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Drivers and Barriers to the Implementation of the Task Force on Climate-related Financial Disclosures: The example of EDP

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Master in Management

Supervisor:
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BUSINESS
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Department of Accounting

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"Success is not final, failure is not fatal: It is the courage to continue that counts"

Winston Churchill

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Abstract

The impact of climate change has made stakeholders more demanding. They are increasingly looking to know what measures companies are taking to deal with climate change, how they are assessing the climate-related risks and how they are adapting their strategies to be more resilient. Given these current stakeholders' needs and considering that non-financial reporting will become mandatory soon, the aim of this thesis is to analyse the implementation process of one of the frameworks - Task Force on Climate-related Financial (TCFD) disclosures recommendations - most used to disclose this type of information.

To this end, a Portuguese company in the energy sector *Energias de Portugal* (EDP) was selected as the case study. Interviews were conducted with employees involved in the preparation of this data in order to understand the main challenges, advantages and results obtained in adopting these recommendations. In addition, the climate transition plan developed by EDP in 2022 was analysed to assess its structure and understand how it is aligned with the TCFD recommendations.

The results show that although EDP has faced some challenges, which are common to other companies, it has managed to overcome them and remain aligned with all the disclosure recommendations. It presents a well-structured report, which has been subject to continuous improvement.

Key-Words: Corporate Social Responsibility; Sustainability Report; Task Force on Climate-Related Financial Disclosures; Case Study

JEL Classification: Q54, Q56

Resumo

O impacto das alterações climáticas tem deixado os *stakeholders* mais exigentes. Procuram cada vez mais saber que medidas é que as empresas adotam para fazer frente às alterações climáticas, como avaliam os riscos dessas alterações e como adaptam as suas estratégias de modo a serem mais resilientes. Atendendo a estas necessidades atuais dos *stakeholders* e considerando que o reporte não financeiro se tornará obrigatório em breve, o objetivo desta tese é analisar o processo de implementação de um dos *frameworks* – *Task Force on Climate-related Financial Disclosures* (TCFD) - mais utilizado para a divulgação deste tipo de informação.

Para o efeito, selecionou-se uma empresa portuguesa do sector energético, a Energias de Portugal (EDP) como caso de estudo. Foram conduzidas entrevistas com colaboradores da empresa envolvidos na preparação destes dados de forma a perceber-se quais os principais desafios, vantagens e resultados obtidos na adoção destas recomendações. Além disso, procedeu-se à análise do plano de transição climática desenvolvido pela EDP em 2022, para se avaliar a sua estrutura e perceber como se encontra alinhado com as recomendações TCFD.

Os resultados demonstram que apesar da EDP ter enfrentado alguns desafios, que acabam por ser comuns a outras empresas, conseguiu ultrapassá-los e manter-se alinhada com todas as recomendações. Apresenta um relatório bem estruturado, que tem sido objeto de melhoria contínua.

Palavras-chave: Responsabilidade Social; Relatório de Sustentabilidade; Task Force on Climate-Related Financial Disclosures; Estudo de Caso

Classificação JEL: Q54, Q56

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List of Abbreviations

APAC – Ameria and Asia Pacific

CDP - Carbon Disclosure Project

CDSB - Climate Disclosure Standards Board

CMVM – Comissão do Mercado de Valores Mobiliários (Portuguese Securities Market Commission)

CP - Current Policies Scenario (CP).

CSR – Corporate Social Responsibility

CSRD - Corporate Sustainability Reporting Directive

DJSI - Dow Jones Sustainability Indices

EBD - Executive Board of Directors

EDP – *Energias de Portugal*

EFRAG - European Financial Reporting Advisory Group

ESRS - European Sustainability Reporting Standard

FSB - Financial Stability Board

GHGs – Greenhouse Gases

GRI - Global Reporting Initiative

IEA – International Energy Agency

IFRS – International Financial Reporting Standards

IPCC - Intergovernmental Panel on Climate Change

IIRC - International Integrated Reporting Council

ISSB – International Sustainability Standards Board

NFD – Non-financial Directive

NFI - Non-financial information

NFR – Non-financial Reporting

NGO's - Non-governmental Organizations

SASB - Sustainability Accounting Standards Board

SDS - Sustainable Development Scenario

STEPS - Stated Policies Scenario

TCFD – Task Force on Climate Related Financial Disclosures

KPI – Key Performance Indicators

UNFCCC - United Nations Framework Convention on Climate Change

CHAPTER 1

Introduction

Climate changes and its consequences are one of the main crisis that human kind has been facing for many years. These changes pose a number of implications not only to natural ecosystems and human life, but also to the economy (Pörtner et al., 2022).

The main cause attributed to these changes are the human species and its actions. Adaption plays a vital role in substantially reducing vulnerability and exposure to the effects of climate change. Part of that adaption lies in companies' efforts to identify, analyse and mitigate climate-related risks that could impact their business, to change their strategies and other contributions for a more sustainable planet (Pörtner et al., 2022; Rivera et al., 2022).

Given all these challenges in our changing world, stakeholders' needs and expectations have also changed. Nowadays, a stakeholder focuses his attention on the measures implemented by companies to tackle climate change, on the strategy adopted to deal with future impacts of climate changes (O'Dwyer & Unerman, 2020). As a result, in the same way that corporations disclose their financial data, they have also started to present non-financial data to reveal the actions taken to conduct their businesses in a more responsible way. Nevertheless, the advantages of this disclosure extend beyond merely benefiting stakeholders. Previous research (e.g. Chua et al., 2022), demonstrates that it is closely associated with numerous positive impacts on the companies, such as, employee well-being, fostering innovation and gaining a competitive advantage, bolstered reputation, ensuring long-term operational efficiency and business sustainability, improved access to capital and greater financial performance.

Although this type of disclosure is a common practice in many companies and countries, there are still some difficulties in preparing them (TCFD, 2022, 2021; Kröner & Newman, 2021). There is no standard framework to support companies regarding the structure and the type of information they should disclose (European Commission, 2023). There are huge number of frameworks, each with its own characteristics, which makes companies feel lost when choosing the best one to adopt (Lima, 2021).

One of the main frameworks used today in companies are Task Force Climate-related Financial Disclosures (TCFD) recommendations. There are studies showing the growth in the number of companies adopting this framework (TCFD, 2022).

With a differentiating approach to the climate-related risks and opportunities, TCFD recommendations seek to provide better information to investors and others so they can make informed and efficient capital allocation decisions. The framework is well-structured and includes essential guidelines for companies to know exactly what to disclose according to the four thematic areas that it defines: governance, strategy, risk management and metrics and targets (Chua et al., 2022). Moreover, these recommendations propose analysing risks by assuming different climate scenarios, in order to test how resilient companies' strategies are to climate change.

While the disclosure of non-financial data remains voluntary for numerous companies, Portugal as a supporter of TCFD recommendations, is witnessing a notable increase in the adoption of this framework by a significant number of companies (TCFD, 2022). Consequently, several questions come to mind: how do Portuguese companies experience the adoption of TCFD recommendations? For them, what are the main challenges and benefits arising from this implementation?

Larger companies usually have greater impacts and responsibilities, are more pressured by stakeholders to report non-financial data. Because of that, *Energias de Portugal* (EDP), was the Portuguese company selected for this master thesis and thus, understand the barriers and drivers found during the implementation of TCFD Recommendations in its reports. In addition to its size and the sturdiness of its reports, EDP is an example for other companies and one of the most experienced in adopting this framework, having been one of the first companies in Portugal to adopt it (Lima, 2021).

Through a qualitative research, the objective of this study was answering to the research question: *How have the TCFD recommendations been implemented in an electricity Portuguese company?*

To this end, interviews were conducted with two people, from different departments, involved in this implementation within EDP. The focus was on finding motivations for adopting the framework, challenges and advantages during the implementation and, finally, understanding the results identified after incorporating the TCFD into their reports.

Despite the fact that EDP has already been implementing the recommendations since 2018, we found that in 2022 there are still challenges, namely related to scenario analysis. However, apart from the fact that this is a common aspect among companies that adopt TCFD, interviews gave the perception that EDP is satisfied with the adoption of the report and is seeking to improve its reports every year. Overall, the implementation was considered easy and EDP was able to cover the entire TCFD recommendations.

To date, there has not been much literature on the TCFD recommendations. Given the changes that have been made to non-financial reporting requirements for companies, it is essential to explore this framework. This study closes a gap in the literature, since there are no studies that report the experience of TCFD recommendations in Portuguese companies.

This work is structured in 5 chapters (including the Introduction). The second chapter is the literature review. Its aim was to contextualise the main topics covered through the investigation of existing studies and the presentation of its authors' perspectives. The third chapter presents the methodology and research context used to gather information for the empirical study. Next, in chapter four, are the results of the study. Links between those results and the literature review were identified. Through a specific example, this chapter provides an overview of what it is implementing TCFD recommendations in an electricity Portuguese company. Finally, the last chapter presents the conclusions of the research carried out, as well as some of the limitations and suggestions for future research.

CHAPTER 2

Literature Review

2.1. Sustainability and Corporate Social Responsibility

Until 1953, when the book "Social Responsibilities of the Businessman" was published by the economist Howard Bowen, the concept of Corporate Social Responsibility (CSR) had never been much discussed. In this book, the author stated that operations of the main centres of power and decision making in the United States economy had a huge impact on society, and therefore it was urgent that policies be taken for the common good (Allen, 2016; Carroll, 2016).

The major evolution of the CSR concept took place during the 1960s, when there were countless social movements related to civil rights, consumer rights, women's rights and even environmental rights (Carroll, 2016). “In the 1970s societal expectations shifted to ask what companies could do to better the world beyond merely ensuring their own survival” (Allen, 2016, p. 5). Companies have started to get more involved in political actions and public affairs to strategically analyse problems such as pollution, resource degradation, carbon emissions and climate change and thus influence the opinion of society and their stakeholders regarding regulatory expectations (Allen, 2016). With the adoption of a neoliberal economy in 1980, many social effects were felt, particularly in terms of employment, financial deregulation of industry and environmental degradation (Allen, 2016). According to Alexander and Bucholtz, as cited by McGuire et al. (1988, p. 855), “a firm has an investment in reputation, including its reputation for being socially responsible. An increase in perceived social responsibility may improve the image of the firm’s management and permit it to exchange costly explicit claims for less costly implicit charges”.

In the last decade of the 20th century, the concept of CSR became broader and public expectations assigned a new political role to companies, believing that they would take another responsibility and could cooperate with Non-governmental Organizations (NGOs) to solve social problems of poverty and health (Allen, 2016).

As cited by Carroll (2016, p. 2), “Dozens of definitions of corporate social responsibility have arisen since then”. Nowadays, firms consider CSR as a contributor for profits, customers’ loyalty and employees’ commitment (Allen, 2016). As defined by Kok (2001), cited by Snider et al. (2003, p. 176), CSR is “the obligation of the firm to use its resources in ways to benefit society, through committed participation as a member of society, taking into account the society at large and improving welfare of society at large independent of direct gains of the company”.

Most of the time, communication is seen as a way of improving a company's reputation and legitimacy (Allen, 2016). Corporate social reporting is associated with the communication of the CSR a firm has. According to Hooghiemstra (2000) and Patten (2002), as cited by Snider et al. (2003), it involves the strategic use of language and messaging to shape perceptions and maintain a favourable image in the eyes of the public, investors, customers, employees, and other stakeholders. CSR is regarded as an ethical element that manifests as transparency and the quality of the reporting. As a result, it enhances stakeholders' trust and confidence (Gonçalves et al., 2021, p. 10).

The planet is currently in a phase of transition to a more sustainable world, to a decarbonized economic system, to a low-emission economy.

“Businesses are both part of the problem and part of the solutions”. While emissions from industrial activity remain a significant contributor to climate change, companies are dedicated to supporting society’s adaptation through innovation, technology adoption and business activities that generate positive social impacts (Rivera et al., 2022).

“Good executives know that their long-term success is based on continued good relations with a wide range of individuals, groups and institutions. Smart firms know that business can’t succeed in societies that are failing — whether this is due to social or environmental challenges, or governance problems. Moreover, the general public has high expectations of the private sector in terms of responsible behavior. Consumers expect goods and services to reflect socially and environmentally responsible business behavior at competitive prices. Shareholders also are searching for enhanced financial performance that integrates social and environmental considerations, both in terms of risk and opportunities” (Hohnen & Potts, 2007, p. 2).

Because of that, “conceptions of accounting have broadened as impacts of accounting have been subject to greater attention by contemporary and historical accounting researchers since the mid-to--late 1980’s” (Carnegie et al., 2021, p. 67).

Accounting's growing recognition lies in its deep impact on and reflections of human behaviors and actions, exemplified using Key Performance Measures (KPIs) in various organizations and society at large. This significantly influences organizational and social functioning and fosters development (Carnegie et al., 2022).

Accounting plays a vital role in the core functions of administration, planning, regulation and transparency, not only in the corporate or profit-driven sector but also within the non-profit sector in government or the public sphere (Carnegie et al., 2021).

As defined by Carnegie et al. (2021, p. 69), “Accounting is a technical, social and moral practice concerned with the sustainable utilization of resources and proper accountability to stakeholders to enable the flourishing of organisations, people and nature”.

Managers manipulate financial results to achieve social, environmental and economic goals (Gonçalves et al., 2021).

2.2. Contextualizing non-financial reporting and sustainability reporting

According to Ferguson et al. (2016), it was only in 1997, when the Kyoto Protocol [1]was signed, that companies began to support global climate change-related policies. From then on, entities adopted a win-win discourse: they understand that “sustainable development will not only solve social and environmental problems, but will bring further financial benefits” (Laine, 2010; as cited by Ferguson et al. 2016, p. 280). Despite all the efforts that are being taken, society and corporations are not doing enough to mitigate global warming and its effects. “Five years after the adoption of the Paris Agreement, we are still not on a trajectory that would enable us to limit the rise in global temperature to 1.5°C” (United Nations, 2020).

In 2018, when the Paris Agreement[2] was updated, the Intergovernmental Panel on Climate Change (IPCC)[3] warned of a catastrophic climate change if global warming exceeds 1.5 °C (IPCC et al., 2018; as cited by O’Dwyer & Unerman, 2020, p. 1114). Therefore, one of the greatest challenges in the world today arises: the process of decarbonizing the economy. “Any failure to adequately decarbonize the economy will expose many businesses to potentially significant risks from the physical impacts of climate change” (O’Dwyer & Unerman, 2020, p. 1114).

Stakeholders' needs and expectations are increasing. More than ever, companies must demonstrate that their purposes are not just words, but actions that benefit all stakeholders. In addition to that, as mentioned by O’Dwyer and Unerman (2020, p. 1114) “investors and lenders need information about these physical and transitional risks and opportunities to help them evaluate and price possible financial outcomes for a corporation flowing from the corporations’ dependencies on the changing state of the climate”.

[1] Kyoto Protocol was adopted in Japan in 1997 but, only come into effect in 2005. It consists on ultimate objective of the United Nations Framework Convention on Climate Change, to setting the reduction of Greenhouse Gases (GHGs) at a level that will prevent harmful disruption of the climate system (UNFCCC, 2008).

[2] Paris Agreement is a global treaty adopted in December 2015 during the UNFCCC Conference of the Parties (COP21) in Paris, France. The main goal of this agreement is to limit the temperature increase to 1.5°C above pre-industrial levels (UNFCCC, 2015).

[3] Intergovernmental Panel on Climate Change - The United Nations body for assessing the science related to climate change.

Investors pressure companies to present not only financial data, but also environmental, social and governance factors. The interest in knowing how much a business invests in ways to minimize its impacts on the environment, build a fairer and more responsible world and maintain the best management processes are nowadays matters in the decision-making investment process (EUR-Lex, 2022). In some studies, it has already been proven that "companies that got positive climate-related performance provide additional information to investors fostering them to make corporate investment decisions" (Lombardi et al., 2022, p. 250).

After the Paris Agreement, the European Union, through the European Green Deal[4], has clearly shown its dedication to reassessing the regulations concerning the communication of non-financial data. The objective of this evaluation was to establish comparable, promptly available, and consistent non-financial information. This harmonization aims to contribute to attaining climate neutrality, enhance societal well-being (encompassing health and safety), and reinforce environmental consideration by promoting more sustainable approaches (EUR-Lex, 2022).

In October 2014, the European Commission published the European Union Directive 2014/95/EU that came to amend the Directive 2013/34/EU, which is known as the non-financial Directive. Comparing with the accounting Directive (Directive 2013/34/EU), which provided for a reduction in administrative costs for simplification of financial reporting procedures, the reduction of information in the notes to the financial statements and the exemption from preparing consolidated financial statements for groups of small companies (EUR-Lex, 2013), the new directive added information on non-financial reporting. In essence, the aim is to enhance the uniformity, comparability and utmost clarity of non-financial reporting (La Torre et al., 2018, 2020; as cited by Lombardi et al., 2022).

According to this directive, all public-interest entities which in a financial year registered an average number of employees higher than 500, must include non-financial data in the management report. By non-financial data it means: "environmental, social and employee matters, respect for human rights, anti-corruption and bribery matters" (EU Commission, 2014, p. 1). Besides that, according to Aureli et al. (2020b as cited by Lombardi et al. 2022), the EU directive adopts a minimalistic approach of standardization, taking into account the unique attributes of its national context. As a result, it allows for significant adaptability, particularly in shaping the necessary content and selecting reporting standards.

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[4] According to the information in the European Commission site, European Green Deal consists of "a roadmap for making the EU's economy sustainable by turning climate and environmental challenges into opportunities across all policy areas and making the transition just and inclusive for all" (European Commission, 2019).

“Directive 2014/95/EU has led to a new European scenario for corporate reporting where non-financial information (NFI) disclosure changes from voluntary to mandatory” (Posadas & Tarquinio, 2021, p: 1).

As a complement of non-financial Directive, in 2017, guidelines on non-financial reporting were published in the Official Journal of the European Union. The document has never overridden the directive. These guidelines work as a methodology based on fundamental principles that its applicable to companies in diverse economic sectors, facilitating the disclosure of pertinent, valuable and comparable non-financial information (EUR-Lex, 2017). Nevertheless, “revisions were judged necessary to fill some gaps identified over the years” (Venturelli et al., 2022, p. 1).

With the approval of UN 2030 Sustainable Development Goals in 2015 (United Nations, 2015), policymakers and academics started significant brainstorming aiming to find “how to best enhance companies’ sustainable reporting” (Papa et al., 2022, p. 87). In response to these criticisms, European Commission started a revision of Directive 2014/95/EU (2014) to meet stakeholders’ information needs and has assigned the European Financial Reporting Advisory Group (EFRAG) the responsibility of commencing a preparatory initiative to formulate the standards for European Union Sustainability Reporting (Papa et al., 2022, p. 88). At the same time, International Financial Reporting Standards (IFRS) Foundation launched a consultation paper aimed at defining its involvement in streamlining and unifying the numerous existing Non-Financial Reporting (NFR) standards. After discussion, both institutions concluded that countries should consider adopting a compulsory framework that incorporates the current Global Reporting Initiative (GRI) Standards[5] to improve the comparability of NFR and enhance accountability for firms (Papa et al., 2022, p. 88).

After the Communication on the European Green Deal[6], one of the most recent publications of European Commission concerns a proposal for Corporate Sustainability Reporting Directive (COM/2021/189 final (Proposal for a directive), 2021). The proposal applies to all large companies and to all companies listed on regulated markets (except listed micro-enterprises), requires audits of reported information, introduces information regarding risks that sustainability could arise for companies and the impact of company’s performance on people and environment.

[5] GRI Standards are an *easy-to-use model set*. Enable organizations to openly disclose the effects of their actions in economy, environment and people, by offering transparency to stakeholders and other concerned parties. This modular system is structured by a series of standards: the GRI Universal Standards, the GRI Sector Standards and the GRI Topic Standards (GRI, 2016).

Even so, in 2022, after an agreement between European Parliament and the Council on Corporate Sustainability Reporting Directive (CSRD), Directive 2022/2464 was published. Amending Regulation (EU) No 537/2014, Directive 2004/109/EC, Directive 2006/43/EC and Directive 2013/34/EU with regard to the disclosure of information on corporate sustainability, this new directive obliges companies to disclose information on climate change, pollution, water and maritime resources, biodiversity and ecosystems, resources used and the circular economy, workers, affected communities, consumers and end users, as well as codes of conduct. A greater number of companies are expected to be covered. This directive applies to large public interest companies (covered by the non-financial reporting directive), to small and medium-sized enterprises, companies not covered by the non-financial reporting directive and companies from countries outside the European Union with a net turnover of more than €150 million and which have at least one branch or subsidiary in the European Union that exceeds certain thresholds. Moreover, in order to make sustainability reporting more accurate and reliable, CSRD features mandatory assurance to this kind of reporting (EUR-Lex, 2022).

Some investors and other stakeholders considered that companies tend to omit information they perceived as crucial. Moreover, even with all the directives, comparability across different companies remains a challenge that leaves investors uncertain about its reliability. For these reasons, in 2023, the European Commission adopted "common standards which will help companies to communicate and manage their sustainability performance more efficiently and therefore to have better access to sustainable finance" (European Commission, 2023, p. 1). The so called, European Sustainability Reporting Standards (ESRS) were mandatory for the same companies to which the Accountability Directive applies.

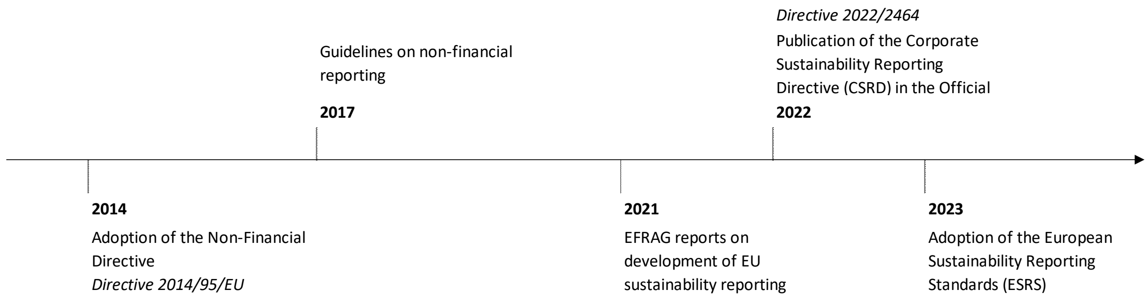

Figure 2.1 – Non-Financial Reporting Evolution

2.3. Task Force on Climate-related Financial Disclosures

In 2017, the Financial Stability Board (FSB) – an international body that monitors and makes recommendations about the global financial system – established the Task Force on Climate-related Financial Disclosure (TCFD) Recommendations. It consists of a couple of recommendations that helps companies “to report on their response to the risks and opportunities created by climate change” (MITSloant, 2018) in a consistent, reliable, and comparable way.

The Task Force is made up of 32 members. These members come from different countries and organizations and are selected by the Financial Stability Board. Between presidents of central banks and economy ministers of member-countries, 16 of them are experts from the financial sector, 8 are experts from non-financial sector and the remaining 8 are from different areas of expertise (TCFD, 2017).

The recommendations are spread among four fundamental categories: governance, risk management, strategy and metrics and targets. The first two, governance and risk management, concern the present: they refer to the attribution of responsibilities on climate issues and the processes employed by organizations to identify, assess and manage these issues. The other two, strategy and metrics and targets, concern the future: with the analysis and modelling of possible climate scenarios, specific to each business and region of operation (TCFD, 2017).

These four thematic areas are supported by eleven types of information that should be disclosed (see Figure *2.2*).

Governance	Strategy	Risk Management	Metrics and Targets
Disclose the organization’s governance around climate-related risks and opportunities.	Disclose the actual and potential impacts of climate-related risks and opportunities on the organization’s businesses, strategy, and financial planning where such information is material.	Disclose how the organization identifies, assesses, and manages climate-related risks.	Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.
Recommended Disclosures	**Recommended Disclosures**	**Recommended Disclosures**	**Recommended Disclosures**
a) Describe the board’s oversight of climate-related risks and opportunities.	a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.	a) Describe the organization’s processes for identifying and assessing climate-related risks.	a) Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.
b) Describe management’s role in assessing and managing climate-related risks and opportunities.	b) Describe the impact of climate-related risks and opportunities on the organization’s businesses, strategy, and financial planning.	b) Describe the organization’s processes for managing climate-related risks.	b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.
	c) Describe the resilience of the organization’s strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization’s overall risk management.	c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.

Figure 2.2 - Recommendations and Supporting Recommended Disclosures (TCFD, 2017, p. 14)

“TCFD recommends that corporations model their climate-related risks and opportunities for different levels of global warming” (O’Dwyer & Unerman, 2020, p. 1120). One of the recommendations in the strategy pilar is the scenario analysis. It involves the systematic examination and evaluation of the potential consequences that could arise from a variety of possible future situations in the face of uncertainty. In the context of climate change, scenarios enable an organization to investigate and gain insights into how different combinations of climate-related risks— encompassing both transition and physical risks—might impact its operations, strategies, and financial outcomes across a span of time (TCFD, 2017).

The main objective is to serve as a tool for investors, creditors and others to find out about the climate-related risks incurred by companies. It is useful for lenders to price risk when granting loans and for investors to present the risks arising from climate change. “The Task Force’s recommendations serve to encourage organizations to evaluate and disclose, as part of their annual financial filing preparation and reporting processes, the climate-related risks and opportunities that are most pertinent to their business activities” (TCFD, 2017, p. 5).

As mentioned in EUR-Lex (2022), the TCFD recommendations can specify “in sufficient detail to ensure that undertakings report information on their resilience in relation to risks related to sustainability matters”. By applying this framework, companies are able “to disclose information about their business strategy and the resilience of the business model and strategy in relation to risks related to sustainability matters” (EUR-Lex, 2022). Lastly, it allows companies to reveal how their business models and strategies are aligned “with the transition to a sustainable economy and with the objectives of limiting global warming to 1,5 °C in line with the Paris Agreement and achieving climate neutrality by 2050” (EUR-Lex, 2022).

There are many financial implications emerging from the risks of climate change, among them: change in the useful life of assets, assets impairment, goodwill valuation, changes in provisions or even in expected credit losses for loans. Because of that, TCFD promotes a financial analysis of the risks arising from climate change by sharing accounting methodologies (O’Dwyer & Unerman, 2020).

To draw up a report that incorporates the TCFD recommendations, risks should be classified into two categories: transitional risks, which are “risks related to a lower-carbon economy (policy and legal risks, technology risks, market risks, reputational risks” and physical risks, the ones “related to the physical impacts of climate change” which can be subdivided in acute physical risks (event-driven) and chronic physical risks (long-term shifts in climate patterns) (Lombardi et al., 2022, p. 254).

The “efforts made to face climate change could lead to the following opportunities: resource efficiency, energy saving, competitive advantage related to low-emission activities, possibility of access to new markets and improvement if the own climate change reliance” (TCFD, 2017 cited by Lombardi et al., 2022, p. 254).

"To underpin its recommendations and help guide developments in climate-related financial reporting, the Task Force developed a set of fundamental principles for effective disclosure" (TCFD, 2021, p. 8). As with financial reporting, these recommendations suggest that non-financial disclosures should be specific and complete, clear, balanced and understandable, consistent over time, comparable between companies in the same sector, relevant, verifiable and objective, should contain relevant information and should be presented in a timely manner (TCFD, 2021, p. 8).

2.3.1. Incentives and Risks of TCFD Implementation

A year before the TCFD recommendations were published, Eccles and Krzus (2017) carried out a study of 15 companies listed on the New York Stock Exchange in the oil and gas sector. The aim of the study was to analyse the companies' annual and sustainability reports and identify what climate-related disclosures were being made, to see if they were in line with what was suggested in the TCFD. In addition, they wanted to understand if the framework was implemented, what its main needs would be and whether this would require legal disclosures. The study revealed that very few companies were analysing scenarios. Furthermore, of the TCFD framework's 11 recommendations, none of the 15 companies disclosed all of them: in the Governance category, there was no reference to the role of management in assessing climate risks, nor to the board of directors' vision on the subject, there was a lack of detail in describing the processes implemented to mitigate climate risks, and finally they found that companies had difficulty linking targets to the strategy of their business model (Eccles & Krzus, 2019).

Every year, the FSB publishes status reports to give an overview of the progress made by companies to implement the framework since 2017. At the same time, it allows them obtaining the perception of preparers, users or other interested parties regarding the usefulness, availability and quality of climate-related financial disclosures. These status reports are based on surveys where respondents are subject to questions accordingly to their role or responsibility in the context of climate-related financial disclosures.

The TCFD 2022 status report (TCFD, 2022) clearly showed an increased adoption and enhanced quality of TCFD recommendations over the past five years. These are positive signs of the business world's growing recognition for the importance of addressing climate risks and opportunities. Furthermore, participants pointed out that climate-related concerns were considered significant for companies and investors' demands as the primary motivations for adopting the framework. Although the quality of the reports has improved and the support provided by the FSB is very useful, the application of TCFD remains a challenge. According to the preparers questioned in 2022 survey (TCFD, 2022), the critical aspects are:

- Scenario Selection: identifying pertinent scenarios and delineating essential inputs and parameters for scenarios analysis;
- Scope 3 Greenhouse gas emissions: finding data across the value chain to estimate this measure; and,
- Create robust methodologies to identify, evaluate, and manage risks associated with climate change, seamlessly integrating these climate-related risks within existing risk management processes.

There are still companies showing some resistance to TCFD implementation, which is related with the lack of understanding they have about the scenario analysis (MITSloan, 2018). In a research conducted by Professor Naomi Soderstrom in 2021, she found that "investors may find the disclosures difficult to understand as there is a lack of explanation of how entities drew conclusions related do the scenarios" (Chua et al., 2022, p. 399).

As mentioned before, TCFD framework is more than just the risks, it also regards opportunities. "It is a journey to improve governance and engagement from the top of an entity down to the operational levels" (Chua et al., 2022, p. 396).

A great differentiating factor of TCFD is the fact that it manages to aggregate the different frameworks that already exist (Carbon Disclosure Project (CDP)[7], Climate Disclosure Standards Board (CDSB)[8], the Global Reporting Initiative (GRI), the International Integrated Reporting Council (IIRC)[9] and the Sustainability Accounting Standards Board (SASB)[10]) and develop a common framework for climate-related financial disclosures (TCFD, 2017, p. 33).

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[7] Carbon Disclosure Project (CDP) is a non-profit organisation that annually provides questionnaires for companies, cities and states in order to them monitoring and managing risks and opportunities regarding three categories: water, forests and climate change (BCSD Portugal, 2021).

[8] The Climate Disclosure Standards Board (CDSB) is an international consortium of business and environmental NGOs, hosted by CDP that developed a framework designed to guarantee that environmental and social information present in mainstream reports is not only accurate and complete, but also decision-useful to investors and supports assurance activities. It also outlined the type of environmental and social information that should be included in mainstream reports for investors' needs (CDSB, 2022).

[9] International Integrated Reporting Council – entity that, in 2021, developed an integrated report framework. It aims to promote integrated thinking and an integrated approach to reporting, including environmental and social aspects in management and in all the organisation's activities in a comprehensive way (BCSD Portugal, 2021).

[10] Since 2022, International Sustainability Standards Board (ISSB) of the IFRS Foundation become responsible for the SASB Standards. By promoting rigour and transparency, these standards were developed to provide disclosures based on industry standards concerning the sustainability risks and opportunities that are likely to impact the entity's cash flows, access to financial resources or capital costs in the short, medium and long term. (SASB Standards).

TCFD implementation is a chance to companies reach financing for its low-carbon projects that demands higher investments at the beginning and to demonstrate to stakeholders what are the risks of climate change and how they are facing them. Additionally, from the moment that investors are interested in how companies face and conduct their strategy according to the climate change and define their scenarios considering the risk management process, it is evident the importance of the match between strategy and risk management made by TCFD framework (Chua et al., 2022).

Moreover, as mentioned by Lombardi et al. (2022, p. 254), TCFD does not rely on "double materiality" as for example, the European Commission's Non-Financial Guidelines. TCFD has simplified this concept, assuming from the outset that "the financial impacts of climate-related issues on organizations are not always clear or direct" (TCFD, 2017 as cited by O'Dwyer & Unerman, 2020, p. 1125). Even though, the term of "materiality" has been simplified, it also become amplified. Many investors continue to experience a challenge in determining materiality (O'Dwyer & Unerman, 2020, p. 1132).

Finally, according to Chua et al. (2022, p. 399), "there is no mandatory assurance for TCFD reports". As the financial reporting, the credibility given to this kind of reports is now also starting to receive more attention. After all, it is important to clarify that TCFD recommendations have been very "helpful, providing comprehensive guidelines and examples" (Chua et al., 2022, p. 400).

As a result of better disclosure, firms are able to identify "potential qualitative or quantitative financial implications of the climate-related scenarios used" (TCFD, 2021, p. 4), "more effective pricing of climate-related risks and opportunities and allocation of capital" (TCFD, 2021, p. 46). TCFD recommendations have an implicit holistic dimension – wherein professionals ranging from board members to facility-level actions are engaged in analysing the key pillars—governance, strategy, risk management, and metrics/targets (Kröner & Newman, 2021).

S&P Global Market Intelligence interviewed one of the professionals from Samsung SDI involved in the publication of it TCFD Report. Since the beginning of the project, they organized a team with elements from different departments such as, energy department, greenhouse department and headquarters (S&P Global Market Intelligence, 2020).

According to Kröner & Newman (2021), companies that align their disclosures with TCFD framework are able to:

- Ensure credibility and safeguarding reputation among the investors and public: clearly demonstrating the strategic evaluation of climate-related impacts;
- Establish a systematic approach to seamlessly integrate climate risks into strategic decision-making processes: develop efficient processes of mitigation and adaptation that provide a competitive advantage over companies that are one step behind; and,

- Foster knowledge and enhance skills within the workforce: build the resources and the know-how needed to meet the future mandatory requirement.

With the enforcement of Directive 2022/2464, making sustainability reporting mandatory, and recognizing the absence of widely accepted metrics and methodologies for assessing, appraising, and managing sustainability-related risks as an obstacle to companies' efforts in ensuring the sustainability of their business models and operations (EUR-Lex, 2022), the need for studies that strengthen the adoption of TCFD recommendations has grown significantly. It's noteworthy that, apart from the fact that it is a relatively recent framework and therefore there is little literature on the subject, there is also a gap of research shedding light on the experiences of Portuguese companies in implementing TCFD. Bearing this in mind, the objective of this research was to gain insights into the primary drivers and barriers associated with TCFD implementation within a specific Portuguese company – EDP.

CHAPTER 3

Research Context and Methodology

3.1. Research Context

As previously mentioned, the Portuguese company involved is *Energias de Portugal* (EDP). It is a multinational energy company, vertically integrated based in Portugal. Founded in 1976, EDP is a listed firm and one of the largest energy companies in Europe that operates in several segments of the energy sector. Currently has 13.211 employees. It has an installed capacity of 28 GW, 22 of which are renewable: wind, solar and hydro. The entity is present in the Euronext Lisbon Stock Exchange, also belonging to PSI20[11], with the highest market capitalization (EDP, 2022a).

Besides being a major producer of electricity, by providing almost 8.5 million customers, with a variety of generation sources, EDP also engages in electricity distribution, operating distribution networks that bring electricity to end consumers in Portugal and other regions where it operates. It is also responsible for commercializing electricity and related services to residential and commercial customers. While supplementary, the group is also engaged in areas such as engineering, laboratory tests, professional training, energy services and property management (EDP, 2022a).

The company has a strong presence in the renewable energy sector, with significant investments in wind farms, solar farms and other clean energy sources.

The Portuguese group essentially operates in Europe, America and Asia Pacific (APAC).

In 2022, the share capital of EDP is represented by 3.965.681.012 shares with a nominal value of 1 euro each. Its most significant shareholder is China Three Gorges, presently holding a 21.08% stake in EDP's capital. China Three Gorges is a public entity in China, one of the largest global power companies (EDP, 2022a). The existing capital structure of EDP is as follows:

[11] Portuguese Stock Index - Benchmark stock market index of companies that trade on Euronext Lisbon Stock Exchange.

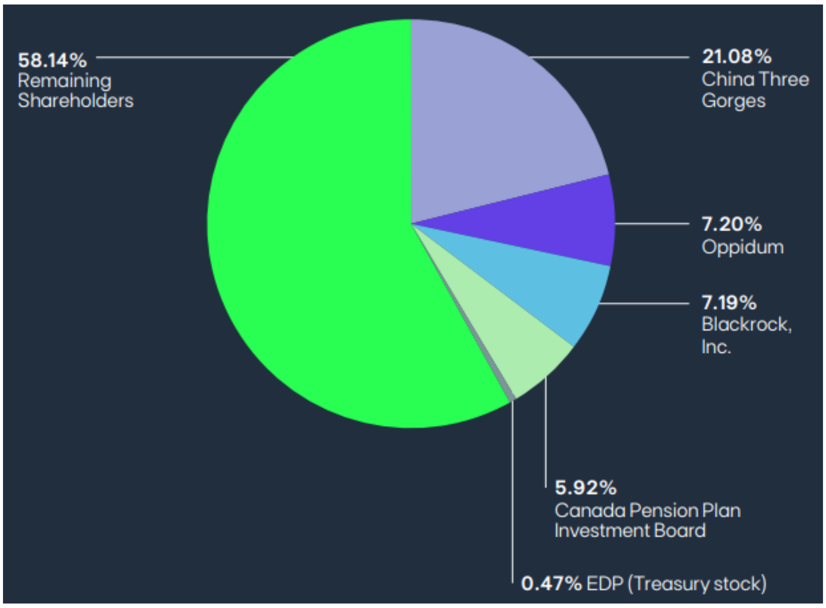

Figure 3.1 – EDP's Shareholder Structure
Source: EDP (2022a, p. 19)

EDP has set a strategic ambition with a series of goals and objectives to be achieved between 2025 and 2040 (EDP, 2022a). EDP's mission involved a holistic and committed approach to sustainability, energy transition and actions related to combating climate change. As a way to decarbonize for a climate-positive world, EDP are committed in be: coal free by 2025, all green by 2030 and net zero by 2040 (EDP, 2022a). This company has been a key driver of the energy transition, seeking to increase the proportion of energy from renewable sources and contribute to the sustainability of the global energy sector (EDP, 2022a)

For the first time, in 2022, EDP published an Integrated Annual Report which is composed by five different chapters: management report (including strategy, operational and sustainability performance), financial statements, corporate governance report, remunerations report and annexes. Every year, in its website, the company publishes other sectoral reports such as: Safety and Business Continuity Report, Internal Audit Report, Ethics Ombudsperson's Report, Human and Labour Rights Report, Biodiversity Report, Circular Economy Report, Social Investment Report and People Report (EDP, 2022a).

In terms of sustainability, EDP also provides a Climate Transition Plan where goals and targets towards a low carbon economy were defined. As mentioned in the 2022 Management Report, all the sustainability performance information is prepared in accordance with the GRI Standards and the Non-Financial Directive. Voluntarily, the company build its reports under regulatory frameworks such as: Task Force on Climate-related Financial Disclosures, the SASB and the Portuguese Securities Market Commission (CMVM).

The study will be based in the reports issued for 2022. It will focus on the European standards and directives, more specifically in the context of Portugal.

3.2. Research Methods

The field work aimed to confront the literature review findings with the reality of a Portuguese company inserted in the energy sector. The overall purpose was to understand the experience of the company with the TCFD implementation.

The choice of the research strategy depends largely hinges on the research question defined (Scapens, 2004; Yin, 2018).

The objective of the study was to answer the research question: *how have the TCFD recommendations been implemented in an electricity Portuguese company?*, which implies that this is indeed a case study research. Since it describes a technique/procedure used in practice, according to Scapens (2004), it was considered a descriptive case study.

Case-based research is considered a qualitative research and as cited by Moser and Korstjens (2017, p. 271), “aims to provide in-depth insights and understanding of real-world problems”. Moreover, the rationale for this kind of research is the longitudinal method that supposes a “before-and-after logic” (Yin, 2018), in this case the results and impacts EDP identified after implement the TCFD Recommendations in its reports. Last but not least, it is important to remember that case studies are used to comprehend a real-world case and presuppose that such comprehension is likely to encompass crucial contextual factors relevant in the case (Yin, 2018).

During the collection of evidence, interaction with the participants was directly through interviews. The scripts can be consulted in Appendices A and B and consist in open- and close-ended questions, to explore various topics and generate unexplored ideas and to ensure consistency across the interviews (Azungah, 2018).

The process of data collection involved two semi structured interviews to key informants. "With semi-structured interviews the researcher as a broad framework for the questioning, which means that similar issues are discussed with a number of different people, but there remains sufficient flexibility to explore issues in depth, and to follow up the responses that are given by the interviewee" (Scapens, 2004, p. 267). Two professionals both representing EDP and involved in the TCFD implementation were interviewed: one from sustainability area (Individual A) and the other one from risk management area (Individual B). Collectively, the interviews spanned a duration of, approximately, one hour and eleven minutes. Before starting them, all the participants provided their consent and agreed to the recording, transcription and processing of the gathered data within the context of the interviews. Due to the quantity and complexity of some questions, the script was handed prior to the interview, to the main point of contact in EDP to select other colleagues from specific areas relevant to the topic being addressed. The interviews were conducted in two different periods: on March and August of 2023.

The first interview aimed to understand the main motivations and difficulties in implementing the TCFD recommendations. The second one was more focused on understanding the results obtained and the main changes made to internal processes as a result of applying different scenarios. An ultimate rendition of the work was shared with the interviewers, granting them the opportunity to be informed about the explicit mention of their names and the chance to voice any objections to this utilization prior to the final submission. None of them raised any concerns in this regard.

In order to enhance our comprehension of the process, we complemented interviews with the inclusion of archival documents as supplementary sources. The archival analysis encompassed official documents sourced from EDP (e.g. integrated annual report 2022, the climate transition plan). Moreover, regulatory documentation on non-financial and sustainability reporting was also consulted, such as the example of the NFD and CSRD. These documents played a crucial role in providing significant contextual information. The information aided us not only in developing a deeper understanding of the implementation of TCFD in EDP but also in comprehending the environment within which the guidelines companies should follow when reporting this kind of data.

As a way of structuring the information gathered, firstly data was separating into different categories. Afterwards, similarities and differences between the categories were sought in order to group them into themes. Subsequently, four wide dimensions were created (see Figure 3.2).

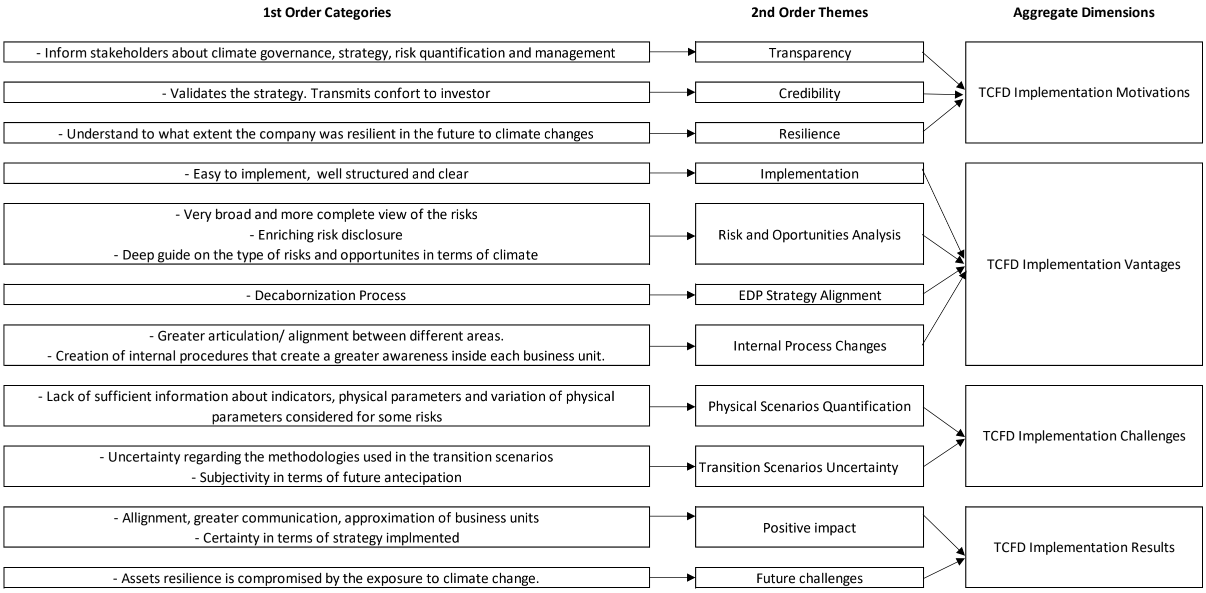

Figure 3.2. - First order categories and second order themes

Source: Adapted from Gioia (2012)

The four dimensions identified above are going to be the main topics into which "Findings and Discussion" chapter will be divided. The first dimension *TCFD Implementation Motivations* seeks to understand the reasons that led EDP to adopt these recommendations. In the second dimension, the objective would be to find the added value of a framework like TCFD, evaluate the positive aspects it brings to the company that implement it. The third dimension concerns the main difficulties at the time of the implementation. With the last dimension, which regards to the period after the incorporation of TCFD in the reports. The aim was to understand the outcomes of this adoption for the company.

According to Gioia (2012, p. 22) this model "shows the dynamic relationships among the emergent concepts that describe or explain the phenomenon of interest and one that makes clear all relevant data-to-theory connections".

After all patterns and themes identified, the issues raised started to be connected with the existing literature and related with other cases or theories, as if a story were being told (Scapens, 2004).

CHAPTER 4

Findings and Discussion

EDP's TCFD Implementation Motivations

EDP has consistently adhered to a principle of transparency. As well as being based on the decarbonisation process, the climate action strategy also involves transparency in the information disclosure. The company believes that this is a key element to guarantee the credibility of its strategy with its stakeholders. In TCFD recommendations, EDP has found a method to help structure the information to be disclosed:

> "a framework that allows this disclosure to be made in a structured way as the TCFD has defined, in relation to risks, impacts on the business, the creation of scenarios, this allows external entities, not only investors, but also sustainability indices - such as the Dow Jones Sustainability Index (DJSI), the Carbon Disclosure Project (CDP), to assess the climate performance of companies" (Individual A).

As mentioned in the literature review, one of the reasons for implementing TCFD is because climate-related information is requested by investors (TCFD, 2022). They search for companies' investments aligned with environmental impact, promoting social responsibility and maintaining strong management processes (EUR-Lex, 2022). Furthermore, investors are more likely to invest in companies with a positive climate-related performance since it provides them additional information (Lombardi et al., 2022).

Besides transparency and credibility, according to Individual A another objective of EDP's strategy aligned with the TCFD was resilience:

> "We are informing our stakeholders, most particularly our investors, about how we do climate governance, what is our strategy, how do we manage risks and quantify them, what is the financial impact, and what is, finally, the resilience of the company to climate risks" (Individual A)

As found before, TCFD recommendations are structured in four categories: governance, strategy, risk management and metrics and targets. In the strategy category, companies are recommended to do a scenario analysis, where they show how resilient their strategies are when facing different climate-related scenarios (TCFD, 2017).

EDP's TCFD Implementation Vantages

From a risk perspective, EDP considered that these guidelines help to structure risks and opportunities internally. On the other hand, they believe that TCFD recommendations were also important for stakeholders:

> "That's it, and also validating our strategy, ensuring that the strategy we are assuming, that our Executive Board of Directors is assuming, that we are developing is resilient, and that in the long run it is good, for all the stakeholders involved, we have that comfort, for our investors it is also good to have that comfort, and therefore it ends up being win-win on both sides" (Individual B)

According to Chua et al. (2022), the framework is very helpful. FSB provides guidelines and examples: in TCFD website it is possible to search for examples of disclosures by industry, region and even type of recommendation disclosed. Besides that, it should be noted that the TCFD is much more than a risk analysis. It allows companies identifying new opportunities in terms of resource efficiency, energy saving, competitive advantage and accessing new markets (TCFD, 2017).

Although, EDP has already a "well-established risk taxonomy for many years" (Individual A), the recommendations have caused a positive impact on the way climate issues are assessed, raising questions that had never been raised before and enriching the risk assessment.

> "And now, I think we have a very broad and more complete view of the risks, and then also in terms of disclosure, we have also been increasingly enriching our risk disclosure." (Individual B)

That is one of the messages transmitted by Nico and Alice (Kröner & Newman, 2021). TCFD enables a 360º view on climate issues affecting companies' operations. As defined in TCFD recommendations report (TCFD, 2017), organizations are supposed to identify and assess risks by splitting them into two groups: physical and transition. Moreover, since it involves professionals across all levels of the company, the risk analysis ends up being more comprehensive (Kröner & Newman, 2021).

"General public has high expectations of the private sector in terms of responsible behavior" (Hohnen & Potts, 2007, p. 2). Only by making this information available, investors and lenders can help companies evaluate and price possible financial results (O'Dwyer & Unerman, 2020). Because of that, when asking EDP about the stakeholders' behaviours after the incorporation of the TCFD recommendations in the sustainability reports, Individual A proclaimed that "at the moment, the pressure is not so much on following the recommendations because we already do that, but it is mainly on one of the components of the recommendations which is the definition of the plans to achieve the decarbonization trajectories, and this is what we did this year: the climate transition plan".

The consequences of failing an adequate decarbonization of the economy can be drastic in terms of climate-related risks, so firms should protect themselves (O'Dwyer & Unerman, 2020).

Like Samsung, EDP also felt the need to create a specialized team dedicated to implementing these standards (S&P Global Market Intelligence, 2020). TCFD recommendations require the involvement of several areas simultaneously: risk management, strategy, governance, sustainability. Regarding this, EDP created an internal process called "climate risk assessment" which consisted of setting up a multidisciplinary team dedicated to the follow up of the TCFD recommendations in the annual reports.

> "Not only in the risk management area, where we manage this process, but then we involve the sustainability area, the energy planning area, and also the local risk areas that coordinate with the local sustainability areas so that together they can have visibility of the main impacts that the risks have on the various business units." (Individual B)

Often specific and demanding, in EDP's case there are many more advantages than disadvantages associated with this implementation. When analysed the existing literature, it can be seen that when a company demonstrates that it is socially responsible, in addition to gaining financial returns and new customers, it also ends up feeling greater commitment from its employees (Allen, 2016). During the second interview, Individual B stated that the framework implementation "create a greater awareness here in terms of information on what are the main risks and opportunities at the level of the business units". Moreover, she also said that "allowed an alignment, a greater communication, methodological alignment, even an approximation of the areas themselves that facilitates a lot in terms of work, for the TCFD or other related topics".

EDP's TCFD Implementation Challenges

The incorporation of TCFD recommendations was, in general, considered easy, even though it brought some challenges for the company. As the results of the 2022 status report showed (TCFD, 2022), one of the main challenges for the preparers of this implementation was identifying pertinent scenarios and delineating essential inputs and parameters for scenarios analysis.

With regard to the physical scenarios, EDP mentioned the lack of information on indicators, physical parameters and variations in physical parameters considered in certain risks.

> "Then when we came to quantification, the idea here was to assume several scenarios to understand in terms of evolution what they could be and to make a kind of sensitivity here for various scenarios over various time horizons." (Individual B)

In 2021, the study conducted by Professor Naomi Soderstrom conclude the same: "investors may find the disclosures difficult to understand as there is a lack of explanation of how entities drew conclusions related do the scenarios" (Chua et al., 2022, p. 399).

In terms of transition scenarios, EDP believes that the TCFD does not provide sufficient guidelines on the best methodology to use. Some uncertainty and subjectivity was felt. “Here, the biggest challenge was to try to anticipate, and or foresee what could happen in a transition scenario, there is more uncertainty, it is not so tangible.” (Individual B)

Individual A reinforced the idea, mentioning “The scenarios of the International Energy Agency are known, they are public, but we had to somehow adapt these scenarios to our reality, to the electricity sector in particular, to our geographies”.

Despite the fact that TCFD recommendations state that the analysis of scenarios is hypothetical and that exact results and estimates cannot be expected, companies see it as one of the main challenges (TCFD, 2022, 2017). Even with all the guidelines and examples provided by the FSB (Chua et al., 2022), there is a lack of support for the various companies that use these recommendations. Among the improvements identified by users and preparers of the framework in the 2022 reporting status is the disclosure of critical input parameters, assumptions, and analytical choices for climate-related scenarios (TCFD, 2022).

To overcome this obstacle, EDP "create joint scenarios, between physical scenario and transition scenario, to come up with integrated scenarios and create a narrative for each of them, so that we could facilitate the quantification of risks" (Individual B).

Numerous financial implications stem from the risks associated with climate change. Most of them related with assets: change in the useful life of the assets, asset impairment (O’Dwyer & Unerman, 2020). For EDP, this is a challenge for the future, considering that the recommendations warned for the assets’ resilience, given their high exposure to climate change.

> “In terms of dangers, or challenges, I think it's appropriate, it has to do with the resilience of the assets, especially in terms of electricity generation and distribution, which end up being the areas of the value chain that have the most assets, the most dispersed and with the greatest value. And so, because we have greater exposure to extreme events such as storms or fires, greater variability in resources, particularly water, extremes of temperature, they end up being the assets that are most exposed and therefore the main challenges are related to these physical variables.” (Individual B)

EDP’s TCFD Implementation Results

When asked about the results obtained after implementation, individual B said: “What happened was that the TCFD ended up refining the strategy that had already been assumed, giving it a little more strength, and also assuring the relevant stakeholders, shareholders, investors, that it was the right strategy to follow”.

Overall, it appears that EDP has exactly met the main objective of the TCFD recommendations. As mentioned in the new directive (EUR-Lex, 2022), by disclosing non-financial information companies ensure their strategy and business model in relation to risks related to sustainability matters.

Since 2018, EDP has been committed to incorporating the TCFD recommendations into its reports. Over the years, the quality of the reports has improved. Before 2022, an individual sustainability report was developed every year. In 2022, EDP published an integrated report for the first time. Comprising 617 pages, this report compiled the management report, financial statements, corporate governance, remuneration report and annexes.

The management report includes information on strategy, performance and indicators aimed at meeting the requirements of the GRI Standards. Although this chapter deals with climate issues and has a sub-chapter dedicated to risk management, it is in a separate document that EDP discloses greater detail regarding the identification, analysis and management of climate-related risks and opportunities.

This document is called *Climate Transition Plan*. Along its fourty pages, EDP's strategy is expressed through climate-specific metrics and targets, the overall climate governance is summarized, and key strategic elements are pinpointed to ensure alignment between them implementation with the climate commitments (Net Zero by 2040). All ongoing initiatives related to climate action are streamlined through an internal Net Zero Program, to accelerate and support progress along this trajectory.

Although other international frameworks and regulations such as the GRI Standards, CDP and SASB are used in its implementation, it is in this report that the information in accordance with the TCFD is fully consolidated, namely in chapter "04 Approaching climate transition". By analysing this document, we found that EDP discloses information on each of the four categories of the TCFD recommendations separately.

In terms of governance, the company presented the structure of its internal governance model, identifying its members and their roles and responsibilities (see figure 4.1). The main objective of this model is to ensure a resilient climate strategy, its effective implementation and the efficient monitoring of its performance.

Figure 4.1 – EDP’s Climate Governance Model

Source: EDP (2022b, p. 25)

The General Supervisory Board oversees the implementation of EDP's Climate Strategy through its Corporate Governance and Sustainability Committee, which meets with the Executive Board of Directors (EBD) to discuss ESG issues. The Remuneration Committee is responsible for presenting a remuneration policy proposal, which is then approved by the General Shareholders' Meeting. To support the environmental and sustainability strategy, the Sustainability Committee advises the EBD by drawing up opinions and recommendations on key ESG issues. Finally, the EBD approves the group's business plan and sustainability strategy.

The multidisciplinary team mentioned above is involved in preparing the Sustainability Strategy. In line with the TCFD recommendations, the approach to the strategy category begins by identifying risks and opportunities and then defining climate scenarios to test the resilience of the strategy adopted by the company.

Adjusted to the company's context, EDP selects scenarios based on those defined by the IPCC's Representative Concentration Pathway and, also, by the International Environment Agency (IEA), updating them as new public scenarios are published. As can be seen below, through figure 4.2, the company decides to categorise scenarios in the same way as the risk: physical and transition.

Figure 4.2 – Climate Scenarios

Source: EDP (2022b, p. 30)

EDP chose three scenarios of IEA: Sustainable Development Scenario (SDS), Stated Policies Scenario (STEPS) and Current Policies Scenario (CP). The first one is fully aligned with Paris Agreement and describes a course of action that enables the world to achieve climate objectives, ensure energy accessibility and improve air quality (IEA, 2019). The second one objective is to reflect the current plans of policymakers and demonstrate their potential outcomes, rather than speculate about how these policy preferences might change in the future (IEA, 2019). Finally, CP Scenario illustrates the consequences of the world staying on its current trajectory without implementing any further policy changes (IEA, 2019).

Together with the scenarios mentioned above, EDP also adopt RCP from IPCC. As mentioned by IPCC (2014, p. 8), it describes “four different 21st century pathways of GHG emissions and atmospheric concentrations, air pollutant emissions and land use”. It includes “a stringent mitigation scenario (RCP2.6), two intermediate scenarios (RCP4.5 and RCP6.0) and one scenario with very high GHG emissions (RCP8.5)” (IPCC, 2014, p. 8). EDP select one from each level, as demonstrated in figure 4.2.

Regarding risk quantification, risks with an impact of more than one million euros are regularly calculated, based on an analysis of the impact on EBITDA made by each business unit and geography. Their assessment is based on an internally developed approach called *Climate Value@Risk*, which consists on the consolidation of the gains and losses (resulting from the quantification of risks) and the identification of correlations between risks and opportunities, between geographies.

In the Climate Transition Plan, EDP discloses three different tables for each type of risk and for the opportunities as recommended by TCFD (see figures 4.3, 4.4 and 4.5). The tables follow a similar structure, presenting the risk or opportunity, its main impact, the business segment affected and its quantification according to three ranges (0-50 M€, 50-100 M€ and +100 M€). The risk tables also include a column for the mitigation measures that EDP expects to adopt to attenuate or even eliminate the impacts of the risks.

Risk		Main Impact	Business segment	Quantification			Mitigation measures
				0-50 M€	50-100 M€	+100 M€	
Chronic	Temperature increase	Rise of energy losses Loss of efficiency (thermal power plants and solar) Demand increase	EDP Group	**OPP& Risk**			Natural mitigation, i.e., increase in temperature will result on an increase in demand. Additionally, EDP Group has an integrated energy risk management and follows a strategy of diversification by business area and geography.
	Water availability	Reduction of hydro generation	Hydro Generation	**Risk**			Strategy of diversification by technology, business segment and geography.
Acute	Extreme temperatures	Unpredictability of consumption Loss of efficiency Malfunction of turbines and panels	Client Solutions EDPR	**Risk**			Energy risk management to cover potential generation outages and a strategy of diversification by technology, business segment and geography.
	Extreme events Wildfires	Disruption of activities (generation and networks) Increase operating costs Damage to assets (distribution networks, generation)	EDP Group	**Risk**			Preventive maintenance of protection strips on distribution lines, a comprehensive insurance plan, and EDP Group has also been strengthening business continuity and crisis management plans, minimizing the impact on business and third parties.

Figure 4.3 – Physical Risks

Source: EDP (2022b, p. 26)

Risk	Main Impact	Business Segment	Quantification			Mitigation measures
			0-50 M€	50-100 M€	+100 M€	
Regulatory and legal	Increase exposure to environmental litigation Changes in product regulation	EDP Group (mainly EDPR)	**RISK**			Strategy of diversification by technology, business segment and geography, asset maturity, as well as through a close monitoring of government regulation and policies.
Market	Loss of revenue due to new competitors Effect of additional environmental measures on market prices variables	EDP Group (mainly Generation and EDPR)		**RISK**		Focus on electrification of the economy, (through energy services, EVs, among others), as an offsetting strategy.
Technology	Failure to follow/ delay in the adoption of new technologies Devaluation/ replacement of assets due to technological obsolescence	EDP Group (mainly Generation and EDPR)	**RISK**			Close monitoring of market trends, technological development (including emerging technologies across value chain) together with a clear Innovation Policy focused on the main trends in the sector.
Reputational	Stakeholders concerns regarding the company's path to climate transition Implementation failures of environmental measures or market positioning regarding the new climate reality	EDP Group	**RISK**			Electricity sector has traditionally been seen as a net contributor to climate change. In a paradigm shift, the Group is strengthening its renewable portfolio, and is committed to attaining 100% renewable capacity by 2030. At the same time, it is recognized for its excellent performance in the various sustainability indexes of which it forms part, demonstrating its sustainable character and providing evidence of adopted measures and strategies.

Figure 4.4 – Transition Risks

Source: EDP (2022b, p. 27)

Opportunity	Main impact	Business Segment	Quantification		
			0-50 M€	50-100 M€	+100 M€
Energy source	Use of incentive policies for renewable generation Explore new green energy sources	EDP Group		OPP	
Product & services	Greater electrification leading to increased energy demand Higher need for heating and cooling because of physical risks	EDP Group	OPP		
Resource efficiency	Use of more efficient means of transport and consequent increase in installed capacity	EDP Group	OPP		
Market	Access to new markets and consequent increase in installed capacity	EDP Group	OPP		
Resilience	Increase supply chain reliability		OPP		

Figure 4.5 – Transition Opportunities

Source: EDP (2022b, p. 28)

According TCFD recommendations the third pilar to disclose is Risk Management. EDP has created a subchapter called the "Climate risk management process", which explains how it adequately assesses the potential risks and opportunities associated with the evolution of the business in its Business Units. EDP divides this process into three phases:

1. Risk identification;
2. Climate scenario alignment;
3. Risk quantification and *Climate Value@Risk* aggregation.

Finally, to complete the TCFD's four recommendations, EDP published climate targets and indicators as follows:

Indicator	Categories	Reference
Scope 1 Emissions	• Stationary combustion (emissions from thermal power stations) • Mobile combustion: car fleet emissions (combustion engines) • Fugitive emissions: e.g., SF6 • Gas consumption in administrative buildings	GHG Protocol, TCFD, CDP, GRI
Scope2 Emissions	• Losses in transmission and distribution networks, when not produced by EDP • Electricity consumption in administrative buildings, if supplied by third parties • Self-consumption of electricity in renewable power stations if it is supplied by third parties	GHG Protocol, TCFD, CDP, GRI
Scope 3 Emissions	• Acquisition of goods and services • Capital goods • Fuel and energy related activities • Purchased products and waste transportation • Business travel • Employees' home-workplace travel • Waste from operations • Use of products sold (e.g., natural gas) • Financial investments	GHG Protocol, TCFD, CDP, GRI
CO_2 Specific Emissions	• GHG emissions (scope 1 or Scope 1 and 2) by net generation	GRI
% Renewable Installed Capacity	• EU1 INDICATOR GRI	GRI
% Renewable Generation	• EU2 INDICATOR GRI	GRI
% Fleet Electrification	• 305-1 INDICATOR GRI	GRI
Avoided CO_2 (by renewable generation)	• Emissions that would have occurred if electricity from renewable energy sources in each geography had been produced by the mix of thermoelectric power stations in that geography	
Avoided CO_2 (from clients)	• CO_2 emissions avoided by the supply of energy efficiency, sustainable mobility, distributed generation and green electricity products and services	

Figure 4.6 – Climate-related targets and KPI

Source: EDP (2022b, p. 32)

The company defines two sets of metrics: operational metrics and objectives that illustrate the evolution of the business in each of the main pillars for the climate transition and climate metrics and objectives that reflect the evolution of the business in terms of impact on CO2 emissions or avoided CO2. The objectives are split in short term (up to five years) and medium to long-term (ten to thirty years).

The short-term objectives are formulated by analysing aggregated operational data from multi-year business plans, simulating the progression of key indicators, and establishing corresponding targets. For emissions scopes, priority is given to the most significant categories. The long ones are concentrated on electricity generation and CO2 emissions exclusively. Targets are established based on this focus.

CHAPTER 5

Conclusions

In this study, we embarked on a comprehensive investigation into the non-financial reporting, more specifically into the TCFD Recommendations. Our central focus was to analyse the report of a electricity Portuguese company and understand how was the experience in adopting this standard.

Throughout our research, we delved into the evolution of non-financial reporting, the European directives related with this kind of reporting, the definition and objectives of TCFD Recommendations, as well as the identification of incentives and challenges of its implementations.

Our findings shed light on the future importance this framework may have from the moment when non-financial reporting becomes mandatory.

From the study, due to its principles of consistency and comparability, it is evident that TCFD Recommendations contribute for more informed investment decisions that drive the transition to a low-carbon economy. Furthermore, the framework was designed to benefit both companies and investors, as well as, indirectly, the economy and society as a whole. With the application of TCFD in its reports, corporations are able to refocus their strategies. It facilitates risk management, resources allocation and other aspects.

Although important steps have already been taken, there is still improvements to do. The percentage of companies aligning their reports with TCFD recommendations continues to grow, but most of them are unable to disclose all the eleven recommendations (TCFD, 2022).

In view of the research carried out, it is expected that TCFD recommendations will improve as entities gain deeper insights into the expectations and concerns of stakeholders, continuously review their climate-related risk assessments, targets, metrics, processes and disclosure policies and procedures. It is no coincidence that in companies that responded to the 2022 Status Report (TCFD, 2022), compared to 2017 there is a clear evolution in que quality of the reports.

From this analysis, it is possible to reach the conclusion that for EDP, the implementation of TCFD recommendations was, in general, easy. Its journey in implementing the TCFD framework showcases its commitment to sustainability and its proactive stance in addressing climate-related risks and opportunities.

During the research, it was noted that the challenges experienced by EDP are common to other companies. Despite this, EDP proved to overcome the difficulties and it is among the percentage of companies that Status Report 2022 reveals have disclosed the eleven recommendations in full (TCFD, 2022). The main difficulty lies in scenario analysis. It would be important for the FSB to provide more support, as the metrics and targets guidance published in October 2021 (TCFD, 2021).

This thesis stands out from others that approaches the same subject, in the sense that it studies a specific case of a Portuguese company, something that had never been studied until now. As explored in the methodology chapter, the selected research method provides detailed insights. The structure of the interviews can be adapted, enriching the study's depth or even emerging unexplored ideas. Compared to a questionnaire, for example, respondents are more engaged and the answers they give are more honest and genuine, demonstrating their emotions and thus, making the study more credible and attractive for researchers.

The research contributes to the literature in several ways. Firstly, it makes relevant contributions in literature regarding TCFD. There is now a study that testimonies the experience of a Portuguese company, which in the end demonstrates the potential of this framework.

Moreover it is our hope that this study has contributed to other companies that need to disclose these issues have an example of how another company has done it, with the inherent potential and challenges of the framework. Additionally, it is hoped to give voice to the difficulties of companies, boosting FSB to provide more guidelines and support.

The research developed, however, had some limitations. Due to the fact that this is a recent framework, there is very little literature on the topic. Furthermore, existing studies are still very subjective and inconclusive. Most of them were written a few years after the publication of the recommendations, which does not reflect the current situation. After five years, companies already have more experience and, consequently, the quality of their reports has already progressed significantly. Another limitation is that there was no opportunity to speak with more people from EDP, than those we have interviewed. It would have been more enriching if we had had the opportunity to explore other perspectives in other business areas, such as the investor relationship department.

For future research, it would be interesting to have studies that report the experience of other companies with recent implementation of TCFD Recommendations. Another research opportunity could be understanding how the quality of non-financial reports changed when they became mandatory. On the other hand, it would also be important to hear the side of those who read these reports in Portugal, in order to understand their expectations and perspectives regarding Portuguese non-financial reporting.

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Appendices

Appendix A: First Interview Script

The interview was attended by one collaborator from Sustainability area and another from Risk Management area, both representing EDP. It took place on March 28, 2023, starting at 2:00 pm and ending at 2:40 pm, lasting approximately 41 minutes.

All participants gave their consent and accepted the recording, transcription and processing of the data collected in the context of the interview

1. What is the main motivation that led EDP to adopt the TCFD recommendations in its Sustainability Reports?
2. What importance does EDP attach to the TCFD recommendations?
3. How is this implementation aligned with EDP's strategy in the process of decarbonizing the economy?
4. How does EDP describe the behavior of stakeholders and other interested parties after the incorporation of the TCFD recommendations in its sustainability reports?
5. In addition to the possible change in investor behavior, were there any other effects as a consequence of this implementation? If so, which ones?
6. What are EDP's objectives in adopting the recommendations in the reports?
7. What were the main difficulties encountered when implementing this methodology?
8. Do you consider that the implementation of TCFD in EDP has allowed to diversify more its investor base?
9. What approach was adopted, namely in terms of the scenarios chosen and the main risks identified?
10. How the implementation/integration of the TCFD recommendations in the Sustainability Report was structured?

Appendix B: Second Interview Script

The interview was attended by one collaborator from Sustainability area and another from Risk Management area, both representing EDP. It took place on 3 August 2023, starting at 5pm and ending at 5.30pm, lasting approximately 30 minutes via Google Meet.

All the participants gave their consent and agreed to the recording, transcription and processing of the data collected in the context of the interview.

1. According to the Climate Transition Plan and the identification of the different physical and transition risks, what results has EDP already achieved in each of them? What changes in terms of strategy have already taken place?
2. Implementing metrics such as the TCFD requires integration between the sustainability and risk management areas. In this regard, what processes have been implemented to facilitate this integration?
3. What internal mechanisms are in place which, as a result of the study of different scenarios, allow shareholders to understand what EDP is like in terms of resilience?
4. In the figures/results obtained after implementing the TCFD recommendations, what do you consider to be the greatest dangers for the Group?
5. Have you ever come across a climatic event that was a compliance problem? How did you deal with this situation? What mechanisms resulted from this event?
6. What are the sustainability and climate KPIs related to the variable remuneration of senior management?