



Working Paper

Corporate environmental reporting: Are French firms compliant with the Task Force on Climate Financial Disclosures' recommendations?

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Corporate environmental reporting: Are French firms compliant with the Task Force on Climate Financial Disclosures' recommendations?

Abstract:

This article deals with the practices of French corporate environmental disclosure with a focus on climate-related risks. In particular, it aims to analyse the compliance of CAC 40 firms with the recommendations of the Task Force on Climate-related Financial Disclosures (2017), an international initiative made up by Financial Stability Board to enhance financial transparency. Based on a content analysis of firms' reference documents spanning 2015-2018, we constructed the Climate Compliance Index (CCI) to evaluate whether firms disclose information on climate risks and opportunities about governance, strategy, risk management and metrics. Our results highlight a gradual increase of the CCI despite disparities across sectors and management areas. The content analysis allows us to develop a set of indicators frequently reported by domain and to identify and define climate risks and opportunities and their financial impacts per sector, which is a first step to improve the disclosure of non-financial information.

Keywords: Environmental disclosures, CSR reporting, climate-related risk, TCFD recommendations, climate index, climate change, climate-related opportunities.

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Introduction

The issues of global warming and climate change involve two main risks, physical and transition, that result from the damage caused directly by weather triggered by changes in the climate system and from the adjustments made for the transition to a low-carbon economy¹, respectively, particularly when these are poorly anticipated or occur suddenly (Burke & Hsiang, 2015; Gasbarro et al., 2017; IPCC, 2012; Nicol et al., 2017; Stern, 2013). This results in a necessary energy transition which requires the taking up of new challenges, including a substantial and sustainable reduction of GHG emissions via greater energy efficiency, a reduction of carbon intensity in production systems and the development of renewable energies. Against this background, the Financial Stability Board (FSB) launched an international initiative, the Task Force on Climate-related Financial Disclosures (TCFD) to develop voluntary and consistent climate-related risk disclosure recommendations; its objective was to create the necessary conditions for transparency to reduce information failures which limit the understanding of the financial consequences of climate risks. The recommendations, published in July 2017, aim to improve the non-financial reporting provided by companies on how they integrate climate risks and opportunities (CROs) in four areas: governance, strategy, risk management and environmental metrics. Such corporate disclosures are considered as one of the means to enhance financial transparency via the market discipline mechanism. Indeed, capital markets require both quality and timely data to function efficiently through the low-carbon transition and to encourage trust. However, despite a wide acceptance of the need to reduce emissions, we observe information failures related to climate risks.

Within this context, this article addresses an important topic in the literature on corporate environmental disclosures: climate related disclosures. Indeed, corporate environmental reporting has been a growing research field since the early 1980s. Most studies aimed to explain and assess the level of environmental mandatory/voluntary disclosures by creating scores based on several items of the environmental regulations or soft law such as international sustainability reporting frameworks (Beck et al., 2010; Lock & Seele, 2016; Pistoni et al., 2018). Many papers have revealed that companies have significantly improved their level of mandatory or voluntary disclosures over the past decade (Chauvey et al., 2015; Cho et al., 2015; Gerged et al., 2018; Russo-Spena et al., 2018). However, it appears that the information is still imprecise and too descriptive for some countries (Beck et al., 2010; Melloni et al., 2017). The case of France is

¹ Stringent regulation such as an increase in the pricing of GHG emissions, including carbon tax, stricter emissions-reporting requirements...

particularly studied in the literature because, since 2000, this country has been at the forefront in promoting energy transition, with the promulgation of a series of environmental laws including more stringent disclosure requirements. Very recently, in this literature there have been articles devoted specifically to the climate (Giannarakis et al., 2017; Kouloukoui, Marinho, et al., 2019; Kouloukoui, Sant'Anna, et al., 2019). Most of these show that the level of disclosure of climate information is still low in both European and international samples; none of them, however, are about France. In addition, to the best of our knowledge, there is not yet a paper dealing with the implementation of the TCFD recommendations, even though they are poised to become the global reference (albeit not binding) for climate risks disclosure. This scarcity can be explained by the fact that this issue has really emerged since the Cop 21 in 2015, even if the literature has been discussing it for more than two decades.

This paper attempts to fill this gap by building a new score - the Climate Compliance Index (CCI) - to measure the level of environmental and climate information reported by firms according to the recommendations of TCFD. It aims to answer the following questions: Do companies disclose information on climate related risk and their impacts in their reference documents? What is the content of environmental and climate related risk disclosures regarding these recommendations? To do so, we have applied this scoring method to French CAC 40 firms over the period 2015-2018. Based on a content analysis of firms' reference documents, our results reveal a rising trend of the CCI over 2015-2018, especially in the case of firms belonging to polluting sectors, as well as a better level of the CCI in the areas of risk management and metrics, which are far ahead of governance and strategy. Moreover, a further analysis of the CROs and the indicators frequently reported by firms by domain highlights that firms are less compliant with some TCFD recommendations regarding the valuation of financial impacts or the consideration of the 2°C scenario.

This article contributes to the literature on environmental disclosures in several ways. First, it supplements the few research studies on the disclosure of information on CROs. Second, to our knowledge, this is the first academic study on the application of the TCFD's recommendations (all other studies generally focus on the NER Act requirements or on the GRI grid) by producing a comprehensive update on French CAC 40 firms' practices regarding environmental disclosures focusing on climate risks. Then, we put forward a new index to measure the environmental and climate disclosures regarding the effects of climate change on firms, unlike existing indices which focus on the impact of companies on climate change. Third, this article

has contributions for firms, practitioners and regulators in that we adopt a very accurate approach to business activity by identifying the main CRO indicators reported by firms according to the four managerial areas requested by the TCFD and by identifying and defining CROs and their financial impacts by sector. Lastly, the limits of our paper represent opportunities to develop further research.

Section 1 details the regulatory context of non-financial reporting and the advantages of TCFD recommendations. Section 2 reviews the academic literature on environmental disclosures. Section 3 describes the data and methodology, while Section 4 presents the results. Finally, Section 5 discusses the results by providing the contributions of the paper and its conclusions.

1 The regulatory context about the non-financial information disclosures

Over the last two decades, we have witnessed a strong development of non-financial information due to national and/or soft law regulations. By illustration, in France we account for national laws, namely the New Economic Regulations Act (NER Act, 2001), as well as the subsequent introduction of the Grenelle II Bill (2010) and the Energy Transition and Green Growth Act (2015). At the European level, there is Directive 2014/95/EU – also called the non-financial reporting directive (NFRD). At the international level, there are currently two main sustainability reporting frameworks, the Global Reporting Initiative (GRI²) and the International Integrated Reporting Council (IIRC³). Such international initiatives help corporate, government and other organisations understand and communicate their impacts on environmental, social and governance (ESG) issues and other sustainability topics by publishing a corporate social responsibility (CSR) report or ESG report. Moreover, they are designed for a wide range of stakeholders.

Recently, in 2015, there was a new international initiative: the establishment of the TCFD. This last one is linked to the FSB's concern that the financial sector and financial investors in particular have not grasped the speed at which global warming is affecting the investment risks of all sectors of the global economy, including the potential stranded assets of the fossil fuel sector and the industries that depend on it. Thus, without the right information on climate risks,

² GRI's framework for sustainability reporting helps companies identify, gather and report this information in a clear and comparable manner.

³ The IIRC promotes the Integrated Report which is a concise communication about how an organisation's strategy, governance, performance and prospects, in the context of its external environment, lead to the creation of value in the short, medium and long term.

investors may incorrectly price or value assets, leading to a misallocation of capital and financial instability. TCFD considers that data are necessary for companies to get an idea of the vulnerability risks of their climate change activities or for investors that are eager to achieve the decarbonation objectives of their portfolios. As a result, there is an urgent need to reduce information failures which limit the understanding of the financial consequences of climate risks (physical and transition risks) by promoting climate reporting.

Explained precisely, TCFD’s objective was to meet financial investors’ increased demand for transparency from organisations by developing recommendations on voluntary, climate-related risk disclosures to be reported by companies for investors, lenders, insurers and other stakeholders. Its final report (2017) established recommendations for disclosing clear, comparable and consistent information about CROs (see Table 1).

Table 1: The TCFD recommendations

| Area | Governance | Strategy | Risk management | Metrics and objectives |
|----------|---|---|---|---|
| Sub-area | a) Describe the board's oversight of CROs | a) Describe the CROs the organisation has identified over the short, medium and long term | a) Describe the organisation's processes for identifying and assessing CROs | a) Disclose the metrics used by the organisation to assess CROs in line with its strategy and risk management processes |
| | b) Describe the management's role in assessing CROs | b) Describe the impact of CROs on the organisation's business, strategy and financial planning | b) Describe the organisation's processes for managing CROs | b) Disclose Scope 1, Scope 2 and, if appropriate, Scope 3 GHG emissions, as well as the related risks |
| | | c) Describe the resilience of the organisation'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 CROs are integrated into the organisation's overall risk management | c) Describe the targets used by the organisation to manage CROs and their performance against these targets |

Source: TCFD

The TCFD develops recommendations on international environmental reporting focusing on climate risk. They are categorised into managerial fields such as governance and strategy (they are not only based on the disclosures of CO2 metrics) and take into account sector features. According to the TCFD, high-stakes sectors are not only those considered to be polluting, but also those whose practices may be affected by climate change (food sector) or those that may influence environmental change (financial sector). Finally, TCFD identifies investors, lenders and insurance underwriters (“primary users”) as the appropriate target audience. The demand for meaningful market information is broad, ranging from depositors, policyholders, shareholders and creditors through to rating agencies, credit and market analysts, and the financial media.

The TCFD reference system has several benefits compared to the existing standards: it adopts a novel approach compared to other international organisations by not focusing on a company's impact on climate change, but rather on the impact of climate change on the company; it especially focuses on CROs and not on CSR and is interested in the financial sector, which is considered to be a high environmental stake in that it plays a crucial role in financing the economy through their investment and financing policies. Furthermore, it tries to link the financial and non-financial information requiring firms to present the CROs' financial impact on their business plan and their financing plan in the financial filings. However, while the stated objective of TCFD is to ask companies to quantify the financial impact of CROs, a large part of the recommendations in terms of reporting relates to non-financial information (such as in the areas of governance and strategy).

All these reasons explain why the recommendations of TCFD have received increasing support since 2015 and are poised to become the global reporting benchmark for climate risks. After receiving support from the French Government and the European Union's HLEG group (2016), the European Commission published "Guidelines on non-financial reporting: Supplement on reporting climate-related information" that implements the recommendations of TCFD in the non-financial information directive (European Commission, 2019). Large companies have followed this movement: while in 2017 282 companies adopted these recommendations, there were around 1,300 in July 2020.

2 Review of the literature on environmental disclosures

Corporate environmental reporting has been a growing research field since the early 1980s. In this literature, most studies have aimed to explain and assess the level of environmental compulsory/voluntary disclosures. Based on the seminal work of Wiseman (1982), who was the first to propose a grid to measure the level of environmental disclosure, many researchers have created environmental scores based on i) mandatory disclosure like NRE French Law or Spanish accounting law (Damak-Ayadi, 2010; Larrinaga et al., 2002) and ii) voluntary guidelines such as the GRI (Clarkson et al., 2008; Latridis, 2013; Lock & Seele, 2016) or Integrated Reporting (Pistoni et al., 2018).

According to Al-Tuwaijri et al. (2004), the method refining a disclosure-scoring measure first identifies certain environmental issues, second analyses the environmental disclosure of each issue using a "yes/no" scoring method and third quantifies individual issues from a content analysis by determining the aggregate score for each firm. As per Helfaya and Whittington

(2019), this coding structure should be carefully designed, otherwise it could produce misleading results. This research methodology is used by many academic researchers that have focused on both mandatory and voluntary disclosure.

Concerning the compulsory information, several studies show that firms do not fully comply with disclosure requirements. For example, since the introduction of the NER Act (2001)⁴, studies seek to identify French companies'⁵ level of compliance and investigate the reliability of their information (Ben Rhouma & Cormier, 2007; Damak-Ayadi, 2010; Delbard, 2008). These researchers generally show that, in the first few years of the law's application, the level of compliance was relatively low, regardless of the sectors. These French studies echo research conducted in Spain in 1997 by Larrinaga et al. (2002), who show that firms do not comply with accounting standards.⁶ As far as the voluntary application of environmental reporting is concerned, research based on the content analysis of European CSR reports globally show that the level of environmental disclosure is not sufficient and leaves significant room for improvement (Beck et al., 2010; Lock & Seele, 2016; Pistoni et al., 2018). Nevertheless, several studies show an improvement in environmental disclosures over an extended period (Cho et al., 2015). In France, ten years after the introduction of the NER Act, some studies⁷ highlighted an indisputable increase in environmental disclosures for listed companies (Albertini, 2014; Chauvey et al., 2015; Chelli et al., 2014). This was also the case for Russo-Spena et al. (2018), which confirmed the trend towards the increasing environmental and social accountability from a sample of international automotive firms between 2009 to 2014. Despite this improvement, many studies highlight that disclosures are often descriptive, rarely quantitative and negative. They favour optimistic information on environmental practices while negative impacts are largely ignored. This result is observed on French samples (Albertini, 2014; Chauvey et al., 2015; Depoers & Jérôme, 2017) and on British and German companies (Beck et al., 2010) or Indian firms (Sen et al., 2011). Along this line, Melloni et al. (2017) assert that international firms with poor environmental performance or belonging to the most polluting sectors tend to disclose less precise information on their environmental impacts. From another perspective, Radu and Francoeur (2017) show that environmentally innovative firms tend to disclose significantly more than non-innovative firms when their environmental performance is

⁴ Before this first law, disclosures by listed companies were almost non-existent (Mikol, 2000).

⁵ CAC 40 or SBF 120

⁶ The disclosure requirements of the accounting standards 437/98 are: current expenses with the aim of environmental protection; risks and expenses covered with provisions related to environmental actions; contingent liabilities related to environmental protection and improvement.

⁷ Using the legitimacy theory as a conceptual framework.

considered to be poor. As noted by Brooks and Oikonomou (2018), there is evidence that when disclosures are voluntary, firms will only supply a judiciously selected portion of information that presents them in a positive light in a self-congratulatory way, which raises questions about the completeness of disclosures and a requirement for assurance of such reports.

Another stream of research is devoted to the determinants of the level of environmental disclosures reported by firms. In this way, researchers use econometric models in which the variable explained is either a reporting score built for research purposes or a score from a database. Several studies show that firms in sensitive sectors (industry, buildings, energy, etc.) are the ones that disclose the most about environmental issues (Alnajjar, 2000; Gallego-Alvarez et al., 2018; Jose & Lee, 2007; Villiers & van Staden, 2011). This is primarily explained by their need to legitimise their practices and neutralise their environmental impacts (Boiral, 2016). It is noteworthy that large firms disclose the most environmental information (Albertini, 2014; Chauvey et al., 2015). Larger firms, presumably due to their greater visibility, are assumed to face greater social and political pressures, and, as such, may use disclosure as a tool to reduce such exposures (Patten, 2002). Furthermore, Haddock-Fraser and Fraser (2008) examined whether proximity to final consumers (Business to Consumers, or B to C) affects the extent and form of environmental reporting of companies listed in the FTSE 250 in order to establish whether these firms are more or less likely to provide public environmental information than their Business to Business (B to B) counterparts. They find that companies that are consumer-oriented or are brand-name companies are highly likely to adopt one of the several forms of environmental reporting considered.

Clearly, there is a significant amount of research on environmental disclosure, however, like Kouloukoui, Sant'Anna, et al. (2019), we note that there are still very few studies on CROs. This pitfall in the academic literature can be explained by the lack of consistency and comparability of climate change reporting across firms that makes it difficult to properly assess the effects of global warming on firms' competitive position and their future performance (Ben- Amar & McIlkenny, 2015). We identified only four papers devoted to climate-risk disclosure. They address the amount of disclosure and its determinants at the level of CDP questionnaires⁸ or GRI-compliant sustainable reporting on European or international samples.

⁸ The CDP is a non-profit organisation dedicated to studying the impact of the world's leading publicly traded companies on climate change. Since 2003, the CDP has conducted an annual survey to gather information on

These papers show that the level of disclosure on climate risks is still relatively low (Kouloukoui, Marinho, et al., 2019). Their empirical developments reveal that the observed level of disclosure is mainly explained by better environmental performance (Giannarakis et al., 2017), board effectiveness (Ben- Amar & McIlkenny, 2015), firm size and financial performance (Kouloukoui, Sant'Anna, et al., 2019). For Giannarakis et al. (2017), climate disclosure is thought to be an effective managerial tool for shareholders and stakeholders to superintend corporate management limiting the level of information asymmetry. Furthermore, higher environmental performers prefer actual climate change disclosure providing a plausible signal. Moreover, Kouloukoui, Marinho, et al. (2019) also demonstrate that the number of climate projects implemented is not related to the intensity of emissions, size, power of shareholders or the country of origin of the company, but to its profitability.

As we can see, there are currently no articles devoted to climate disclosure either on the French case or on the application of the TCFD's recommendations.

3 Data and methodology

3.1 Data

Our sample includes the 40 companies on the Euronext Paris with the largest market capitalisations (the CAC 40 index) from 2015 to 2018. We focused on French firms because they are subject to the most stringent environmental legislation: the NER Act (2001); as well as the Grenelle II Bill (2010) and the Energy Transition and Green Growth Act (2015). Moreover, these companies sometimes go further than the regulations by disclosing voluntary information because they may be subject to pressure from stakeholders (NGOs, analysts, the general public, etc.) regarding the disclosure of environmental information. This is particularly important in the context of our study for two reasons. First, for the period 2015-2016, the TCFD recommendations had not yet been issued, so only the firms reporting significant disclosure can be studied. Second, for the period 2017-2018, the TCFD's recommendations were not binding, so only large companies could be expected to change their disclosure policies (due to the aforementioned external stakeholder pressure). This longitudinal study shows the trend in environmental disclosures in light of the TCFD's recommendations. The choice of this study

corporate greenhouse gas (GHG) emissions and the effects of climate change more generally (this questionnaire includes more than 100 questions).

period aims to observe the evolution of such practices in order to identify if a change occurs after the publication of the TCFD's recommendations.

To assess French firms' compliance with the TCFD's guidelines, we have built an original index based on the content analysis of reference documents. This choice, to collect and analyse information in the reference documents which are published and audited annually and which contain more structured, comprehensive and reliable information (Beck et al., 2010), is consistent with most studies of voluntary or mandatory environmental disclosure (Chauvey et al., 2015; Chelli et al., 2014; Damak-Ayadi, 2010; Gerged et al., 2018; Wiseman, 1982). Lastly, to identify sector reporting differences, we retain here the TCFD's sector classification⁹: high impact sectors (energy, transport, food & agriculture, materials & building, and finance) and low impact sectors (e.g. all other sectors). According to the TCFD, high-stakes sectors are not only those considered polluting, but also those whose practices may be affected by climate change (food sector) or those that may influence environmental change (financial sector).

Table 2: Descriptive statistics on CAC 40 firms (2018)

| Sectors | Firms | Firms that quote TCFD | Firms that apply TCFD | Market Capitalisation (K€) | Turnover (K€) |
|------------------------|-------|-----------------------|-----------------------|----------------------------|---------------|
| Energy | 3 | 1 | - | 150 646 093 | 216 848 603 |
| Finance | 4 | 4 | 1 | 143 149 488 | 299 218 000 |
| Food | 4 | - | 2 | 101 467 734 | 131 962 000 |
| Materials and Building | 10 | 4 | 3 | 195 003 125 | 262 917 267 |
| Transport | 6 | - | 2 | 164 991 706 | 257 330 000 |
| Low impact sectors | 13 | 5 | - | 618 493 950 | 294 108 800 |
| Total | 40 | 14 | 8 | 1 373 752 096 | 1462384670 |

Table 2 illustrates that low impact sectors include some 33% of firms (39% based on market capitalisation).¹⁰ Some sectors only have a few firms but represent higher market capitalisations (e.g. finance and energy) and *vice versa* (e.g. food, building & materials, and transport). We can note that in 2018, of the 22 CAC 40 firms that mentioned TCFD in their reference documents, only 14 quote them and 8 comply with them.¹¹

⁹ This allocation was subject to a consultation which involved over 200 responses.

¹⁰ Among the high impact sectors, building and finance are those with the highest market capitalisations.

¹¹ Note that the financial sector is particularly committed to the application of this standard, with the four firms belonging to the sector indicating their determination to apply it.

3.2 Building the TCFD Climate Compliance Index

The content analysis method is widely used in studies on environmental disclosures (Beck et al., 2010; Bouten et al., 2011; Gerged et al., 2018; Hooks & van Staden, 2011). Bardin (2013) defines it as a group of communication analysis techniques that, by systematic and objective message content description procedures, seeks to gather indicators enabling inference. We followed the recommendations of both Bouten et al. (2011) and Krippendorff (2012) to achieve a stable, reliable and reproducible content analysis. To ensure the stability and accuracy of the study, the coding grid was first carried out by four encoders, including two experts who are specialists in the recommendations of TCFD. Then, two encoders coded the same report simultaneously, and the results were assessed to guarantee the consistency and reliability of the study (Bouten et al., 2011).

To build this original database indicating the presence or absence of the information required by the TCFD, we started from the recommendations in the four areas (governance, strategy, management and metrics) and in their sub-areas (a, b, c). In order to assist companies in their climate reporting, the TCFD has associated one or more questions with each of these recommendations. Using the section 3-Guidance for all sectors of the TCFD final report (TCFD, 2017), we identified 8 questions for governance, 13 for strategy, 7 for risk management and 10 for metrics. Overall, we identified 38 questions. TCFD's recommendations are thus translated more concretely into 38 questions that companies must answer (Appendix 1).

From this step, it is then possible to start coding to measure the presence or absence of items (required by the TCFD) in the reference documents. Insofar as the answer to the different questions can be qualitative or quantitative, we chose to transform the questions asked by the TCFD into closed questions with a positive or negative answer. Each question has been assigned a value of 1, so the maximum score of the overall compliance index will be 38.

However, in order to accurately capture the nature of the information disclosed, we used a more precise coding scale, in line with Cormier and Magnan (1999) and Pistoni et al. (2018). In this research, the coding depends on whether or not the firm discloses the information (i.e. the presence of information) and on the degree of detail, not on its relevance. 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. At the same time, in order to justify the score assigned to each sub-question, we systematically state the page of the information and we copy/paste the text extract from the reference document. The database thus created allows us to calculate a score for the CCI, but also to carry out a qualitative analysis of the disclosure for each company.

According to the coding criteria, a company has a score for each area (governance) and sub area (governance (a) and governance (b), for example). Its score per area is obtained by adding the score per sub-area and the overall score is calculated by aggregating the scores per area. This database facilitates the calculation of a score per area ranging from 0 to 8 for governance, from 0 to 13 for strategy, from 0 to 7 for risk management and from 0 to 10 for metrics & targets. Each company therefore has a score per sub-domain (governance (a) and governance (b), for example), a score per area (governance) and a total compliance score. We obtain the firm's overall compliance index by calculating the ratio of the total score out of 38, multiplied by 100 to make a percentage. This index corresponds to the ratio of information disclosures that comply with the TCFD. Like Gerged et al. (2018), we retained an unweighted measure in order to reduce the subjectivity involved in assigning relative importance to individual items. This index can be broken down into an index by area and sub-area (see Appendix 2 for an extract from the database with the scores per area and the supporting text from the reference documents).

We used Cronbach's alpha test for each question of the four areas to test the consistency of our analysis grid (Pistoni et al., 2018). The alpha level never rises above 0.76 (0.8919 in average) for all the four areas; this provides evidence that each of the 38 items contributes incrementally to the assessment of the quality of the score and therefore should be kept in the CCI.

In the end, the database is both a quantitative and qualitative database insofar as it contains, respectively, scores ranging from 0 to 1 for each question but also textual elements taken from reference documents. The quantitative part gives us a score (as a percentage) that permit us to study and analyse the evolution of environmental and climate reporting of French firms (sections 4.1 to 4.3). The qualitative part enables us to identify the indicators most frequently reported by companies by question, as well as the CROs (sections 4.4 and 4.5).

4 Results: A longitudinal analysis of the compliance of French CAC 40 firms with the TFCFD

4.1 A rising trend of the CCI but with strong disparities across sectors

Figure 1 displays the gradual increase of the CCI for all sectors, from 37% (2015), 48% (2016), 60% (2017) to 65% in 2018 (i.e. + 42% over the period), revealing that French companies are disclosing more information about CROs over the period. The relatively good levels in 2015 and 2016 can be explained by the fact that France has required CSR disclosures since 2001: while the NER Act laid the foundations for improving environmental reporting, the Energy Transition Act (2015)¹² consolidates it by implementing more specific environmental requirements. Efforts initiated in early 2016 as a result of the Energy Transition Act have been continued with the commitment of companies to comply with the TCFD's international initiative. However, these results mask disparities across sectors.

Figure 1: Evolution of the CCI per sector over 2015-2018

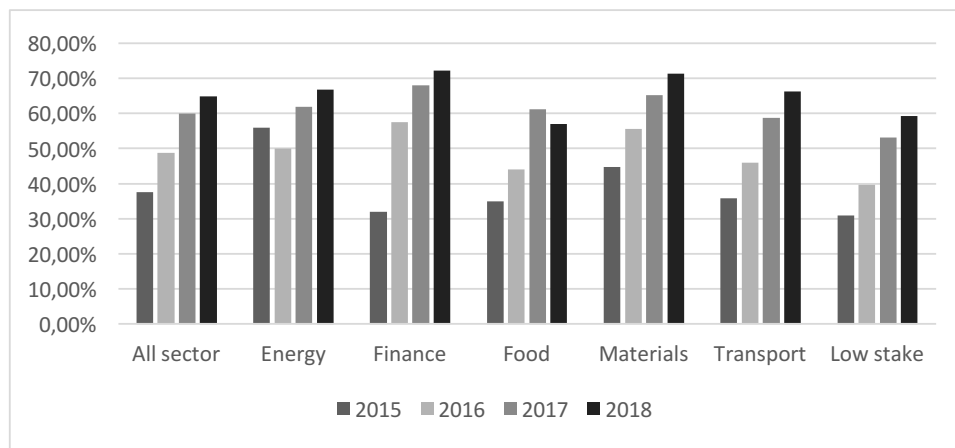


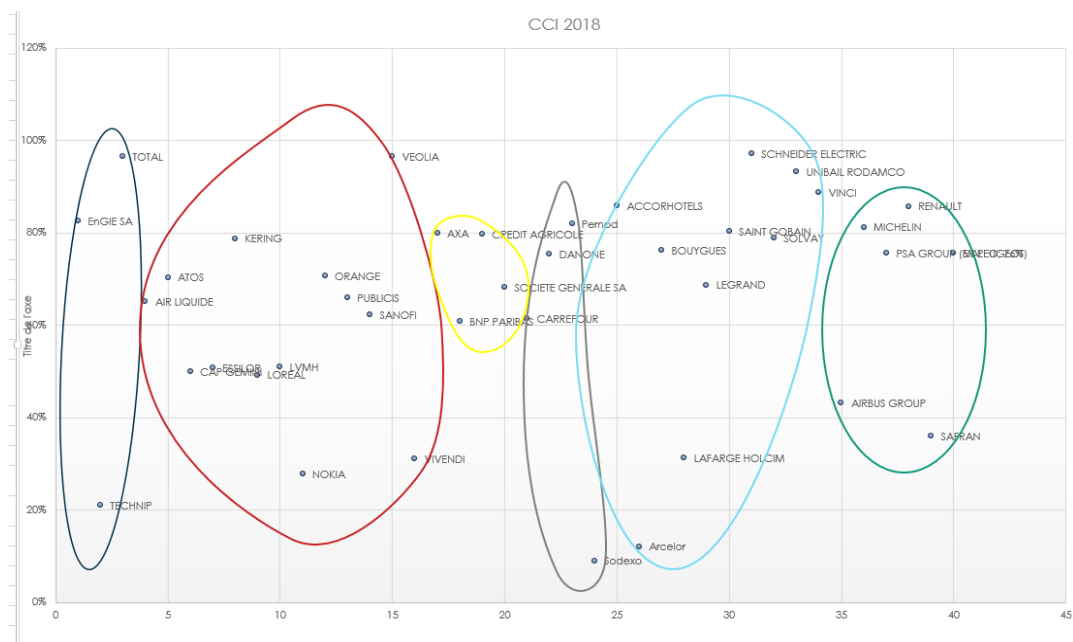
Figure 1 also reveals that firms with high environmental stake sectors have higher index scores than firms with low impact sectors, except for transport. In 2018, the financial sector has the highest CCI and the highest growth (+56%) over the period. These results reflect a relatively recent awareness which can be related to Article 173 of the Energy Transition Act (2015), which compels banks and investors to report on how they are addressing climate change. The TCFD considers that the financial sphere has a huge role to play as a catalyst and has a significant capacity to move the economy towards a low-carbon trajectory. We observe that the materials & building and energy sectors have good CCI levels (71% and 67%), but the latter would have been better if it had not been driven down by the low rates of three companies (Technip¹³,

¹² Which came into force in 2016.

¹³ Technip did not publish an annual report in 2016 (the year of its acquisition by FMC) and its score was 49% in 2015 and only 12% in 2017.

ArcelorMittal and Lafarge). The restrictive French regulatory context, which requires companies to use more environmentally friendly alternative solutions, can explain the relatively good scores of this sector. The transport and low impact sectors are lagging behind, with an index below the average CCI level of CAC 40 (66% and 59%) despite significant growth rates (46% and 48%, respectively). The distinction between the two sub-sectors (automotive and aerospace) is relevant: while the scores of Airbus and Safran improved over the period, they remain very low.

Figure 2: The CAC firms' CCI in 2018



Note: Each circle represents a sector (Energy in navy blue, Finance in yellow, Food in black, Building & materials in blue, Transport in green and Low stake sector in red)

Figure 3, which displays the firms' distribution by level of CCI in 2018, shows a certain dispersion within sectors. Companies with the highest (lowest) CCI are Renault, Veolia Environment, Schneider Electric, Saint Gobain and Accor (Technip, Vivendi, Airbus, Lafarge, Nokia, Safran and Sodexo). These low scores can be partly explained by the different environmental regulations in the home country. ArcelorMittal and Airbus are respectively domiciled in Luxembourg and the Netherlands. Four other firms came under French regulations prior to cross-border mergers: Solvay (merged with Rhodia), Nokia (merged with Alcatel-Lucent), Lafarge-Holcim and TechnipFMC. These four firms are now headquartered in Belgium, Finland, Switzerland and the UK.

In addition, the analysis of the CCI's evolution regarding firms' size (according to market capitalisation, total assets and number of employees) does not reveal any major differences.¹⁴ This observation makes sense in that our sample is made up of large firms.

We analyse the CCI score with regard to firms belonging to Business to Customer (B to C) firms or Business to Business firms (B to B) in line with the same criteria¹⁵ as González-Benito and González-Benito (2006) and Haddock-Fraser and Fraser (2008) .

Table 4 highlights a higher level of CCI for B to C firms over the period, reflecting that companies that are directly involved with consumers tend to disclose more environmental information in order to provide a better image to stakeholders (Pernod, Danone or Accor).

Table 3: The evolution of CCI according to B to B and B to C activity

| | CCI 2015 | CCI 2016 | CCI 2017 | CCI 2018 |
|--------------------------|----------|----------|----------|----------|
| B to B (21 companies) | 37.08% | 43.46% | 52.60% | 58.46% |
| B to C (19 companies) | 37.93% | 52.08% | 68.05% | 72.06% |

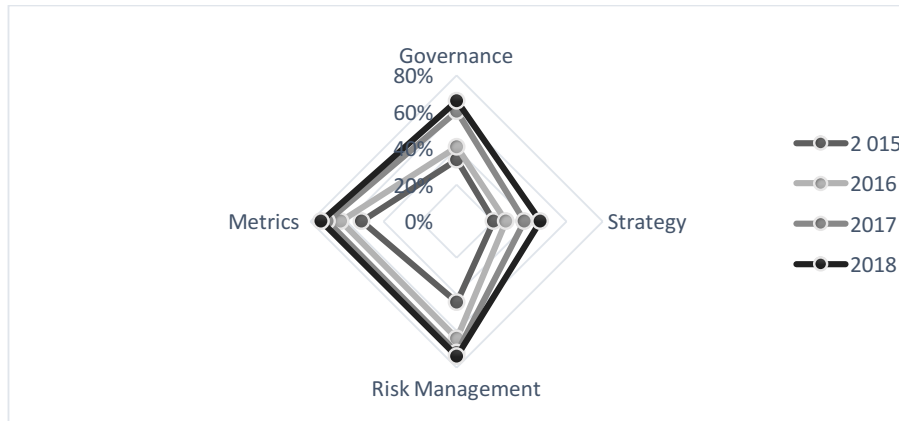
4.2 A better level of CCI in the areas of climate metrics and risk management.

Figure 4 reveals a higher score of the CCI over the period in the areas of metrics and risk management, despite continuous improvement in each area. In 2018, CAC 40 companies reported the most in the areas of risk management and metrics (74%) and governance (66%), far ahead of strategy (46%). The high level of compliance with the recommendations in terms of risk management and metrics can be explained by French regulations, which for several years have required environmental reporting. The AMF 2014-14 Act requires companies to present their risk factors; climate risks therefore seem to fit well into the overall risk management. The NER Act (2001), the Grenelle II Bill (2010) and the Energy Transition and Green Growth Act (2015) required listed companies to publish a non-financial report including environmental indicators and information about how the governance manage environmental and climate issues. The low level of compliance for strategic areas can be explained by the tactical nature of the information.

Figure 3: The level of CCI according to the four TCFD areas

¹⁴ The different CCI statistics with regard to the firm size criteria are available on request.

¹⁵ Firms are B to C if they supply goods or services directly into consumer markets rather than supplying to another business entity. However, there were a number of firms with a wide range of both B to C and B to B activities (e.g. Renault, Total), in such cases, as there is some consumer focused activity, a B to C categorisation is given.



4.3 The climate indicators reported by CAC 40 firms

As previously mentioned in the methodology section, our database includes not only the scores but also qualitative information from the reference documents that justify the coding. The analysis of this textual material allowed us to identify the indicators most frequently reported by the companies in question, as well as the CROs (Table 5). It must be noted that these indicators are data which have been reported by CAC 40 companies and not data that should be reported in theory. Table 4: The climate indicators per TCFD area

| Areas of TCFD | TCFD Recommendations | Indicators reported by firms |
|---------------------|--|---|
| Governance | Describe the board's oversight of CROs | Existence of a committee dedicated to the environment meeting several times a year** |
| | Describe the management's role in assessing CROs | Variable compensation linked to environmental indicators * Description of environmental reporting * Description of top management responsibility * |
| Strategy | Describe the CROs the organisation has identified over the short, medium and long term | Physical risks ** Transition risk** Climate change opportunities* |
| | Describe the impact of CROs on the organisation's business, strategy and financial planning | Description of the impact of these risks on the business (not quantified)** Distribution of CROs at regional and sectoral levels * Quantification of CROs (capex and opex)* |
| | Describe the resilience of the organisation's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario | Adaptation of the strategy according to the 2° C scenario (horizon and disclosure of results and impacts) * |
| Risk management | Describe the organisation's processes for identifying and assessing CROs | Risk mapping ** Materiality matrix ** Environmental footprint study ** Performance ESG* Climate risk Modelling* Stress tests* |
| | Describe the organisation's processes for managing CROs | Implementation of transversal risk management teams* |
| | Describe how processes for identifying, assessing and managing CROs are integrated into the organisation's overall risk management | ISO 14001, OHSAS 18001** Partnerships with academic/non-academic institutions** Evaluation and improvement of the transversal risk management system** |
| Metrics and Targets | Disclose the metrics used by the organisation to assess CROs in line with its strategy and risk management process | Indicators related to energy consumption, water, land use and waste management** Evolution of indicators over time** Existence of a steering indicator ** |
| | Disclose Scope 1, Scope 2 and, if appropriate, Scope 3 GHG emissions, as well as the related risks | Use of an internal carbon price * Carbon footprint on GHGs on scope 1 / 2 ** Carbon footprint on GHGs on scope 3* Relevant emissions from scope 3 * |
| | Describe the targets used by the organisation to manage CROs and performance against targets | The quantified objectives on these indicators * |

Note: * Little reported / ** Well reported

In terms of governance, we observe that firms are willing to disclose information about the existence of committee dedicated to CSR. However they mention very little information on how the board of directors is informed about CROs and how it assesses progress in this area. Besides environmental issues are only one of the many concerns of CSR committee. We find very few data on the top management' responsibility related to the CRO and on the consideration of environmental performance criteria in the top management's remuneration.

Regarding the inclusion of CROs in the strategy, while companies willingly describe climate change risks (see 4.4), they rarely specify the horizons over which they arise (short, medium, long term), their geographical or sectoral distribution and their financial impacts (like green investments, operational expenses (OPEX), capital expenditure (CAPEX) or environmental

provisions, as well as the consideration of the 2°C scenario. However, this information is precisely what TCFD is asking for, as it is crucial to quantify the financial impacts related to climate risks. Similarly, the climate related opportunities surrounding business and strategy are rarely explicitly mentioned. In addition, firms do not specify how CROs are integrated into the strategy.

In terms of risk management, firms disclose setting up diversified specific processes in order to identify and assess climate risks, in particular through climate risk modelling, climate stress tests or the use of complementary tools like environmental risk mapping and materiality matrices. These aim to prioritise their action on the most relevant subjects by taking into account their activities and the expectations of their stakeholders. Some companies implement integrated environmental and climate risk management systems at the group level; many of these comply with ISO or OHSAS certifications. In addition, in order to develop best practices and to anticipate the effects of CROs, several companies implement studies in collaboration with universities and NGOs.

At the metric level, we notice that companies communicate quite well on the environmental indicators such as energy, water and waste management consumption and their trends over 2 and 3 years, as well as GHG emissions under Scopes 1 and 2, except at the level of the most relevant GHG emission items in Scope 3. Lastly, they communicate poorly concerning the use of an internal carbon price and the quantified objectives on climate metrics.

In the end, the indicators likely to meet the main expectations of TCFD by disclosing quantified information on the financial impacts of climate risks are poorly informed: this is the case for data related to investments in the low-carbon sector, environmental expenditures or provisions and the consideration of the 2°C scenario, as well as the internal price of carbon (strategy's area) or quantified emission limitation targets over horizons or relevant emissions related to Scope 3 (metrics' area). As regards the area of governance, the indicators are often based on CSR reports, which generally fail to focus on climate issues. In addition to this fundamental matter, there is another related to the presentation of annual reports. In fact, although a majority of firms (22) claim to respect the recommendations of TCFD, in 2018, few of them filled out a specific section to comply with them. Cross-reference tables are often used to refer to the various chapters throughout the annual report. This results in a wide disparity of data that hinders the transparency and comparability of information.

4.4 The climate risks and opportunities per sector

The content analysis of the qualitative database leads us to identify and define the CROs reported by CAC 40 companies describing more precisely their nature for each sector, as well as the identification of their financial impacts. Table 6 summarises these risks by matching them with the typology of climate risks developed by I4CE (Nicol et al., 2017) and Gasbarro et al. (2017). Their typology is useful because it distinguishes the financial impacts of climate risk impacts, considering, in particular, four sub-categories of transition risks:

- policy and legal risks (increased pricing of GHG emissions, enhanced emissions-reporting obligations, mandates on and the regulation of existing products and services, exposure to litigation),
- market risks (changing customer behaviour, uncertainty in market signals, increased cost of raw materials),
- reputation risks (shift in consumer preferences, stigmatisation of the sector, increased stakeholder concerns, negative stakeholder feedback),
- technology risks (substitution of existing products and services with lower emissions options, unsuccessful investment in new technologies, upfront costs to transition to lower emissions technology);

and two sub-categories of physical risks:

- acute risks (increase severity of extreme weather) and
- chronic risks (changes in precipitation patterns and extreme variability in weather patterns, rising mean temperatures and sea levels).

We observe that the most polluting sectors (energy, construction, transport and food) are those with the highest number of transition risks (legal, market, reputation) compared to those of finance. The impacts related to these two types of risks are broadly identical. An increase in operating costs may imply a reduction in profitability and these risks can have an impact on both the firm's business model and its asset portfolio structure, such as repercussions on the financial markets by causing a fall in market valuations and in capital availability. The finance sector, which is considered by TCFD to be a sector with high environmental stakes, has only identified transition risks related to climate regulation (e.g. increasing carbon tax and regulatory requirements on investments) with the potential devaluation of carbon intensive financial assets (stranded assets) that result. It is one of the few sectors to identify climate-related disclosure requirements as a significant risk. Insurance companies seem to be particularly concerned about

the physical risks associated with their non-life insurance contracts. To a lesser extent, all sectors have identified climate opportunities which are twofold: new products and services linked to new consumer expectations and investment opportunities. For instance, in the most polluting sectors, these products correspond to new, less carbon-intensive energies (solar, wind, etc.) or less polluting products (electric vehicles or low-consumption buildings), whereas in the finance sector, they are mainly investment opportunities and new green financial products aimed at responsible investors.

Table 5: The CROs and their financial impacts reported by CAC 40 firms per sectors

| Sectors | Transition risks and corresponding impacts | Physical risks and corresponding impacts | Climate opportunities | | |
|----------------|---|--|---|---|--|
| Energy | <p>Legal and policy risk Air pollution limits Cap and trade schemes Carbon taxes increased Fuel/energy taxes and regulations goods/services General environmental regulations</p> <p>Market risk Changing regional or seasonal energy needs - conflicts over water use, preservation of natural carbon sinks... Growing stakeholder concern about climate change</p> <p>Reputation risk Technology risk Risk of disruption of value chains Risk associated with a rapid shift in energy production patterns towards a less carbon-intensive energy mix, leaving a more limited share to fossil fuels. Legal risk Legal proceedings in this area.</p> | <p>Impacts Increased operational cost Reduced profitability Reduced stock price (market valuation) Reduction in capital availability Impact on business model Impact of assets portfolios</p> | <p>Acute risks Flooding Wind drought Tropical cyclones & storms Change in precipitation extremes and droughts Change in temperature extremes Induced changes in natural resources Other physical climate drivers Uncertainty of physical risks</p> <p>Chronic risks Change in mean precipitation Change in mean temperature Induced changes in natural resources Change in precipitation pattern Sea level rise</p> | <p>Impacts Increased operational cost Reduced demand for goods/services Reduction/disruption in production capacity</p> | <p>Promote hybrid solutions combining hydrocarbons and renewables (mobility) to meet the needs of various industries</p> <p>Development of new energies: renewable energies, biofuels, CO2 capture storage and recovery technologies</p> |
| Finance | <p>Legal and policy risk Carbon taxes increased General environmental regulations on investment Emission reporting obligations</p> | <p>Impacts Reduced stock price (potential devaluation of carbon intensive financial assets) Reduction in investment and financing</p> | <p>Acute risks (See details in Energy sector)</p> <p>Chronic risks (See details in Energy sector)</p> | <p>Impacts Reduced stock price Reduction in investment and financing Impacts on the amounts of damage under non-life insurance contracts</p> | <p>Offer of insurance products</p> <p>Fund and promote research on risk and education</p> <p>Prospective climate change trajectories using claim databases</p> |

| | | | | | |
|---------------------------------------|--|---|--|---|---|
| <p>Materials and buildings</p> | <p>Legal and policy risk: Air pollution limits Cap and trade schemes Carbon taxes increased Fuel/energy taxes and regulations goods/services General environmental regulations Market risk Changing regional or seasonal energy needs - conflicts over water use, preservation of natural carbon sink... Lack of adaptation to changes in customer behaviour Reputation risk Negative attitude of stakeholders if their concerns about climate change are not taken seriously. Technology risk: Unsuccessful investments in new technologies to reduce emissions</p> | <p>Impacts Increased operational cost Reduced or changed demand for goods/services Reduction/disruption in production capacity</p> | <p>Acute risks (See details in Energy sector) Chronic risks (See details in Energy sector)</p> | <p>Impacts Increased capital cost Increased operational cost Reduced demand for goods/services Reduced stock price Reduction in capital availability Reduction/disruption in production capacity Resilience of a growing number of structures (buildings and infrastructure)</p> | <p>Develop product and service offers with a positive impact (energy efficiency) and low-carbon offers in buildings (BBCA certified) Identify growth opportunities in low-carbon sectors, redirect industrial investments</p> |
| <p>Food</p> | <p>Legal and policy risk: Air pollution limits Cap and trade schemes Carbon taxes increased Fuel/energy taxes and regulations goods/services General environmental regulations Market risk Rapidly changing consumer preferences Risks related to product quality, safety and positioning Raw materials: price volatility and availability Reputation risk</p> | <p>Impacts Increased operational cost Reduced demand for goods/services Reduction/disruption in production capacity</p> | <p>Acute risks (See details in Energy sector) Chronic risks (See details in Energy sector)</p> | <p>Impacts Increased operational cost Reduced demand for goods/services Reduced stock price Reduction in capital availability Reduction/disruption in production capacity</p> | <p>New product lines to meet consumer and stakeholder expectations</p> |
| <p>Transport</p> | <p>Legal and policy risk: Air pollution limits Cap and trade schemes Carbon taxes increased Fuel/energy taxes and regulations goods/services General environmental regulations Market risk Change in consumer behaviour. Reputation risk Negative attitude of stakeholders if their concerns about climate change are not taken seriously Technology risk Unsuccessful investments in new technologies to reduce emissions</p> | <p>Impacts Increased capital cost Increased operational cost Reduced or evolution demand for goods/services Reduced profitability Reduced stock price Reduction in capital availability Impact on business model</p> | <p>Acute risks (See details in Energy sector) Chronic risks (See details in Energy sector)</p> | <p>Impacts Increased operational cost Reduced demand for goods/services Reduced stock price Reduction in capital availability Reduction/disruption in production capacity</p> | <p>Reinforcement of regulations on CO2 emissions from vehicles, which represents an opportunity for the development of low-carbon mobility and a major competitiveness challenge for the sector. New growth opportunities around electrification, the autonomous car and the new forms of mobility linked to digital technology</p> |

5 Discussion and conclusive remarks

This study is the first attempt to assess the level of environmental and climate disclosure according to TCFD's recommendations. To do so, we created a new score and applied it to a sample of French firms from 2015 to 2018.

While the FSB seeks to improve the non-financial reporting provided by companies on how they integrate CROs, our results reveal that companies disclose more and more information on climate risk, especially in the case of firms belonging to more polluting sectors. Our study highlights some disparities across TCFD areas with a higher CCI score in the areas of metrics and risk management, despite continuous improvement in each area over the period.

However, our study points out that there is room for improvement concerning climate disclosures. Indeed, the content analysis of the qualitative part of the database allows us to identify that the indicators likely to meet the main expectations of TCFD by disclosing quantified information on the financial impacts of climate risks are poorly informed: this is the case for data related to investments in the low-carbon sector, environmental expenditures or provisions and the consideration of the 2°C scenario, as well as the internal price of carbon (strategy's area) or quantified emission limitation targets over horizons or relevant emissions related to Scope 3 (metrics' area). Consequently, if the evolution of the CCI shows that the amount of climate information is increasing over the period, our study highlights that firms are less compliant with certain crucial recommendations of TCFD regarding the valuation of financial impacts or the consideration of the 2°C scenario and the resilience of the firms. Besides, it is noteworthy that French firms identify and explain relatively well their CROs as well as the financial impacts. We observe that the most polluting sectors (energy, construction, transport and food) are those with the highest number of transition risks (legal, market, reputation) compared to those of finance. This research extends a relatively undeveloped area of the literature: the disclosure of environmental information related to climate risks (Ben-Amar & McIlkenny, 2015; Giannarakis et al., 2017; Kouloukoui, Marinho, et al., 2019).

The original contribution of this article can be measured against a discussion of the implications for practitioners, policymakers/regulators and researchers alike. While Europe is showing a keen interest in setting up climate reporting and harmonising non-financial reporting, (European Commission, 2019), our study shows that there are formal and substantive limitations linked to the presentation of reference documents and the nature of TCFD's recommendations.

First, with regard to the presentation of information in the reference document, one of the main limitations is that environmental and climate information is scattered across various sections of the report (CSR section, corporate governance section, risk management or financial statements, etc.). For example, financial impacts such as environmental expenses and provisions are rarely detailed in the environment section and are more generally quantified in the financial section. It follows that there is a need for a more harmonised presentation to improve environmental disclosure. The idea is to gather all the information relating to the TCFD's requirements into a single "Environment and Climate Change" section.

Regarding the TCFD's grid, it seems to us that the suggested questions to help companies view the recommendations in operational terms are sometimes too precise and especially redundant because highly similar information is found in the different sub-areas. For example, there exists an overlap between the third governance question (how climate issues are taken into account in guiding and evaluating the strategy) and the questions related to the identification of risks in the short, medium and long terms, and the impact on businesses and strategies, etc. The recommendations published by the TCFD in 2017 are an undeniable step forward in making the environmental information published by companies better and more transparent. It is now time to improve its large-scale implementation by giving companies the operational tools to use it.

With respect to practitioners (preparers of financial statements, readers of reference documents, investors, etc.), they may be interested in this research insofar as it facilitates the situation of the level of disclosure of French companies, their development and their position within the sector. Moreover, the table of key indicators in the 4 areas can help practitioners simplify the implementation of the TCFD's recommendations for firms that wish to apply them. The Climate-risks and opportunities table can be used as a tool to assess the firms' level of disclosure (for example, for analysts or investors). Cross-referencing these two tables would help refine climate disclosure requirements, which would provide an incentive for companies to more comprehensively disclose the financial impact of CRO risks on their business.

Lastly, the current limitations represent an opportunity to develop further research. While this study has provided valuable insights into climate disclosure practices, its scope remains limited in relation to its small sample size. Future studies would be possible on a larger panel of firms on a European or even global scale. This implies systematising the analysis of reference

documents, which is a time-consuming step at this stage, if not impossible given the number of items to be researched in the reference documents. Moreover, if this study focuses on the quantity of climate information to identify to what extent firms disclose information on climate risks, in which field and which indicators precisely, the fact remains that an empirical study would consist of studying the main determinants explaining the disclosure choices (financial factors, type of governance, environmental performance). Similarly, while certain firms may disclose abundant environmental information, it may not prove to be relevant and, above all, may not be in line with their behaviour, reflecting a gap between words and acts. Future research could consist of studying its quality in terms of its relevance by comparing environmental communication with firms' investment practices.

Appendix 1: Questions used by domain for the content analysis

| Governance | Strategy | Risk Management | Metrics & Targets |
|---|---|--|--|
| <p>a) The Board's vision on climate issues <i>Q1: Is the Board informed about climate issues?</i> <i>Q2: How often?</i> <i>Q3: Are climate topics taken into account in the evaluation and orientation of the strategy?</i> <i>Q4: How does the Board assess progress?</i> Total: 4 points</p> | <p>a) Identification of CRO in the short, medium and long term <i>Q1: Accuracy of the periods?</i> <i>Q2-3-4: Detail and costing of CRO by period)</i> <i>Q5: Distribution of CRO at the sector and geographical levels</i> <i>Q6: Impact of risks and opportunities associated with climate change on the company's business and strategy</i> Total: 6 points</p> | <p>a) Description of processes for identifying and evaluating CRO <i>Q1: Are the processes presented?</i> <i>Q2: What is the materiality?</i> <i>Q3: Are current and potential regulations taken into account?</i> <i>Q4: Existence of materiality study?</i> Total: 4 points</p> | <p>a) Disclosure of information on the metrics used to evaluate CRO <i>Q1: Indicators related to energy consumption, water, waste management, etc.</i> <i>Q2: Indicator similar to an indicator for managing business risks.</i> <i>Q3: Assessment of an internal carbon price.</i> <i>Q4: Evolution of indicators.</i> Total: 4 points</p> |
| <p>b) The role of management in the evaluation of CRO <i>Q5: Variable remuneration linked to climate indicators?</i> <i>Q6: What are the responsibilities of managers related to climate change?</i> <i>Q7: Climate information feedback process</i> <i>Q8: How does the management manage climate issues?</i> Total: 4 points</p> | <p>b) Description of the impacts of CRO on business, strategy and financial planning <i>Q7: Identification of impacts?</i> <i>Q8: How are they integrated?</i> <i>Q9: Description of Capex and Opex related to CRO?</i> Total: 3 points</p> | <p>b) Description of CRO management processes <i>Q4: Management of climate-related risks.</i> <i>Q5: What are the priorities identified?</i> Total: 2 points</p> | <p>b) Disclosure of information on Scopes 1, 2 and, if relevant, Scope 3 <i>Q5: Carbon footprint, GHG emissions from Scopes 1 and 2.</i> <i>Q6-7: GHG emissions of Scope 3 and details of significant elements.</i> <i>Q8: Evolution of these indicators.</i> Total: 4 points</p> |
| | <p>c) Description of the potential impacts of different scenarios, including the second one, on the organisation's business, strategy and financial planning <i>Q10: Study of the resilience of the business model?</i> <i>Q11: Analysis of different scenarios?</i> <i>Q12: Horizon of these analyses?</i> <i>Q13: Conclusions of the scenario analyses</i> Total: 4 points</p> | <p>c) Description of how the processes for identifying and assessing CRO are integrated into the overall risk management Total: 1 point</p> | <p>C) Description of the objectives used to manage CRO and performance against these objectives. <i>Q9-10: Are objectives posted for the different indicators?</i> Total: 2 points</p> |

Source: adapted from TCFD (2017)

Appendix 2: Coding grid and scoring extract

| Extract from Area Metrics and Targets (coding) | | | | | | | | | | | | | | |
|--|------|---|--------------|---------------------|---|---------------------|---|--|--------------|-------------------------|--------------------|--|--|--------|
| Company name | Year | Indicators related to energy consumption, water, waste management, etc. | | | Indicator similar to an indicator for managing business risks | | | Assessment of an internal carbon price | | Evolution of indicators | | Carbon footprint, GHG emissions from Scopes 1 and 2? | | (....) |
| | | Yes or No (1/4 or 0 for each indicator) | Page & quote | Yes or No (1/0,5/0) | Page & quote | Yes or No (1/0,5/0) | Page & quote | Yes or No (1/0,5/0) | Page & quote | Yes or No (1/0,5/0) | Page & quote | | | |
| ACCOR HOTELS | 2018 | 1 | p128 | 1 | p126 Details of the 19 business indicators | 0 | | 1 | p128 | 1 | p173-174 | | | |
| AIR LIQUIDE | 2018 | 1 | p276-96 | 1 | p296 | 1 | p34 Air Liquide integrates an internal carbon price of €50 per tonne of CO2 in its investment decision process. (...) | 1 | p295 | 1 | p295 | | | |
| AIRBUS GROUP | 2018 | 0.75 | p89 cf table | 0 | | 0 | no mention of carbon price unlike 2017 | 1 | p89 cf table | 1 | p89 | | | |
| ARCELOR | 2018 | 0 | | 0 | | 0.5 | p19 However, unlike previous years, 2018 marked a structural change with the emergence of the carbon price as one of the major price drivers (detailed by countries...) | 0 | | 0 | only scope of 2017 | | | |

This table is an extract from the coding grid for the first five questions of the Metrics & Targets area.

| Company Name | Year | Governance | Strategy | Risk Mgmt | Detailed score of the Metrics and Targets area (scoring) | | | | | | | CCI |
|---------------------|------|-------------|-------------|-------------|--|-------------|-------------|-------|------|------|-------------|---------------|
| | | Sub-score % | Sub-score % | Sub-score % | a) 4 points | b) 4 points | c) 2 points | a) % | b) % | c) % | Sub-score % | Total Score % |
| ACCOR HOTELS | 2018 | 94 | 58 | 100 | 3 | 4 | 2 | 75 | 100 | 100 | 92 | 86 |
| AIR LIQUIDE | 2018 | 100 | 39 | 58 | 4 | 2.5 | 0.5 | 100 | 62.5 | 25 | 63 | 65 |
| AIRBUS GROUP | 2018 | 54 | 8 | 38 | 1.75 | 3 | 2 | 43.75 | 75 | 100 | 73 | 43 |
| ARCELOR | 2018 | 0 | 19 | 25 | 0.5 | 0 | 0 | 12.5 | 0 | 0 | 4 | 12 |

This table shows the scores for the four areas and the total CCI. Only the score for area Metrics & Targets is detailed with respect to the three sub-areas.

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