group of stakeholders.

This study is subject to the usual limitation of the limited samples and the case study investigations, which indicates a lack of generalizability (Yin, 2018). This research contributes by providing the most recent inventory of best practices in non-financial disclosures and investigations towards the strategies and implementations in the energy and utility companies. Additionally, the case study clarifies the essential findings from the public reports and explores the actual challenge in the implementation perspective. Ultimately, this research provides a unique approach to achieve the non-financial disclosure best practices and demonstrates the process in the case study.

This thesis also presents opportunities for next research on the sustainability reporting sector or non-financial accounting. As the non-financial standard frameworks evolve, this research can be used as the latest starting point and approach to the available best practices. Further, the subsequent works can improve the proposed approach for developing best practice non-financial metrics according to the most recent regulations and frameworks.

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7. Appendix

Interview transcription

Interviewee name : A1
Company name : STEDIN Group
Job position : Senior Non-Financial & Sustainability Controller

Sebastian Ateng · 00:11
Okay. Yep. Yes, that is correct. Okay. So, first of all, thank you very much for your time. I would like to introduce myself first. My name is Sebastian. I think actually I'm a master's student from TU Eindhoven, and I'm currently researching for the nonfinancial disclosure for these companies, especially STEDIN as one of our example. In here, I would love to ask a couple of questions from my previous findings, so yeah, it is also, I'm partnering with PWC, Netherlands, so that is why we, I got some context that also connected to you. Yeah, maybe you want to introduce yourself from your side also first.

A1 · 01:08
Yeah. So, I'm dealing with (how do you say it) sustainable yearly reports, since 2011. So 10 years, two different companies. They belong to the same group, the ENECO group. First, I was working for the infrastructure company, Joulz. And since 2015, I'm working for the grid operator STEDIN, but in the past it was ENECO energy.

Sebastian Ateng · 02:03
Perfect. Yeah. So, since this nature of the research, I have to take the transcription of the interview itself, are you, is it fine by you if I record for the interview with the sound? Okay, perfect. Yeah. So, related to the information that you talk about, what is your current position that related to the non-financial disclosure sustainability information that you working on currently with STEDIN? What is your job position with that related to the nonfinancial information with STEDIN right now?

A1 · 02:50
So, I'm the only one in finance who is working, with the non-financial data and/or sustainable data. That's also non-financial data. Currently for this year, for the second year, they also do impact measurement. That's the new era, to show our added value for the municipality and, the negative sides (impact), once we retrieved from the municipality.

Sebastian Ateng · 03:38
Okay. Cool. Could you elaborate more about this impact measurement. Is this included in the ESG umbrella itself or more in a broad context?

A1 · 03:51
No, I think it's really a next step in the ESG, development. The ESG is mostly saying, okay, what do we do? What did we do last year? How fast your rates and what is our results from the targets that they do good or bad, and what did we learn and what will be the next action. But the impact measurement has more to do with, your value chain. So the value chain model, not the output but the outcome of what our company does for the world, for the planets, for the people. What we take, what we need, from the planets, worlds, from the people, startup, these positive impacts. Of course, we increase the positive impacts more and decrease the negative impacts. You will need a policy as a company, to make this possible.

Sebastian Ateng · 05:16
Maybe step back to my question. I was wondering, could you tell me from your experience, what is the particularly the main reason or the most important reason for STEDIN itself to disclose this nonfinancial information or to do these impact measurements?

A1·05:47
To disclosed the non-financial information because it is requested by law. We are an OOB (Public Interest Organization). We are a very important organization for the Netherlands or for a certain part of the Netherlands, because we are a grid. We only work in certain part of the Netherlands, and it's based on at least three issues, or which I know. You should have a revenue of 20 million. Well, we have a revenue of 3 billion. The company has more than 500 people working. Well, we have almost 5,000 people working for our company. Our company has a big impact, it is 'Organisaties van Openbaar Belang'.

A1 · 07:00
So, it's an organization or public interests. Before I did, risk management and assurance, and I also did some sustainability measurement and did some yearly reporting and as those everything together. But now the organization, they decided to really professionalize on different topics. Risk management (what I did in the beginning) was a department of eight people. Assurance is only one, a dedicated Assurance manager, but doesn't have to do the I this time with other, aspects. And, and I was asking, okay, maybe you can help us, with the non-financial information, because this is what I studied. I started a corporate social responsibility at the Erasmus university. The post-doc executive program.

A1 · 08:18
It was in 2011 and then I passed it and I wrote a paper, et cetera. So, I got my diploma with a grade of eight, and then I got involved, first with the Joulz yearly report. And, this also retrieving the, non-financial information, about Joulz. Then, they asked, okay, you have really, experience in this field. Can you do this also for STEDIN, and you can, I can skip risk, I can skip insurance, I can skip everything that only focused on this. So that's really nice. Because in 2017 in the, EU Directive came out and yeah, we also have to comply with that directive. So that's why they asked me.

Sebastian Ateng · 09:18
Following to that answer, are you using several selected methodologies for preparing this non-financial information, for example, this EU directive, or specifically GRI, SASB or TCFD probably. Are you using these selected frameworks?

A1 · 09:42
Oh, okay. We use, we UCM, I mean, okay. We are linked with the EU directive, of course. Then, we use it now for 10 years, we used in the Joulz periods, but also now in a STEDIN periods, the GRI. Yeah. I know I use GRI 3.1, then I used GRI 3.3, I think then GRI four, and now it's the GRI-standards.

Sebastian Ateng · 10:16
It's all referencing these frameworks around the process.

A1 · 10:23
The reason, the reason why I said we should follow GRI because it is like globally. There's a possibility for a global standardization. To see how we score on the certain topic, within a company. It's worldwide, it's the world's largest (most used) framework. That's why we use this GRI, what else? And I also know, yeah, I also know SASB and ISO8000

Sebastian Ateng · 11:11
Perfect. From your perspective, what are the topics that you emphasize the most related to the STEDIN? Are you focusing on several aspects or only one of these aspects?

A1 · 11:31
No, we are fully, in my opinion, we are fully focused on the whole GRI framework. If you look at that, did you see our yearly report or not? Yes. At the end you see the GRI index. You see, all the topics that we address your reports

Sebastian Ateng · 12:02
We already analyzed that for, I think around 155 for GRI index listed.
A1·12:13
Yeah. It is on page five and I see it's a big list. So those are eight pages of GRI topic.

Sebastian Ateng · 12:32
Perfect. Actually, it's interesting to see in here that, most of the, generally speaking for this energy and utility companies, they're a bit focusing on the climate change issue then also referring to this task force for climate related financial disclosure (TCFD). What is your perspective on this, preparing through this phase for STEDIN? Are there any discussion for preparing towards that?

A1 · 13:07
Well, to be honest. I don't think we really follow for the full amounts this framework on financial risk.

Sebastian Ateng · 13:31
Yeah. From your perspective, are you also considering about this climate change related issue from the assessment?

A1 · 13:41
Okay. There is this framework. We are still in the searching mode, but we have our one planets strategy that is based on the climate, policy of the government and this year. For the first time we also showed our, how our, science-based targets impact, but we don't follow exactly this, well, I'm looking now for the abbreviation. Okay. Let me see, because I know the CFO asked me to do some research. I was also in contact with Aliander and I heard is doing something, where they will inform, get the TCFD. So we don't follow exactly the TCFD. That is the next step. We are in the research now, and with Alliander.

A1 · 15:28
I think that, also PwC, made us an offer to focus on this, but for this year reports, we didn't do it because we had other tactics and strategy to create our yearly reports. Because normally they came out at the beginning of April or the end of March with our yearly reports. Now we managed to release it five weeks earlier, including several activities. There's no time to do some research on the new frameworks, like TCFD and others.

Sebastian Ateng · 16:34
Perfect. I think that the next one, I was wondering, like what are the processes that involve answering like these activities or results around the impact measurement or the ESG umbrella that achieve in the ESG field across the business units? Are there any like specific processes there?

A1 · 17:03
Well, what do you mean with that those processes?

Sebastian Ateng · 17:05
(The process refers to) more internal, governance and internal control, which is serving for this non-financial information quality or the data itself?

A1 · 17:19
Well, that's also a growing thing because at this moment, we have some internal control on some, non-financial topics. There are also some, I'll talk topics that only comes up for the yearly reports. If somebody says, okay, you have, we have so many solar panels or whatever, then we just believe it. We don't control it, but we had evaluation, create an evaluation last week Thursday with the CFO and limited communications director and, finance director and my finance manager. And everybody agreed that they need to take the next step to become more adultery (mature) on all these aspects. We are doing good, we have the ESG-report from ISS and we are in the top seven of a 42 or 49 companies. We are in the B level (sustainability rating), which is good.

A1 · 18:55
While Aliander was, before we started doing yearly reports, STEDIN in B plus, and they went down to B and we came up B minus to B. We are really doing a lot of good things. And this year, we also think that we will get more points. We did address the science-based targets methodology, and then the look and feel, and the context is the same as what is written in the Alliander yearly report. So it's not really different. So yeah, but okay. The TCFD is one of the next steps and assurance is also one of the next steps. It starts with the internal assurance because, like the accountants are very expensive.

A1 · 19:55
If you let the accountant do all the work, then you will also know that you will get a very high bill. So we have to be adults (mature) on this topic and if you have a first, second or third level degree of control management, then where that third level is like internal audit, then the accountant can also work on the results of internal audits and save also the bill for the external questions that we have. We have to go to that situation.

Sebastian Ateng · 20:48
Thanks for the answer. I think the next one that I want to ask you more about the correlation to this, strategy itself. So, how do you include this non-financial information of metrics, as part of the strategy development process? Are there any considerations taking into account for this non-financial information through strategy development in particular?

A1 · 21:15
Well, I think that the mindset of everybody in the company has changed. Because our strategy is, since 2017, I think it's not 2017 and 2018, but at least it is already more than three years old, maybe four years. So, but like the CFO, the former CFO, who is now retired and my finance departments, nobody cares what I did in the financial area, because everybody was busy with the financial topics and financial data and figures or whatever, and then they were also sure that they can manage the non-financial, the whole shebang, to get the good grades. But now they see, Oh, now our ideal CFO, he is invited for some seminars or roundtables or whatever, or goals or newspapers.

A1 · 22:43

Then he got questions about “Okay, how many solar panels do you have? How many windparks do you connect and how, what's the percentage of sustainable energy in your grades?” If you cannot answer that, then it looks like a fool. It does not mean (that), we have to be adultery (mature) on all this topic. Our highest financial man is also now, the highest non-financial spokesperson, in this energy, transition, sustainability, worlds that we are living in now. Yeah, you see that the attention is going from left more to, right. But the main (point), it's shifting and more people are involved now from other departments.

A1 · 23:48
To make it all better and to make it more like a real story, also integrate the story, but that you can prepare. Okay. Why does the safety or security costs so many millions? Yeah. Because our accidents rate is very low, for example. We put a lot of energy in it. Another, as it could also be. Yeah. Because we had a very big accidents and it costs us a lot of money. You can declare, financial and non-financial.

Sebastian Ateng · 24:38
Yeah, for sure. So, from your opinion and experience itself, how far this kind of implementation for the strategy? How far STEDIN group in particular including this non-financial information to the strategy implementation at the current moment? Because you said previously it was not that important, but right now it's evolving, what do you think about this situation?

A1·25:08
Yeah. We are able to retrieve the data, but some of the data, not only data creators, but also data, managers. They also say, okay, this is my data, but I'm not sure, it's 100 percent correct. Then, because they're not sure that it's 100 correct. It's because they got the question at the end of the year and nobody asking every month or every three months, every quarter. “Show me the data, show me the data. Let me see, what are we talking about?”. The strategy of 2017, it addressed our role in the energy transition, and not so many direct connections with KPIs nowadays, that's the outside worlds want to see from us. Oh, because the other energy companies are reporting about those topics.

A1·26:28
So, how STEDIN do on those topics? Yeah, we are not the pilots, we are just the passenger to address this question and we should become the pilots. So we are now, our life is based on what other people think and we have to we'll find it out, but they want to get in the top group, in the head, to say this is it. So the KPIs, because it's, but the data is not a hundred percent, not all of the data is 100%, but this doesn't matter, because you can also use ranges, but on the impact measurements, we are (in the) top level, together with Alliander and they listen to us as well. It is our progression and the impact measurements as well. Now we hear, “we have to follow STEDIN and Alliander”.

Sebastian Ateng · 27:52
Yeah. Actually from your perspective, like what is the most obstacle for this, non-financial information? I think you've mentioned a bit slightly about the data itself. Like it's a bit messy and the process itself, but do you think any other major obstacles that you feel at the current moment?

A1 · 28:14
Yeah, it is the management attention. So, all these departments they make every month, their reports about certain topics, but are these not ancient topics? What are the new modern topics, that we can also implement and measure, and show every month, to buy with what is being asked, from India, it's like rules from our company? Yeah, this whole transition of data, information, data topics. As long as there is no question top down, from like, okay, the STEDIN 2.0, they have to address all these topics then the people on the lower (position) will not do it because they say, “who is asking? because I don't

get to ask a question for my boss?". Then I said, "it's very important because the boss of the boss, the CFO, he wants it".

A1 · 29:36
So, they replied, "Okay, I have to put some work aside". All these discussions, that is pretty annoying and unnecessary, we should make our lives easier if somethings are on the agenda and maybe, with a lot of efforts, but okay. Make data lakes, et cetera, and everything in between, to restrict information. Then, we can spend more time on doing analytics. What is that data now saying? What does it mean? What is the benchmark? You get in a next level of also communication, how with the internal and the external partners, that's how I see it.

Sebastian Ateng · 30:33
Perfect. Thank you very much. If I can clarify, maybe clarify, tell me if I write them wrong. It's more about the translating the core message, like from the vertical approach, from the top bottom, giving these messages of the importance of non-financial disclosure, at least from your explanation.

A1 · 30:59
Yeah, because the questions that the CFO gets from colleague, grid operators, or from the government, but also from investment companies. If you cannot, for example, tell the investment company, how many electrical poles (have you installed?). How is it possible because you are the grid operator, you are connecting the wire to the electrical pole, for loading energy, electricity in your car, a question like this, for example. It looks simple, but it's very difficult to retrieve that data. To be one hundred percent sure about the quality and, fidelity of the data.

Sebastian Ateng · 32:11
Okay, perfect. Thank you very much. Yeah. I actually did. That's my last question. Actually also I already assess or analyze a bit from excellent perspective from the annual reports, sustainability website. I want to show you some slides, if you want to give some comments or some of my approach in here, let me share my screen in a moment.

A1 · 32:37
Yeah. Yeah.

Sebastian Ateng · 33:52
Perfect then. I analyzed the STEDIN group from different, sources. What do we see in here right now? I measured this against the EU directive framework, which scores around, 0.958 out of one. So it's really good, actually. Also, from the TCFD, unfortunately it's slightly lower, but as you can see before, it's preparing towards there. What currently STEDIN do not have right now, if we apply it to the TCFD framework, it should be, the learning curve is not that far.

A1 · 34:41
It's also a 0.640 out of one yeah?

Sebastian Ateng · 34:49
Yeah, out of one. Also, other parts for comparison in here. I analyze in total, we have total 17, energy utilities companies in whole Netherlands and, STEDIN ranked in the ninth position, but it's really, like on top of it and also analyze readability scores. The text is not that complex.

A1 · 35:24
Is the ninth position good?

Sebastian Ateng · 35:31

Yes, it's in the middle

A1 · 35:38
Okay. Because how many companies did you address?

Sebastian Ateng · 35:39
17 to 19. Yeah exactly. I think from my side of analysis, the key takeaways and suggestions are in here. From this graph, we see this kind of distribution of the elements by the TCFD compliance index. For example, for metrics and target, a STEDIN group itself has a really strong baseline, a really strong foundation, also risk management, but in here, unfortunately it's a bit less on the strategy and governance level. That's why I also asked a bit how to involve the risk management process or this, translating this, especially climate-related information to this aspect in the development.

A1 · 36:34
No, I know I asked them because I came from the risk department and I said, "Okay, now I'm at the other side, I'm doing the user reports and I see also in the EU directive that we need to address climate change, risks that we see and we need to know, and all that, but it doesn't happen". And then the risk department says, "Yes, we did an interview with all these stakeholders and nobody's (saying) something about climate." I said, "Oh, okay? Now, you know. So maybe you can say hey thank you very much for all these risks, but there's a new field of era if you also need to address the climate change. They didn't, they didn't take action on that.

A1 · 37:29
So that's really, it is really helpful. Okay, these lines distribution is based on the TCFD-index?

Sebastian Ateng · 37:39
Based on the TCFD framework, yes.

A1 · 37:42
In the metrics and targets we score one out of one. At least from my analysis, based on the TCFD framework, the metrics and target.

A1 · 37:54
Why is it? Because we do it over many years?

Sebastian Ateng · 37:57
The completeness of the scope of the disclosure and also the target itself, actually, because I see they're preparing more targets for the energy transition. In that sense, the metrics and target scores relatively high also for the benchmark for other companies.
A1 · 38:22
Yeah. But is it also because we report over more than one year?

Sebastian Ateng · 38:26
Yes, totally. Historical reporting is also really important in this section.

A1 · 38:32
Yeah. That's what for the benchmark and for the, what you, how do you say it? How does it good or bad or whatever?

Sebastian Ateng · 38:41
Exactly. I mean, those transparency in this historical periodical reporting, that is an important element.

A1 · 38:49
Yeah. Thank you.

Sebastian Ateng · 38:51
Yeah. I think this is what I want to show you. Do you have any comments from your side? I mean, besides from what we discussed?

A1 · 39:03
Only that maybe it's, good for the reader to understand that. And, then the ninth position, for example, is based on the 15 or 17 or 19 companies. Ninth position for something had to do with the 16,000 figure that I saw the fourth bullet. I thought, okay, that is really good or not.

Sebastian Ateng · 39:36
Okay. Yeah. Okay. Sorry about that. Yeah. I will, I will make it clearer next time.

A1 · 39:41
So you can say, okay. I investigated so many companies and STEDIN is in the middle, of the ninth position. This is interesting. What companies are then in position one until eight?

Sebastian Ateng · 39:58
What we see in here? Let me check. One of them is shell. Actually, Shell is scoring quite high on that. The other part is the SBM offshore. Enexis and Alliander are similar in the eight positions.

Sebastian Ateng · 40:37
Enexis is in the seventh. So It's super close, Alliander and Enexis and STEDIN. They basically have very small differences. After I completed my thesis, structured the report and everything, I can, share this to you from my findings for assessing of these energy & utilities companies. I will keep you in touch and also keep you updated about the results of the thesis itself.

A1 · 41:10
Nice, nice. Okay

Sebastian Ateng · 41:14
Yeah, I think in the end, thank you very much for your time also because you are coaching for this fencing tournament. Good luck with that. I hope you a success, a great success. Thank you very much from my side.

A1 · 41:35
Good luck with your report and graduate whatever level, you need to graduate on. Yes. All right. Thank you very much.

Interviewee name : A2
Company name : Enexis Group
Job position : Senior Advisor Corporate Strategy (CSR and Sustainability)

A2 · 00:00
Yeah, of course. Yeah. Well, as you know my name is A2. I work for Enexis about six years now and currently, and the last, like two, three years, two and a half years, I think, I've been working for the strategy department, where my main responsibility is sustainability and our like so sides or position. Like everything, concerning sustainable development goals and our contribution, for example, to those goals. Well, they are pretty much within my responsibility within Enexis. That also means that because, the SDG and also sustainability and like indeed to non-financial information is mostly about those teams. Yeah. That means that I'm also at a very much involved in the annual reporting process.

A2 · 01:01
And, well, I'm like part of the group that is responsible for making, the annual reports, which doesn't mean by the way that I'm like the person that, look and find all the information within the organization. There are other people that are actually in the reports and department that are actually putting it all together, but I'm a bit more, I guess, in this an overview position. I think that's also why a Han referred to me, because I know like about quite a lot instead of that, I know a lot about something very specific. If you have some very specific questions, it might be necessary to check it with another colleague, but if we get there, I'll make sure you get the info you needed.

Sebastian Ateng · 02:00
Thank you very much. Yeah. Thanks for that. Yeah. I think I, first of all, like I would like to ask, like, can you tell me what, like, what is the most important reasons, I mean, for the Enexis itself to pursue this, like almost gold standard or this, maturity level in the discourse on the financial disclosure?

A2 · 02:23
Well, I think it has a lot to do with like, our position in society. Enexis is not like a commercial company. I don't know what about the background of Enexis, but it's like semi-public or hybrids (people call it that). Which means that we do have, shareholders, but they're all, municipalities and provinces here in the Netherlands. Our profits go pretty much to the provinces and the municipalities, which can, and they can use our profits to invest in other public goods. And we're also delivering a public good. That means, pretty much all the money like flowing around in our organization is public money that it's coming from pretty much everyone in our areas that we're monopolist. Everyone that has a connection to the grids pays the same amount. So it's like equally define it.

A2 · 03:29
It doesn't really matter if you only use like a 10 kwh or if you use a, I don't know, a hundreds. You only have like, I think like two or three times of connections to create. They obviously come with like higher or lower bills, but the principle is everyone like living in like, well, like I do, like in normal Dutch home, everyone pays the same amounts to an exit. We really feel the responsibility of like having always public money and doing a public task pretty much. We find it very important.

A2 · 04:11
That that's, yeah, I would say it's therefore for us kind of common to step up our game in the reporting, because it is public money, we feel like we should be as transparent as possible on how we are spending it and to, well, yeah, guys kind of explain, I would say where the money's going and that's the interesting part that because, I, I would say like a traditional annual report doesn't really do much nonfinancial disclosure, but I think a lot of the value that we create is not financial. I mean, you can,

it's hard, right? To say like a minute of outage time of the electricity grid. How much is it worth? I mean, who can tell, but it's like obvious that if it has like a huge societal impact, if our grid fails, for example.

A2 · 05:16
I think from that perspective, it really makes sense that we try to, well put in quite a lot of nonfinancial information to be just transparent about like our public role on how we spend public money. I think also, I, I'm not sure if you also looked in like our, well, I, I, they're not really competitors since we are monopolist, but the other grid companies like Alliander and STEDIN, they're also pretty far ahead in the game of, nonfinancial reporting, for example, Alliander, ENEXIS. We are all pretty much always, you'd like to talk to them positions in the crystal price, transparency benchmark thing for that. I, I'm not completely sure what it's called, but there's like this benchmark for annual reports.

A2 · 06:11
We're, as far as I know, at least the last four or five years, we're in the top 10 and Alliander too. I think it's also based on the sector, logic that it makes sense to do it if you're in our sector.

Sebastian Ateng · 06:27
Okay, perfect. I, can I rephrase it? Like, this is more like a means for improving the communication about the impacts that an Enexis is made to this to your stakeholders for in that sense.

A2 · 06:43
Yeah. It's, it's about indeed improving communication, but it's also really about that we feel a responsibility to explain and it's not just communication. Like, I don't know, like it makes us look better. We just feel like it's our responsibility to be really transparent about spending public money.

Sebastian Ateng · 07:10
Okay, perfect. Then, and actually, because I I've been, reading through the Enexis reports and more of the website and so on and so forth, actually, I really like also like the parts form when you're connecting these SDGs through the strategies and that kind of stuff. Actually, I actually, are there any preferred frameworks or approach that you focus the most, especially within the Enexis, I mean, in terms of non-financial disclosure?

A2 · 07:41
Yeah. I think that SDGs are really starting to take off in that sense in earlier and rule reports, I think in 2018 and maybe even 2019 I'm not completely sure. We also used them the **value creation model** with like the six capitals and stuff. The thing was you get in the GRI the reporting guidelines and you, it is, well, something you get like points to use value creation model, but internally we don't really use the value creation model in our strategy or anything.

A2 · 08:26
That's why were a bit shifting to the SDGs and also, well kind of conscious making the decision that maybe from like a GRI point to a few we're not like improving our performance, but in improving like actual transparency insight in like how our organization actually functions. That's a big step for us to move towards the SDGs, even though that's like, as much GRI proof as it would be, if we just keep using that the value creation model. I would say that the SDGs are also internally a red or common framework for us to like structure the different activities we do

Sebastian Ateng · 09:19
Okay. How about actually the impact of the regulation on the EU directive for non-financial disclosure? Is there any like constraints or challenges for implementing that, or it's also included in the, I mean, national regulation, so it's already like in align with that.

A2 · 09:42
I'm not completely sure. What you mean? Could you elaborate a bit?

Sebastian Ateng · 09:49
I mean, there's another framework that required by the, this EU level, like the regional level, it is including diversity, the environmental sector, the socio part. And so, etc. This something that the Enexis is also pursue in that direction or, more, mostly focused on the direction that you mentioned before?

A2 · 10:18
Well, I mean, we're also, (how wants to correct word in English) for issuing green bonds, and for the green bonds, I have, yeah. Impact reporting, for example, I think your, the framework you are talking about is the TCFD right? or it's the Taxonomy?

Sebastian Ateng · 10:55
Yeah, it's, the report that they're referring, there's actually two, the first one is more like these European guidelines, like, the article and the status for a non-financial reporting, but for the all European countries. And the second one is the TCFD. Yeah. The one that I referring for now is the regional.

A2 · 11:18
Yeah. That's the one that came out (I don't know) two weeks ago. Right?

Sebastian Ateng · 11:25
Yeah. The, the new updates just came two weeks ago, this more on the bonds and sustainable finance, more work guidelines towards that.

A2 · 11:35
Yeah. Okay. Yeah. I, I think I'm not completely sure that we try to align, with like those guidelines as much as possible, but that we're also not using them as I would say, like the gold standard, if it doesn't make sense for us as a company to follow them. I mean, that's also, I'm also grateful for example, in the reporting of the green bonds. Sometimes there's just something in like an EU directive that, I mean, would probably make sense for, I don't know, like, an electricity company that actually produces electricity, for example, but at an EU level, it's not as clear that those two are separate. In many countries, the producer is the same party as like the critical operator and here in the Netherlands, that's already well split up quite well.

A2 · 12:42
Yeah, that sometimes leads to situations in which like the EU directors don't like, completely make sense. We just, make it our own way, but it's definitely, what we're trying to do to follow it as much as possible, but at the same time, I have to be honest because it had two weeks ago, the new update for sample spublished. And, I'm not completely sure whether, the people at our reporting department for example, are already reading through and checking in the impact of it. That's also something, what are our accountants researching. Well, those recommendations about like, they really know all of these directives, we, I would say no them on the surface, but we don't like, get all the specific details.

A2 · 13:56
Often our accountant, helps us to understand, like what we actually need to add or change or do differently in our next report. It's also a bit of a collaboration, I think.

<u>Sebastian Ateng · 14:11</u>
Okay. Thank you. Yeah. That's a really interesting perspective, I think. Actually moving on to the next one this TCFD report, do you think how prepared Enexis gearing towards that actually. Are there any initiatives or actions, towards preparing that or is it still in a discussion?

<u>A2 · 14:37</u>
Yeah, it's still a bit in discussion. It's also because it remained unclear for quite a while. If, if it applied to us the TCFD, I have be sure. We had like some discussions about the TCFD, I think for maybe already like a year ago or something when we heard there was something coming, but no one really knew like, what was actually coming and what to say. So then it's becoming the backlog and everyone was like, okay, well, we'll see what happens if it actually gets published. Now I've seen it all like song plans and records for next year. Like, hey we need to figure out like what the impact is of the TCFD on Enexis.

<u>A2 · 15:43</u>
What I understand at this point is that it's mostly about like climate related risks and making those risks, like clear in your reporting, but also mitigating those risks in like your company, I would say steering. The principal, we know that we need to do something with it, but we don't know like exactly what it means. So we still need to dig deeper to figure that out. I, I think let's, this is not something my department does. I'm not like completely sure, but I think in about like a month or maybe two, some people will like start digging and figure out like, how to, work with the TCFD here. I would say, like, we know it's there, but we haven't really taken any concrete measures yet.

<u>Sebastian Ateng · 16:51</u>
Okay. It's still in the exploration phase at least for now. Yeah, I think, the other point that I want to ask is that, in terms of, this external controls or the governance part, are there any kind of process in terms of, monitoring this result of this positive impact to ensure that the activities or the results achieve, like in these ESG fields across business unit is the quality data?

<u>A2 · 17:27</u>
At Enexis, we have something like PRC cycle, planning or our control cycle which is like a result of our, strategy plan. And, and well, it pretty much translates like the strategic goals into KPIs and that, to get like, pretty much like a PDCA cycles or planned check acts, they get monitored. And, well, goals get changed if necessary and stuff like that. And, like quite a lot of like SDG ESG related, themes are part of our strategic plan so they're already like involved in the PRC cycle. It's not like we have like this separate governance process going on financial themes, but also it's not like every theme is completely covered. For example, if we look at carbon emissions at the project level, we have the cycles in place.

<u>A2 · 18:45</u>
We know that we take measures, we know, do they work? Do we need to take our measures? Should the project goal reach that is completely clear and also in a very clear governance cycle, but if you look at like the aggregation of that, so like the complete, carbon emissions over the next year. **I would say like the sum of all those little projects there's not like an actual governance process in place about, like, who's actually responsible for the total amount of carbon, because we have like older responsibilities, like lower in your organization as a project level.**

<u>A2 · 19:28</u>
That's something I'm, kind of working on because I'm, well, I'm not completely sure yet if that's something we need to do, what I feel like there's work to do there to also aggregate that the little bits and get like more control over the like, total sum, instead of just looking at, like, specific parts of the total amount.

Sebastian Ateng · 19:57
Okay. Okay. Interesting. Interesting. Yeah. Actually related to that, I think I want to relate it to the, this strategy development and our strategy implementation in terms of, nonfinancial information. How do you include these? Like, let's say non-financial KPIs in terms of when you're making this strategy or any direction towards that. Are there any specific methods or, yeah. I mean, when include, including non financial KPI?

A2 · 20:32
Well, it's not like, I don't know for like goals in general, you could have of course say that they need to be SMART. So, so that's something we use, but I wouldn't particularly say that's like an actual methods to get there and it's more of a check, like, is the grid cool. I think if I just, because we're now actually working on a new strategic plan, so kind of in the middle of these discussions, like how are we gonna like measure and monitor everything and when we want to do, and I think how it pretty much works if I really simplify it is that we look for a quantitative goal.

A2 · 21:18
Most of those goals aren't, very, like financial already because like most of the quantitative goals are for example, about how much time, like in minutes we have outages and how much time it takes for, I don't know, like a household to get connected to the grades, how many kilometers of grid we are able to construct during, like, I don't know, a specific period in time. Those are already like very quantitative goals, but they're not financial. I think most of the goals within our organization are dead, like kind of nature. If it really doesn't work to get like in a quantitative goal, then we also have some like qualitative goals, for example, we're part of the regional energy strategies, which are like the regional energy plans, like future planning in like provinces and municipalities.

A2 · 22:30
It's really hard to then just say, okay, we want to, I don't know, create X numbers of connections in a specific area, because it doesn't make sense for us to set a goal if the planning still is in progress. Yeah. What we then do is that we say, okay, we want to set a goal because we find it really important to be part of like the regional energy strategies, but we're not like setting production goals. We're setting, like, how to say that more goals to, if I would say like input related goals, most goals are output related. We have a hundred connections and then our KPI is green or red, but you can also set an input related goal. That's what we do with the energy strategies that we say we want to be at the table.

A2 · 23:35
The negotiations, I would say about the regional energy strategies in all of the provinces that we are, the regional grid operator. So that's not a very, I realized it's not like the best goal ever. You would want it to be more specific and more output related. Well, if that doesn't work, we're still making input related goals to make sure that we keep tracking, what we're doing instead of just saying, Oh, we can't measure it. Okay. Then we'll let it go.

Sebastian Ateng · 24:16
Okay. Is that also applicable to let's say this SDG goal as well?

A2 · 24:24
Yeah. Yeah. Actually, if I look at the current, state of affairs, for example, in circularity, it's a theme that SDG 12, which we find very important and which we have, like a lot of initiatives in and we don't really have like an overview within Enexis. Like, where are we going? We don't know that yet, but we do know we have some initiatives in place that are helping us to get there, but we don't really know what's there.

A2 · 24:54
So now, one of the goals is to create a circularity roadmap and that's not really like a smart goal that you can measure and say like, "Oh, our roadmap is a 10 or over", it doesn't make sense to do that. But it does make sense to like put it, "yeah, you have like the strategic plan and then you have the execution plan of like how you operationalize the strategy". We do put it in the operational, or the execution plan to make sure that it is far as of like all the conversations that needs to be, started with all the departments and everyone knows next to the really hard quantitative or even financial goals that also have work to do on the themes, circularity, emission, stuff like that.

A2 · 26:01
Because we're not really at the point that we can actually quantify like how circular we are, for example, we cannot have really said like a SMART goal with the specific number in it. But we are trying to take steps to get there. I hope in like three years that we're able to actually do that, but at this point we just don't have the numbers to be honest, to really sets such a goal.

Sebastian Ateng · 26:36
So, I mean, in, sorry if I dig that to the point. In that sense, like how do you set up for this targets for this, several KPIs, nonfinancial KPIs, let's see, like, how do you set up for these goals? in terms of, is it more like improving based on baseline year, like previous year, or are there any ambitions that Enexis group wants to achieve in that sense?

A2 · 27:08
Well, I think it's project level for going let's take the example of circularity again at the project level. We, we indeed have the ambition to do like every project better each year. And, but the main question is like, how much better, and you want to like really set a good goal, but then things start to play as what is the actual definition of circularity and how can you measure it? Because that's the thing with, like, I, I would say like nonfinancial themes as circularity, it's really hard to measure. First you need to like set, like a standards within the organization to, well, pretty much agree with all the departments who feel like, okay, we know we circularity, isn't like fully measurable, but we do need like something in place to track whether we're making progress or not.

A2 · 28:09
We're now in the process of like defining circularity. And well, that takes quite a while. I mean, if you want to like 60 methods or so to define it and then another hundreds to calculate it. We're also really looking like what is a definition and a way of measuring that. Should Enexis in the type of organization that we are, because we don't really produce a lot of materials, for example. We don't want a definition that's really about producing materials, ? So we're really looking into what is like a common, yeah, a common way to define circularity and then this measure it in the same, way. If we have like the standards in place, then we can start calculating, Hey, how much are those initiatives that we already have?

A2 · 29:09
How much are they contributing to? Well, I would say like the overall level of circularity within Enexis, because if you ask me now to how circulars is Enexis and next year, I don't know what to tell you, it shouldn't a percentage or what, how do you, like, what kind of, how do you say, like, in what, kind of indicator can you grasp what circularity is, and we're trying to figure it out now so that we can move towards like better goals and overall vision in which we want to say, I don't know, Enexi is 50% circular air by 2030, I I'm just saying a random goal out. That's where we're trying to go. It's, it's a rough and bumpy rides to be on.

Sebastian Ateng · 30:07
Yeah, thank you very much. Yeah. Yeah. I think it's a really interesting infrastructure. I mean, owner answers and yeah, I think, for the next part, I would like to present my findings, like my analysis. So, we can also discuss about that. Let me share the screen in a bit. Okay.

A2 · 30:28
Can you also afterwards share those findings with me then I can also send them to some other colleagues in the, reporting, department. I think they're really interested in what you,

Sebastian Ateng · 30:44
For sure. I mean, well, my plants actually like, I mean, after this interview, and then after my reports, like fitness in a thing, like in four weeks from now, like I would like to share it with you, like all the complete reports and all my findings. So, I mean, like the end result will better. Right. I mean, after I completed everything.

A2 · 31:06
Okay. Yeah, that's fine. I'll just wait for dad's version to send it, so that's fine. Yeah. Great. Thank you.

Sebastian Ateng · 31:12
Can you see my screen here? Okay, perfect. Yeah, in here, what I built in here, I tried to compare the Amex's annual report, but also trying to find the connection links between the, from the company website or any sustainability report towards that, and compare it against this one. First, the EU directive that I mentioned this a super regional level, you countries, and then the DCF, the topic of the complaint index, what the findings tells is that, for the, your directive actually it's score, pretty high, like 0.98, but for the TCFD itself, it, if we say, how does the Amex's report fit into DSD framework is lower, like in the middle.

Sebastian Ateng · 32:06
The highlighted points in here, for example, the EU directive, because you referenced is like this international recognized framework that's sent helping, okay, this is a mature, the definition of the major, compliance for the EU directive, but still there's some part about the board diversity issue that needs to be addressed in a bit more detailed way. Also for the TCFD, for example, one of the highlights that I find interesting here is that, actually the next is profile, okay.

Sebastian Ateng · 32:43
This is about the amount of carbon emissions because we related to the climate, but the lack of this historical data make it the maturity, like lower, because one of the thing that's important is that, you want to provide those transparency, okay, these are great numbers because actually the annex is already did that in some parts, but for the CO2 itself, it's kind of missing link in that sense.

A2 · 33:12
That we only referred to the year before, but not to the years before that's so that's an interesting point. Yeah.

Sebastian Ateng · 33:24
Also if we see in the right side in here, these four, aspects is actually from the TCFD, topic of framework. In this sense, if we see for the metrics and targets, next is score of pretty much a very high one. Also the yellow one is the average samples. Our samples of my sample is around 18 companies or energy utilities in the Netherlands. Yeah. If we see the lowest part is actually for the governance part, because at least from this framework suggested that for the governance we need, like department focused to track those sustainability metrics and don't find a set of KPIs. What you say that your work actually, there's more work to go to that way. It's actually the one that TCFD further suggests I guess.

A2 · 34:25
Okay. Well, that's good for me. I'm going in the right direction.

Sebastian Ateng · 34:30
Exactly. Yeah, more or less, but for the indexes, I think, it's core, largely, positive, then the efforts samples in here, if it comparisons for the EU directive is ranked around eight position, sorry. Out of, 17 samples and for the TCFD is around fifth position. And actually it's very close. As you mentioned around the understanding. Yeah.

Sebastian Ateng · 35:05
Close competitors. I can say, the key takeaways. I want to underline in here, I think like, discussing the historical trends to the 4d emission scope one, two, three, I think it's, yeah. With these straightforward and yeah. Particularly in the governance work since, it's short like of, one Dettori for the climate issues, but it's actually a bit right. I mean, and next is core strategies, energy transition, but in the same sense, like, okay. Climate change is like far from there. Yeah, I think in that sense, the TCFD folder, want to emphasize in that part and yeah, this third point also explain the same one. Yeah. Do you have any comments or around this one or any questions also if I can answer,

A2 · 36:08
I think if I just look at this, I recognize like you're finding, so I think, your analysis is, well, pretty much correct. I, I don't see anything things that I'm like, Oh, if that indeed the case, and I'm a bit curious, but I'm not completely sure whether you can say that and how indexes scores. Cause you already said like Ali on there and stated they are pretty close, but can you tell me a bit more like about the differences because they're not like exactly the same. I I'm looking for like where we can like learn from them. I'm also an accurate how we like specifically compare to, an exit or stayed in and all the younger, like, are we, in the bottom line of the OSHA three or like in middle, like how do you perceive that?

Sebastian Ateng · 37:11
Well I think I can give you a very detailed answer, like in the end of my report, because I also interview I will interview them. I can get more information towards that. For now, what I can say is that, I think from this state in an alley under, across itself, the downside is that they still feel this, nonfinancial disclosure as their CSR program. In that sense, it's not like their core strategy. In that bedside, they only say, okay, we, targeted for one planet strategy or, this environment, but okay, what, where does it connect to the core strategy? It's not there. It's that bad part, but, the advantageous or like their leading example is that they're really tracking, okay. These are the amount of CO2 that we have in here. Here's the perfect, yeah. Numbers.

Sebastian Ateng · 38:15
Also here are also the standards, like the methodology Stowers that. In that sense, they scored a really relatively, also very high in the metrics and target in that sense. Yeah.

A2 · 38:29
Yeah. Just because of like a different reason. So that's interesting. Yeah. Yeah. But I mean, for the,

Sebastian Ateng · 38:36
The governance, they also have the same problem. I mean, they don't really track around that part also even for the internal process, Yeah. Yeah. I can give you a more detailed answer. I mean, at my end of the report, I don't have it on top of my head right now.

A2 · 38:57
Well, it's not because I, it's not like, because I want to do like exactly the same as them, but also in like we in reporting really also look at how our younger and stayed in are doing it because often if like one of us three, like five smart way to do something, the other two can use it too, because we're so much alike as companies. I'm really looking for those opportunities to learn. Also if it, if also important, it is the other way around, like if the others can learn from us well, I'm more than happy to provide them with the information, but I just need to know like what it is. It would be really helpful at the end, if you can elaborate a bit.

Sebastian Ateng · 39:44
For sure. For sure. Yeah. Yeah. I think, that's all actually for this session for my side and also, as I said before, all of my findings and also, yeah, the rest of the interviews, I will try to share it with you and yeah. At the end of my thesis or which is next month. So yeah, it's almost there getting close. Yeah. Yeah, I think at the end, I would like to say thank you very much actually for your time also for a good Friday morning, talking more about this, going to the right direction and yeah. Do you have any further comments or questions from your sites or,

A2 · 40:27
No, not for now. I'm just, well, I'm kind of happy he like about the results. I mean, it's always good to hear that. Well, at least we're, no black completely in devolvement and, we also have some points to improve and that's also good because otherwise I wouldn't have anything to do. So, yeah, I'm happy with the results and it looks like you did a very comprehensible, research, so I'm happy about it. I'm mostly just curious about like the final results. So, I would say, good luck the next month in finishing everything and I hope you get like a great, grade for, well, if you're there, then I'm happy to look at the results. Yep. That's it.

Sebastian Ateng · 41:20
Okay. Yeah. Thank you very much for your kind words. Yeah. All right then, yeah. I mean, if you have any further inquiries or anything, you can just, send me an email or anything, so it's perfectly fine. Okay, perfect. Thank you very much. Yeah. Have a really nice weekend also.

A2 · 41:39
Yes, you too. I hope there's not too much research work in it.

Sebastian Ateng · 41:44
No, it's fine. It's part of the, student life.

A2 · 41:49
Okay. Well have a good one.