

CORPORATE GOVERNANCE DISCLOSURE IN ITALY IN THE CONTEXT OF CLIMATE CHANGE

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Abstract

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Nowadays climate change represents the most critical issue facing the global economies, and, at the same time, the most misunderstood risk that organizations face in the coming years. The necessity to cover this gap has led to the spread of alternative disclosure frameworks, such as the Task Force on Climate-Related Financial Disclosure (TCFD), established in 2015. In our research, we focus the attention, amongst the TCFD recommendations, on the thematic area of governance, as we are interested in studying companies' awareness of climate change and the extent to which they assess environmental issues, risks and impacts. The adherence to TCFD policies appears, amongst the major results of the analysis, limited, with a rather significant polarization of information between good and bad reporters. Our findings provide interesting insights and implications both from a theoretical and managerial point of view, displaying that, in line with mimicry studies on corporate disclosure, the conduct of companies towards climate change disclosure suggest an imitative behaviour amongst competitors.

Keywords: Governance for Climate Change, TCFD, Non-Financial Disclosure, Italy

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1. INTRODUCTION

Nowadays climate change represents the most critical issue facing the global economies, and, at the same time, the most misunderstood risk that organizations face in the coming years.

Greenhouse gases emissions (GHG emissions) will cause further global warming, responsible for environmental and economic damages, even if there is still no exact estimate of timing and severity of physical effects.

In 2016, nearly 200 United Nations Frameworks Convention on Climate Change (UNFCCC) members have signed the Paris Agreement, dealing with greenhouse gas emissions mitigation, climate change, adaptation, and finance.

The reduction of GHG emissions demonstrates a move away from fossil fuel energy to a transition of the lower-carbon economy which can cause economic losses to companies that do not adapt on time, but also create opportunities for climate change mitigation and adaptation solutions.

Companies who develop a mechanism for protection against climate change and seize opportunities, including the ability to respond to transition risk and physical risk, are resilient to a lower carbon economy, will last longer and their investors will experience higher returns.

This means that investors cannot avoid climate change, therefore, organizations and investors should consider long-term strategies and the most efficient way to allocate capital.

In this sense, many securities regulators and stock markets have begun to recognize that climate risks may be material to investors and financial markets, but existing current climate-related disclosures seldom provide information on the business financial implications of climate change.

The necessity to cover this gap leads to the spread of alternative disclosure frameworks, such as the Task Force on Climate-Related Financial Disclosure (TCFD).

The TCFD was established in December 2015 by the Financial Stability Board to “develop voluntary, consistent climate-related financial disclosures that would be useful to investors, lenders, and insurance underwriters in understanding material risks” (Task Force on Climate-related Financial Disclosures [TCFD], 2017, p. iii).

TCFD recognizes the significant threat climate change poses to the global economy and encourages to disclose consistent, reliable and clear climate-related financial disclosures enabling investors to take into account climate-related risks.

There is growing interest in having a clear and consistent disclosure by investors and shareholders. Effective disclosure focuses on transparency and risk analysis, which leads to well-founded investment decisions and a reduction in capital loss.

TCFD provides 11 recommended disclosures related to 4 thematic areas (governance, strategy, risk management, and metrics and targets).

In our research, we focus the attention on the thematic area of governance because we are interested in studying companies’ awareness of climate change and the extent to which they assessed environmental issues, risks and impacts concerning their business.

Climate policies or commitments should be considered at the highest level, representing a starting point for developing a climate strategy that will be then implemented by the company’s management and overseen by the board of directors.

Investors, lenders, insurance underwriters are concerned in comprehensive the role at companies’ board plays in being responsible for climate-related issues. This information allows users of climate-related financial disclosures to understand an organization’s governance to assess if the board and management are taking enough care of these issues. Moreover, according to legitimacy and stakeholder theories, social and environmental disclosure is a valuable tool for influencing their external perceptions and legitimizing their business activities to stakeholders.

We conducted an empirical analysis to investigate the level of companies’ commitment to putting climate change risks at the forefront of their business strategy, risk management policies, and objectives.

As far as concern the sample, we examined the latest available non-financial disclosure (NFD) of the major Italian listed companies. NFD represents the only non-financial mandatory disclosure for Italian listed companies.

There are several reporting options for preparing the NFD, namely: 1) a section of the annual report or a stand-alone report; 2) in the form of

a statement containing information under the requirements of the Legislative Decree 254/2016; 3) a sustainability report, or 4) an integrated report.

Our panel, excluding companies incorporated under foreign law and companies operating in the banking and insurance financial sector, consists of 22 companies as of September 30, 2021.

After a first reconnaissance of the physical location of the NFD, in the majority of cases positioned within the sustainability report of the period, we carried out a content analysis of governance issues related to climate change, with particular reference to the requirements of TCFD.

Among the major results of the analysis: the adherence to TCFD policies appears, on the whole, limited (slightly over 50% of companies), with a rather significant polarization of information, whereas of the 13 companies that explicitly confirm their adherence to TCFD, only 5 produce a report in strict and full compliance with the requirements of TCFD.

Our findings, even if preliminary, provide interesting insights and implications both from theoretical and managerial point of view, displaying that, in line with mimicry studies on corporate disclosure, the conduct of companies towards climate change disclosure suggest an imitative behaviour amongst competitors.

The structure of the paper is organized as follow: Section 1 is devoted to the presentation of the climate change challenge and the related need of financial information; Section 2 contains a literature review on the TCFD framework and on the board’s effectiveness with respect to the climate disclosure; Section 3 presents the methodology adopted and the data sample selected; Sections 4 and 5 expose results and discuss research findings correspondingly. Section 6 concludes the study.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1. The economic consequences of climate change and the need for financial information

In the contemporary world scenario, climate change concerns have become the most controversial risk business organizations have to tackle (Intergovernmental Panel on Climate Change [IPCC], 2021; Abhayawansa & Adams, 2021; Pachauri et al., 2014; Cotter & Nahjh, 2012; Cotter, Lokman, & Najah, 2011; Parry, Canziani, Palutikof, Van der Linden, & Hanson, 2007; Beerbaum, 2021; for the specific case of Italy De Bernardi, Venuti, and Bertello, 2019).

Currently, the concentration of greenhouse gases has reached a level never seen in the past years, causing alarming global warming, that is irreversibly changing climate. Consequences are there for all to see: natural disasters, epidemics, and extreme events will be more likely to happen in the future as the global temperature rise.

Scientific studies indicate that the number of extreme weather events has more than tripled since the 1980s; these changing events are the result of anthropogenic influences that are projected to continue into the future, while other changes are

projected to emerge from natural climate variability under enhanced global warming (IPCC, 2021, Chapter 11, pp. 11–13).

Ötoker and Srinivasan (2018) estimate that hurricanes and typhoons caused damage of USD 548 billion (constant 2010 dollars) worldwide during 2000–2014. According to the study by Network for Greening the Financial System (NGFS, 2019), during 2018, 62 million people were affected by natural hazards and 2 million people had to move. The conclusions of the Intergovernmental Panel on Climate Change indicate that more than half of the temperature increase since 1950 can be attributed to human activity (IPCC, 2014). Therefore, everything suggests that further global warming will largely depend on our ability to restrain greenhouse gas emissions as its main cause.

A huge number of studies have confirmed that global warming reduces well-being (Gelzins & Steele, 2019; Ötoker & Srinivasan, 2018; Dafermos, Nikolaidi, & Galanis, 2018; Burke & Emerick, 2016; Organisation for Economic Co-operation and Development [OECD], 2015; Burke, Hsiang, & Miguel, 2015; Lanzafame, 2014; Lobell, Schlenker, & Costa-Roberts, 2011; Schlenker & Roberts, 2009).

A consensus has been reached worldwide about climate change's impact on reducing future economic growth, by lowering labour productivity and diverting resources from investment in current productive capital and innovation to climate change adaptation.

Ötoker and Srinivasan (2018) pointed out that there is growing evidence that investors and financial markets do not fully understand, at least not immediately, the impact of weather shocks on output and productivity.

Scientists' results suggest that the global economic benefit of emissions reductions could be much larger than previously assumed because the existence of the planet itself is questioned by not acting (Burke et al., 2016).

In November 2021, the Group of 20 countries made a deal that resumes the climate pledges of the Paris Agreement 2015⁹. Leaders agreed on remaining committed to the Paris Agreement's goal to hold the global average temperature increase well below 2°C and to pursue efforts to limit it to 1.5°C above pre-industrial levels (United Nations [UN], 2015).

The 1.5°C threshold is a crucial global target because, beyond this level, so-called tipping points become more likely. Tipping points refer to an irreversible change in the climate system, locking in further global warming (Burke et al., 2015).

These basic considerations require a prompt human response in terms of energy transition; the changing process introduces greater uncertainty that reverberates on both real economy and financial activities (Stern, 2015).

According to Sustainable Development Goal 13 "Climate Action" (SDG 13), to stem climate change it is important to act on its anthropogenic causes, mainly reducing GHG emissions; so that all human activities, including business activities, are now required to "go green", rethink all resources' consumption processes toward renewable energy.

It is reasonable to consider that future energy transition has to face physical risks, connected to weather and climate phenomena which are more and more frequent as a response from damaged environment, and regulatory risk, connected to policymakers' choices about, for example, taxation (carbon and green), emissions quotas, business activities regulation, mandatory and voluntary disclosure.

It is important to notice that climate change can also provide some opportunities. According to Porter and van der Linde (1995), strict environmental regulations can induce efficiency and encourage innovations that help improve commercial competitiveness (Emmanuel, Carvalhal da Silva, & Avila, 2012).

It is now obvious that there are branches that are developing rapidly on this basis; the introduction of stricter technological standards and carbon tax can give a great stimulus to the research in new energy sources.

In such a scenario, information on the business financial implications of climate change is widely required to assess both the business's vulnerability risks and opportunities connected to climate change activities. More generally, disclosure of financial and non-financial information represents a key part of the market: the demand for information is broad since it involves a wide range of entities, stakeholders, shareholders, policymakers, investors, credit and market analysts and media.

The emergence of climate change as a technical issue for accounting scholars and practitioners can be dated back to around 2000. At the time, accountants deemed their role should be essentially technical and non-strategic (Hoerisch, Ortas, Schaltegger, & Alvarez, 2015).

Starting in 2005, significant changes have occurred in accountants' approach to climate change problems. In this period, several initiatives related to climate change accounting/accountability emerged, e.g., an increase in the numbers of climate change reports, newsletters, and other initiatives by accounting professional bodies. In 2008, the International Accounting Standards Board (IASB) intervened on this issue in collaboration with the US Financial Accounting Standards Board (FASB).

Given the urgency of the issue, in recent years, different initiatives, frameworks and guidelines on climate change-related information to be disclosed were proposed (Cotter & Najah, 2012; Global Reporting Initiative [GRI], 2016) to enrich the possibility of making more transparent corporate actions.

Even if there is a general agreement about the importance of these measurements for the evaluation of the performance of corporations, there is a lack of frameworks based on accounting principles to frame them.

The main limitation of the aforementioned practices is that climate-related disclosure rarely provides information on the business financial implications of climate change.

Climate change disclosure tends to be disclosed through non-financial information, so-called "narrative disclosure" (Ben-Amar & McIlkenny, 2015).

Evangelinos, Nikolaou, and Leal Filho (2015) concluded their study by suggesting that currently,

⁹ <https://www.un.org/en/climatechange/paris-agreement>

a large part of accounting approaches accounts for information on climate change voluntarily. The existence of informal accounting standards leads to untrustworthiness and awkwardness in climate change accounting and accountability.

According to Ilinitich, Soderstrom, and Thomas (1998), as well as Nikolaou and Evangelinos (2012), the lack of generally accepted guidelines for environmental information accounting and accountability is a significant problem.

Hopwood (2009) identified analogous difficulties in carbon accounting. As a result, there is an ineffectiveness in stakeholders' decision processes, in the measurement of corporate environmental performance, and public policy entities (Lohmann, 2009; Malik & Yadav, 2020).

2.2. Literature review and the Task Force on Climate-related Financial (TCFD) approach

In 2015, at the UN Climate Change Conference (COP21), the Financial Stability Board set up an international working group of TCFD "to convene public and private-sector participants to review how the financial sector can take account of climate-related issues" (TCFD, 2016, p. 8).

TCFD (2017) highlighted that "users also cite inconsistencies in disclosure practices, a lack of context for information, use of boilerplate, and non-comparable reporting as major obstacles to incorporating climate-related risks and opportunities (collectively referred to as climate-related issues) as considerations in their investment, lending, and insurance underwriting decisions over the medium and long term" (p. 1).

TCFD emphasized that it was not calling for an additional document but strongly recommended that these disclosures should be done in existing financial filing requirements that are focused on investors. TCFD also issued supplemental guidance for the financial sector and certain non-financial groups. TCFD made it clear that it was not calling for regulation; instead, these disclosures should be done voluntarily.

Even if TCFD is quite a recent topic, it has received attention from scholars. More specifically, Eccles and Krzus (2017) analysed the motivation for implementing TCFD, while Christophers (2017) made reflections about the prioritization of market discipline underpinned by risk disclosure. Aven (2020) and Caldecott (2020) focused their attention on describing the type of risk associated with climate change and the consequent process of climate risk management (CRM).

Other authors contend the role and problematize the topic, addressing some specific challenges of TCFD, namely: undertaking and understanding novel climate-related scenario planning, both for reporting corporations and investors; integrating climate risks into corporate-level risk management; the challenges of climate-related materiality determination; aligning TCFD reports with other corporate reporting frameworks; the challenges for investors in using TCFD information; and other challenges in

the implementation of TCFD reporting (O'Dwyer & Unerman, 2020).

Demaria and Rigot (2020) have made a study analysing whether the 40 biggest publicly listed firms in France traded in Euronext Paris disclose their climate-related risks and are compliant with TCFD, developing a model later used by Friedrich, Velte, and Wulf (2021).

The study by European Financial Reporting Advisory Group (EFRAG, 2020) outlined that the scenario analysis is usually more concentrated in describing the transition risks than physical risks.

Demaria and Rigot (2020) and EFRAG (2020) had a sample that consisted of financial and non-financial companies. All three studies concluded that companies provide a rather poor and generic description of the board oversight compared to management responsibilities.

EFRAG (2020) study praised companies for providing a good description of governance structures and including illustrative graphics.

Demaria and Rigot (2020) state that while companies are eager to talk about the different committees they have in place for corporate social responsibility (CSR), the information on top management responsibilities regarding climate-related risks and opportunities is very limited.

Lombardi, Schimperia, Paoloni, and Galeotti (2021) investigated the quality and quantity of climate-related information disclosed by Italian public interest entities (PIEs) in the non-financial disclosure scenario. Their findings show the lack of several required climate-related information or a not in-depth presentation of information.

In 2019, the European Commission (EU) extended its guidelines on non-financial reporting (EU, 2017) and integrated the recommendations of TCFD (2017) through its supplement on climate-related information reporting (EU, 2019).

According to these guidelines, "under the Non-Financial Reporting Directive, climate-related information should, to the extent necessary, include both the principal risks to the development, performance, and position of the company resulting from climate change and the principal risks of a negative impact on the climate resulting from the company's activities" (EU, 2019, para. 2.3, p. 1).

The recommendations provided by TCFD are intended to help companies to better understand what financial markets want from such disclosures.

The main assumptions underlying recommendations can be summarized as follow: suggestions are applicable to all organizations, despite the industry, and should be included in an organization's financial filings. Furthermore, companies are asked to provide decision-useful, forward-looking information on the financial impacts of climate-related risks and opportunities. Finally, organizations should place a strong focus on risks and opportunities related to the transition to a lower-carbon economy.

TCFD recommendations provide a framework of specific topics that need to be disclosed. In particular, four core elements are proposed as shown in Table 1.

Table 1. TCFD recommendations' disclosure core elements

<i>Area</i>	<i>Recommended disclosure</i>
<i>Governance</i>	Describe the board's oversight of climate-related risks and opportunities.
	Describe management's role in assessing and managing climate-related risks and opportunities.
<i>Strategy</i>	Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.
	Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.
	Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.
<i>Risk management</i>	Describe the organization's processes for identifying and assessing climate-related risks.
	Describe the organization's processes for managing climate-related risks.
	Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.
<i>Metrics and targets</i>	Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.
	Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 GHG emissions, and the related risks.
	Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.

Source: TCFD (2017).

For our analysis's purpose, we focus attention on the information regarding *Governance*.

Under TCFD perspective, in the *Governance* area, it should be disclosed the policies and commitments should be initiated and managed at the company's highest level of representation and decision making (i.e., the board of directors, CEO, or president), while also being monitored by the company's corporate governance system. This means that climate policies or commitments should be considered at the highest level, and should be a starting point for developing a climate strategy that will be then implemented by the company's management and overseen by the board of directors.

2.3. Board effectiveness and climate change according to TCFD

Corporate governance literature has been focused mainly on the relationship between corporate governance and environmental performance (Kassinis & Vafeas, 2002; De Villiers, Naiker, & Van Staden, 2011; Walls, Berrone, & Phan, 2012); some papers (Haniffa & Cooke, 2005; Rankin, Windsor, & Wahyuni, 2011; Michelon & Parbonetti, 2012; Frias-Aceituno, Rodriguez-Ariza, Garcia-Sanchez, 2013) investigated the link between individual corporate governance mechanisms and environmental and social reporting.

Given that companies are making environmental commitments, the board of directors has the responsibility to monitor and address such commitments (Grove & Clouse, 2021; Osemeke, Osemeke, & Okere, 2020).

Previous accounting research also investigates the link between the effectiveness of board committees and disclosure practices. This research stream argues that board effectiveness will be contingent on the monitoring activities performed at the level of board committees. More specifically, agency theory scholars (Jensen & Meckling, 1976; Fama & Jensen, 1983), as well as Hill and Jones (1992) in their stakeholder-agency framework argue that the board of directors has the power and legitimacy to exert control over managers and ensure that they act in the best interests of the firm's shareholders and other stakeholders. Consistent with this prediction, recent researches (Kassinis & Vafeas, 2002; De Villiers et al., 2011; Walls et al., 2012) show that board composition has

an impact on the firm's adoption of environmentally friendly initiatives. Galbreath (2010) suggests that the structure of the board of directors affects both the design of specific climate change governance practices and the deployment of organizational resources to deal with risks and opportunities related to climate change.

The board of directors has a fiduciary duty to oversee material risks to the corporation and ensure that they are identified and included within the scope of the company's risk management systems (Desjardins & Willis, 2011).

Climate change raises physical, regulatory, reputational, and litigation risks, which may threaten the firm's competitive advantage and ultimately harm its financial performance (Khan, Nijhof, Diepeveen, & Melis, 2018).

The implementation of an effective climate strategy is connected to the board's awareness about the climate-related risks and opportunities, as well as the board monitoring activity on the company's management.

2.4. Literature gap and hypotheses development

The literature on TCFD is growing but still suffering from some major gaps, both from the point of view of scientific arrangement (in fact, the sole model used is Rigot's) and in geographical distribution: for this reason, without prejudice to the choice of methodology, we have identified in the Italian context another fertile habitat to study the effectiveness and consistency of application of the TCFD framework.

Moving from the consideration above, we believe it worth investigating how companies disclose information about governance, considering how and to which extent the board takes into account the climate topics. Consequently, we intend to map materiality connected to climate issues, the management role in the evaluation of climate disclosure, and remuneration policies linked to climate indicators.

To reach the goal of our research we address three research questions that are based on TCFD recommendations in the area of *Governance*. These ten major questions have been responded to through processing companies' reports.

RQ1: Materiality — How important climate issues are considered by the Board in terms of risks and opportunities? (Q1, 2, 3, 4).

RQ2: Board involvement — Has been identified a committee involved in managing sustainability issues? Is climate change explicitly tackled by the committee? (Q5, 6).

RQ3: Management's role in assessing and managing climate issues — Are managers involved in climate change disclosure and policies? (Q7, 8, 9, 10).

3. RESEARCH METHODOLOGY

The method pursued in this study is essentially qualitative, since, as Hair, Celsi, Money, Samouel, and Page (2003) stated, it is the most appropriated and the only way to achieve research objectives research when “little is known about a research problem or opportunity, where previous research only partially incompletely explains the research question when current knowledge involves

subconscious, psychological, or cultural material that is not accessible using survey and experiments, and if the primary purpose of the research is to propose new ideas and hypotheses that can eventually be tested with quantitative research” (p. 10).

Thus, this is the most appropriate approach to discover how and to which extent the climate change perspective is embraced by corporate governance.

We have conducted a content analysis, in the light of which the narrative information has been traced via a coding system (Krippendorff, 2013).

More specifically the coding has been carried out on the basis of the work of Demaria and Rigot (2020) who identified 8 specific questions to disentangle the topic, also in relation to the provisions of the TCFD, and we added 2 more lines regarding the presence and, if present, the role of a specific committee in managing climate change issues. In light of these considerations, the codification we used is shown in Table 2.

Table 2. The research questions: Details

<i>RQ1: Materiality</i>	<i>RQ2: Board involvement</i>	<i>RQ3: Management's role</i>
Q1: Is the Board informed about climate issues? Q2: How often? Q3: Are climate topics taken into account in the evaluation and orientation of the strategy? Q4: How does the board assess progress?	Q5: Has been identified a committee involved in managing sustainability issues? Q6: Is climate change explicitly tackled by the committee?	Q7: Variable remuneration linked to climate indicators? Q8: What are the responsibilities of managers related to climate change? Q9: Climate information feedback process Q10: How does the management manage climate issues?

Source: Our elaboration based on Demaria and Rigot (2020).

The content analysis has been conducted on the NFD from 2017 onwards for Italian listed companies.

In order to select the sample, within the Italian listed companies, we have selected those belonging to the FTSE MIB (FTMIB, Milano Indice di Borsa), the index which consists of the most liquid and highly capitalized stocks listed on the Italian Stock Exchange.

Furthermore, consistent with Kvaal and Nobes (2010), we believe that large companies are most likely to be more attentive than smaller companies to the requirements and expectations of the global investor community. FTSE MIB companies fully address these requirements. Moreover, all the FTSE MIB companies are also cross-listed and cross-listing has been identified as a determinant of financial and non-financial information quality because these companies have to comply with international disclosure practices and international investors' needs (Meek & Saudagaran, 1990). In addition, the sample, being made up of several industries, and representing more than 80% of the total Italian market capitalization, could allow inferences to be made for the entire listed Italian companies. FTSE MIB sample is also widely used both in empirical researches based on multiple countries samples (Devalle, Onali, & Magarini, 2010; Nobes & Stadler, 2015) and in the Italian context (Veltri & Ferraro, 2018).

Consequently, the analysis has been run among the non-financial reporting practices of the most representative Italian companies.

We have excluded for homogeneity reasons companies within the finance and banking industry

and companies which have been incorporated outside Italy and for which NFD is not mandatory; in the end, the sample comprises 21 companies.

Amongst the above, 10 companies (48% of the overall sample) explicitly mention the TCFD project and guidelines.

4. RESEARCH RESULTS

The sample analysed can be observed from a different point of view; for the study's purpose, it is worth depicting the sample by industry and identifying the locus in which TCFD disclosure is provided. Moreover, it is interesting to summarize how many companies are a member or not of TCFD. These characteristics of the sample are exposed in the following tables.

Table 3. Companies by industry

<i>Industry</i>	<i>N</i>
Industrials	4
Energy	3
Public services	2
Discretionary goods	1
<i>Total</i>	10

Source: Our elaboration.

Table 4. The locus of the non-financial disclosure

<i>Locus</i>	<i>N</i>
Integrated report	5
Sustainability report	3
Stand alone NFD	1
Financial statements	1
<i>Total</i>	10

Source: Our elaboration.

Table 5. Relationship amongst companies and TCFD

Type	N
Constituents	3
Partners	4
Nothing	3
Total	10

Source: Our elaboration.

A significant majority of the companies belong to sectors particularly related to the theme of climate change (industrials and energy) and 70% of the sample has adhered, immediately or subsequently, to TCFD: the environment to be examined, therefore, represents the ideal context of the study, referring to sectors with important impacts on climate and environmentally-conscious companies.

At the very same time, a certain dispersion emerges in the place of representation and content of NFDs, which only in a single case assume a separate and autonomous dignity to the other reports.

As in their work (Demaria & Rigot, 2020), we did not limit our content analysis to a binary model (0, 1) but we made use of a more precise coding scale.

More specifically, each question is assigned a score of 1, 0.5, or 0 according to the relative presence of the disclosed information. A score of 1 corresponds to full compliance, a score of 0.5 partial compliance (information is not detailed) and a score of 0 to a lack of required information.

The results are represented in Table 6 (whereas the first row presents the sector: I-industrials, E-energy, P-public services, DG-discretionary goods, and the dashed lines divide the issues related to *RQ1*, *RQ2*, *RQ3*).

Table 6. Governance on climate change: The total score of the disclosure

	Industrials (N = 4)				Energy (N = 3)			Public services (N = 2)		Discretionary goods (N = 1)	Total	Weight to total
	I	I	I	I	E	E	E	P	P	DG		
<i>Q1</i>	0.50	0.50	0.50	0.50	1.00	1.00	1.00	0.50	0.50	0.50	6,50	14%
<i>Q2</i>	0.00	0.00	0.00	0.00	1.00	1.00	1.00	0.00	0.00	0.00	3.00	7%
<i>Q3</i>	0.50	0.50	0.50	0.50	1.00	1.00	1.00	0.50	0.50	0.50	6.50	14%
<i>Q4</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0%
<i>Q5</i>	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	10.00	22%
<i>Q6</i>	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	5.00	11%
<i>Q7</i>	0.00	0.00	0.00	0.00	1.00	1.00	1.00	0.00	0.00	0.00	3.00	7%
<i>Q8</i>	0.50	0.50	0.50	0.50	1.00	1.00	1.00	0.50	0.50	0.50	6.50	14%
<i>Q9</i>	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	5.00	11%
<i>Q10</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0%
Partial sum of rows	3.00	4.00	4.00	4.00	6.50	6.50	7.50	4.00	3.00	3.00	45.50	100,00%

Note: N – number of companies in the industry (each column pertains to a single company working in the industry).

Source: Our elaboration.

Results show that the three companies by the energy industry (E) record the highest total scores (7,50; 6,50; 6,50) showing the more complete governance disclosure.

More in-depth, the analysis shows how

the companies disclosed the three different thematic areas of governance (materiality (M), board involvement (BI), and management's role (MR)). The following Table 7 details the score record by each company in the aforementioned areas.

Table 7. Governance on climate change: the area score of the disclosure

	Industrials (N = 4)				Energy (N = 3)			Public services (N = 2)		Discretionary goods (N = 1)	Total	Avg.
	I	I	I	I	E	E	E	P	P	DG		
<i>M</i>	1.00	1.00	1.00	1.00	3.00	3.00	3.00	1.00	1.00	1.00	16.00	0.40
<i>BI</i>	1.00	2.00	2.00	2.00	1.00	1.00	2.00	2.00	1.00	1.00	15.00	0.75
<i>MR</i>	1.00	1.00	1.00	1.00	2.50	2.50	2.50	1.00	1.00	1.00	14.50	0.36

Note: N – number of companies in the industry (each column pertains to a single company working in the industry).

Source: Our elaboration.

If the absolute value of the information is equally attributed to the three research questions (the "Total" column), the most interesting results, which will be the subject of comment in the next paragraph, are, however, those in the last column, in which the absolute figure has been weighted by the number of questions and the number of companies: it emerges that the average figure is lower than the average reference value (0.50) for research question *RQ1* and *RQ3*, with a slightly more satisfactory figure in the first, and, therefore, with better disclosure of the themes for board purposes than for managerial issues.

The fact that the highest level of disclosure, on average, is for BI (0.75) is a statistic that deserves further emphasis.

As seen above, the research question (*RQ*) accepts two lines of questioning, the first of which is limited to surveying the presence (or not) of a sustainability committee and the second, instead, verifies the disclosure on climate change by the committee itself.

The fact that all companies have a committee that discusses ethical issues means that, within the score of 0.75, all companies report the maximum score in relation to this question; if, on the other hand, we excluded this aspect (or weighed it with a lower weight) the average value of disclosure would no longer be 0.75 but only 0.40, meaning that the discussion on climate change by the various committees is, in fact, weak.

5. DISCUSSION

The total volume of information expected is, of course, 100.00, that is 10 pieces of information with a maximum score of 1.00 for each of the 10 companies.

The fact, therefore, that the total information equals 45.50 (45.50% of the maximum score) represents, from the very outset, an unsatisfactory result, also because, as seen before, the object of study are companies with mandatory socio-environmental information and within the context of a specific vocation on the subject of TCFD and climate change.

Nonetheless, a discussion disaggregated by question and by score, as well as an industry level assessment, captures better the data and their meanings.

Let alone the presence, inside the board, of a committee involved in sustainability issues, which is in effect included in all the 10 companies, the highest average score, 6.50, has been achieved by *Q1*, *Q3*, and *Q8*: those questions, put together, require 1) to disclose the fact the board is informed about climate issues; 2) the relevance of those issues for the strategy, and 3) to explicit the responsibilities of managers related to climate change.

All the companies disclose at least partially those items and 3 are fully compliant with complete disclosure.

Quite interestingly *Q9* (i.e., the feedback process of climate change information) represents the unique question which has been disclosed by all the companies and by all of them partially: the general info, in effect, either confirm the fact that feedback exists or does not move further in the details of the type of the process.

Both *Q2* and *Q7* (the number of meetings of the board into which the climate topic has been discussed and the remuneration process when linked to climate change indicators, respectively) score at the end 3.00, with the polarized results of

the 3 companies compliant and the remaining 7 without disclosure.

These two questions, in effect, seize more accurately and analytically on two major considerations; the first refers to an explicit numerical claim (i.e., during how many board meetings an issue was examined) and the second further explores the relationship between environmental, social and governance (ESG) metrics and performance, assessing which of the companies not only identify a relationship between the former and the latter but also whether the ESG metrics include an explicit reference to the climate issue.

Finally, 2 questions out of 8 have been not answered by any company, even partially — these being *Q4* (the frequency of assessment of the progress on climate change) and *Q10* (the management of climate issues by the second-line (managers)).

On the one hand, reporting on these issues certainly appears challenging, since companies are required to declare that 1) not only the awareness of a theme, but also the frequency of progressive verification during the year of the objectives achieved; 2) the actual modalities, at a managerial and not at a board level, for managing climate change.

At the same time, however, these two questions most explicitly pose the challenge of climate disclosure: the fact that no company responded is particularly significant, indeed, and it appears more and more severe since the companies in the sample are expressive of the largest and most environmentally conscious companies in Italy.

Vertical analysis of the questions, company by company and by industry, elicits the following supplementary insights in conjunction with the suggestions above.

The sample in this sense has been divided, as in the figure above, into four distinct cohorts, according to the sector.

The results are reshaped in Table 8.

Table 8. Governance on climate change: The score of the disclosure by sector

	<i>Industrials</i>	<i>Energy</i>	<i>Public services</i>	<i>Discretionary goods</i>	<i>Total</i>
<i>Q1</i>	2.00	3.00	1.00	0.50	6.50
<i>Q2</i>	0.00	3.00	0.00	0.00	3.00
<i>Q3</i>	2.00	3.00	1.00	0.50	6.50
<i>Q4</i>	0.00	0.00	0.00	0.00	0.00
<i>Q5</i>	4.00	3.00	2.00	1.00	10.00
<i>Q6</i>	3.00	1.00	1.00	0.00	5.00
<i>Q7</i>	0.00	3.00	0.00	0.00	3.00
<i>Q8</i>	2.00	3.00	1.00	0.50	6.50
<i>Q9</i>	2.00	1.50	1.00	0.50	5.00
<i>Q10</i>	0.00	0.00	0.00	0.00	0.00
Total	15.00	20.50	7.00	3.00	45.50
Avg.	3.75	6.83	3.50	3.00	4.55

Source: Our elaboration.

At first glance, therefore, an aggregation of companies into two masses — bad (more numerous) and good (less numerous) reporters — could be imagined.

More specifically, the companies of the first type belong to all the sectors except for energy (that is, industry, public and discretionary goods); they produce, with respect to the number of questions, an all in all limited number of responses; at the same time, moreover, the responses when

present are also poor and not entirely exhaustive in their narrative configuration.

Yet more relevant, however, is the scenario of the good reporters (all belonging to the energy sector) who certainly are more extensive in their information but who, at the same time, suffer from non-trivial limitations.

In the first place, they, as mentioned above, do not express issues that are indeed important (from the periodic verification of improvements to

the good managerial practices for the management of climate change).

Similarly, the verification of feedback is described, but more concisely than the other themes, which are instead addressed extensively.

In other words, where Demaria and Rigot (2020) value scale is calibrated and pondered according to the strategic significance of the 8 questions, the final score would be considerably less than 50% of the total.

This outcome is particularly negative since, it should be remembered, we have only been looking at larger companies that explicitly state their comprehension of the TCFD theme.

Fruitful insights emerge when tackling the industry sector and the support of TCFD: if all the 3 good reporters pertain to the energy sector (i.e., all the energy reporters all good reporters, since the energy companies are 3), 2 of them support TCFD from the beginning, while another joined later.

On the contrary, amongst the 7 poor preparers 1 (operating in the industrial sector) supported TCFD from 2017.

This reasoning leads us to assume that among the components at the foundation of a good disclosure the sector plays certainly the lead, while membership (or not) of TCFD seems of less significance; furthermore, traces of impression management and imitative/mimetic behavior come to the surface.

Those features help us in constructing our findings in terms of our research questions.

RQ1 refers materiality and it embraces the first 4 issues: the average result is 4.00 (out of 10.00) and it comes as an average amongst issues fully disclosed (the fact that the board is informed about climate change and it is a relevant topic for the strategy) with an issue only partially disclosed (the frequency of board meetings involving climate change topics) and an issue not disclosed by any company, that is the periodic measurement by the board of the results in terms of climate change.

The synthetic judgment that emerges, therefore, is that of an informational approach, regarding the role of the board on climate change issues that is capable of grasping some aspects, but more formal and less of substance. When delicate aspects such as the periodicity of ascertainment of results and their periodic monitoring in terms of climate change are addressed, the results of the disclosure are unsatisfactory.

RQ2 refers to the presence, inside the board, of a dedicated monitoring committee and to the explicit relevance, within this committee, of the issue of climate change: the results are polarized according to the issue since all the companies have nominated inside the board a committee devoted to sustainability but only half of those committees explicitly tackle climate change as a topic.

Certainly, this does not imply that the theme of climate change is not embraced within the broader theme of sustainability; however, in the catalogue of tasks and formal activities of the committee, it is not mentioned.

As far as the name is concerned, all the committees, despite the variety of their lexical formulations, include the term "sustainability", ranging from the most synthetic definitions (sustainability committee) to more structured ones

such as "sustainability, scenarios and governance committee".

RQ3, in terms of managerial implications (variable remuneration linked to climate indicators, responsibilities and frequency of management, feedback progress), leads to the least satisfactory score and the worst information results.

If the responsibility of management is, in fact, unequivocally stated, the indication of the frequency of management handling of the issues is not so (data is always absent), nor is the feedback process usually described in a summary manner.

In overall terms, the combined analysis of the three research questions leads to results of disclosure that are certainly unsatisfactory: in the face of formalistic information and generic attention to the theme of climate change when it comes into play more concretely, the effectiveness of the board's role and, above all, the second-level dynamics of part of the management are largely disregarded.

6. CONCLUSION

This manuscript examines, within the non-financial statements of major Italian listed companies, the level of governance disclosure on climate change.

This level is measured, according to the guidelines of TCFD, based on a scale of contents already validated in the literature.

The principal results of the study confirm, on the one hand, the absence of the most sensitive information on the subject, even among the best reporters, and, at the same time, a polarization by sector, whereby all companies in a sector (energy) are good reporters.

The three research questions, in this sense, capture the information that represents the more formalistic aspects and, to a lesser extent, those of greater content and more evidence of the impact on the managerial line. This is even truer in the case of companies that, adhering to TCFD, should produce a very different quality of disclosure; at the same time, however, a weak disclosure on substantive issues makes the relevance and impactful capacity of the TCFD weak.

These results, in turn, confirm, on the Italian scene, the study by Demaria and Rigot (2020) and expand it with specific reference to climate change governance disclosure.

The study suffers, of course, from some limitations, in particular, the size of the sample (which is certainly limited in the time frame and the number of the companies involved) and the methodology adopted, since we made use only of the Rigot model.

Those points at the very same time could be the subject of future scientific developments, aimed, also in the international logic that must inspire the theme of climate change, either at international comparisons or at other research methods (for example, case studies).

At the very same time, a future fruitful avenue of research could be fostered by the analysis of the bank and insurance sector, which have been considered by TCFD itself like a relevant player in the field of climate change, as well as by addressing the relationship, if any, amongst board composition

— in terms of diversity, size, gender and so forth — and environmental disclosure (Shehata, 2013).

In this sense, furthermore, we ask for other researchers to proceed further in the relationship, if any, between the composition and the specific

feature inside the governance mechanisms of the sustainability committee (or the equivalent committee) and the adherence (in terms of disclosure and effectiveness) of TCFD recommendations.

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