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Climate change financial disclosure normalization: does one size fit all?

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Abstract:

Climate change is one of the biggest issues the world is facing today. Investors need to improve understanding and analysis of climate-related risks and opportunities and their financial implications on organizations. There is therefore an increasing demand from investors and creditors to access climate-related financial information that is consistent, comparable, reliable and verifiable. Based on an academic literature review on climate change disclosure and a critical analysis of existing normalization initiatives on climate-related issues, the objective of this paper is to carry out some reflections and recommendations on a common mandatory high-quality climate change financial reporting framework.

Introduction

Climate change is one of the biggest issues the world is facing today. Greenhouse gas (GHG) emissions are impacting climate change and are associated with sea level rise and extreme weather events such as hurricanes, floods, heat waves, and droughts (IPCC 2018). Climate change risks are generally caused by temperature increases leading to more extreme weather and other natural events, changes in agriculture leading to more or less production, melting of the polar ice cap leading to rising sea levels, and increased ambient temperatures leading to the need for more power to run cooling systems.

Climate-related risks encompass (1) risks related to the transition to a lower-carbon economy and (2) risks related to the physical impacts of climate change. These climate risks are increasingly impacting the business world and likely to result in predictable losses and liabilities for many companies. In the financial markets, environmental, social and governance information (ESG), and particularly financial information about climate change, are becoming increasingly critical for investors in evaluating and comparing investments. Long-term investors need to improve understanding and analysis of climate-related risks and opportunities and their financial implications on organizations. Therefore, they need adequate information on how organizations assess climate-related risks and opportunities as well as how they are preparing for a lower-carbon economy, in order to avoid financial dislocations and sudden losses in asset values (TCFD 2017).

In 2017, a group of the largest institutional investors even called on the Securities and Exchange Commission (SEC) "to quickly initiate mandatory rulemaking to ensure that listed companies disclose high-quality, comparable, and decision-useful ESG information" ¹. The group emphasized that standardized disclosure is essential for assessing long-term corporate performance and risk management. They raised the concern that while some companies voluntarily disclose information, different reporting methods make it difficult to rely on the information disclosed and therefore to compare companies when making investment decisions (Chumley 2019).

In fact, the consequences of misdirected capital are not only harmful for investors and shareholders, but also potentially disastrous for the planet. On the one hand, we observe an

¹ Cynthia A. Williams & Jill E. Fisch, Petition For Rulemaking Pursuant To Rule 192(A) Of The Securities And Exchange Commission's (SEC) Rule Of Practice (2017), <https://www.sec.gov/rules/petitions/2018/petn4-730.pdf> [<https://perma.cc/5RSC-3RFV>].

increasing pressure from investors demanding organizations to take into account the risks related to climate issues both in the assumptions and estimates underlying their financial statements and in climate-related information disclosed in their annual filings (IIGCC 2020). There is an increasing demand from investors and creditors to access climate-related financial information that is consistent, comparable, reliable and verifiable.

On the other hand, policy makers and other stakeholders need adequate and reliable information on the impacts of the organizations' current and future activities on climate change and on the environment in order to make relevant decisions and actions for a prosperous and low-carbon future. Disclosure requirements based on the concept of "double materiality"² mean that entities should disclose the information needed to understand how sustainability issues affect them, but also the information needed to understand the impact of their activities on the environment and the population.

Based on an academic literature review on climate change disclosure and a critical analysis of existing normalization initiatives on climate-related issues, the objective of this paper is to carry out some reflections and recommendations on a common mandatory high-quality climate change financial reporting framework.

The paper is therefore organized as follows. In the first section, we review academic literature on critical climate-related disclosure issues. In the second section, we present an overview of normalization initiatives on climate-related financial disclosure and highlight some critical issues resulting from existing rules, guidance and practices. In the third section, we make some reflections and recommendations towards a common high quality climate change reporting framework. Finally, we conclude the paper by raising some discussion questions that help to promote consistent, comparable and decision-useful climate change reporting at the international level.

Climate change financial disclosures are part of environmental disclosures which are, in turn, part of disclosures on corporate sustainability reporting (CSR). This study only covers issues related to climate change financial disclosures.

1. Academic literature review on climate change related disclosure

² The concept of "double materiality" CSR disclosures was firstly introduced in the European Non-Financial Reporting Directive 2014/95/UE (NFRD) and further specified in the proposal for Corporate Sustainability Reporting Directive (CSRD) issued by the European Commission (EC 2021).

In the US, climate change disclosures date back to the rules of the Securities Act that require listed companies to disclose all relevant information so that the required statements are not misleading. These general requirements apply to any risky eventuality but have only recently been considered applicable to climate change. Clearly, climate change disclosures became fashionable in 2010 when the disclosure guidelines were issued and the number of disclosures more than doubled (Harrast and Olsen 2016).

The purpose of this section is to review the literature debates relating to climate change disclosure in order to question the possibility and relevance of global, regional or industrial standardization of climate change-related information.

1.1. Should climate change disclosure be regulated?

Regulation is often seen as a tool as blunt as a tax that imposes additional costs on a company (Harrast and Olsen 2016). So, why does the issue of climate change disclosure regulation arise today? Several reasons have been cited in the literature.

First, there is a great disparity in the information that is currently disclosed by companies. Some authors have attempted to make comparisons between companies in order to assess their disclosures. Pinkse and Kolk (2009) note that some companies are not sufficiently transparent about the methodology used to calculate GHG emissions while others change methodologies over time, making it difficult to carry out any benchmarking or trend analysis. Sullivan, Crossley, and Kozak (2008) also point out that companies do not clearly describe how they handle emissions from their subsidiaries and do not necessarily include all operations in their GHG emissions calculations. Uddin and Holtedahl (2013) note that a standardized approach to greenhouse gas accounting is needed. In order to establish more transparent markets and a responsible society, Chumley (2019) proposes a mandatory GHG emissions reduction regulatory framework and quarterly reporting of accurate internal climate change-related data. Chumley's proposal aims to standardize all GHG emissions reporting on climate change, rather than on varied and non-standardized ESG reporting. According to Chumley (2019), better disclosure makes markets more efficient and also helps to deter fraudulent behaviour. This will serve to make disclosure easier and evidence of fraud or inaccurate information easier to find. It is not about punishing, but about creating a more transparent and accountable environment. The proposal seeks deterrence through increased disclosure and the risk of litigation. Regarding the scope of such a law, it would only be mandatory for companies that emit more than a certain threshold of GHGs. The threshold would help to avoid the unnecessary costs and efforts of disclosure for companies whose operations do not significantly contribute to climate change.

Second, beyond the standardization and comparability of information, the introduction of new regulations has a positive impact on the quality of climate change disclosure. For example, Freedman and Jaggi (2005) and Prado-Lorenzo *et al.* (2009) found that companies in countries that have signed the Kyoto Protocol have higher quality disclosure compared to companies in other countries. Sales de Aguiar and Bebbington (2016) found that environmental policy instruments influenced corporate disclosure on climate change issues, but that the impacts of those policy instruments were not striking. However, it should be noted that in their case, they studied a voluntary-based scheme (UK ETS) and not a mandatory one.

Third, various stakeholders are increasingly demanding that companies disclose information on GHG emissions. However, do we know whether the implementation of mandatory climate change disclosure can contribute to an eventual reduction of GHG emissions? There is an intense debate in the literature about the relevance of voluntary versus mandatory disclosure (Coulson, 2008, Cowan & Deegan, 2011; Haque & Deegan, 2010). Downar, Ernstberger, Rettenbacher, Schwenen, and Zaklan (2020) studied the impact of the 2013 implementation of the UK Companies Act Regulations on the GHG emission of UK companies. The UK Companies Act made it mandatory for UK listed companies to report GHG emissions in their annual reports. The authors find that GHG emission reductions occur primarily for companies reporting for the first time after the introduction of the disclosure requirement and that these reductions are significantly less for companies that have previously reported GHG information on a voluntary basis. They also find that GHG emissions' reductions are permanent rather than transitory, occur over several years, and are higher for larger emitters with greater savings potential.

In recent research, Chen *et al.* (2018) find that compulsory CSR reporting reduces the level of local pollution, i.e., wastewater and sulphur dioxide (SO₂) emissions in Chinese cities in which the companies covered by the CSR reporting requirement are located. To avoid the negative consequences of relatively high emissions, companies would thus change their emissions behaviour either in response to or in anticipation of shareholder actions. Downar, Ernstberger, Rettenbacher, Schwenen, and Zaklan (2020) report that even companies that have made voluntary disclosures of their GHG emissions prior to the introduction of the requirement can further reduce their emissions because they will now be susceptible to comparison with other companies. According to Chumley (2019), mandatory reporting also reduces strategic and opportunistic disclosure that aims to improve a company's reputation and that does not actually provide useful information to investors.

Downar *et al.* (2020) argue that regulation could also impose penalties for high-emitting companies (Matsumura *et al.*, 2014; Griffin *et al.*, 2017). Penalties for high emissions can damage the reputation of companies (DEFRA 2010) and thus tarnish the reputation of their leaders. Penalties on high emissions are a feedback effect of GHG disclosure, which can increase the efforts of executives to reduce emissions to avoid stakeholder reactions, such as consumer boycotts and attract investors with environmental preferences. They show that forcing companies to disclose their GHG emissions in a way that is easily and quickly available to shareholders, has real effects on corporate emissions.

Thus, it would appear that the introduction of climate change regulation has a positive impact on the quality of corporate disclosure and management behaviour towards GHG emissions. In the following subsections, we will explore the characteristics of optimal climate change disclosure.

1.2. Which media for climate disclosure?

There is a multitude of media for corporate climate reporting today. Annual reports are the most commonly climate reporting medium studied in the literature, primarily because organizations produce annual reports more regularly than any other sources of information (Gray *et al.*, 1995; Guthrie & Abeysekera 2006; Guthrie & Boedker 2006; Guthrie *et al.* 2008). However, there was also a particular interest in the standalone reports provided by the companies (Hackston & Milne 1996; Hooks & Van Staden 2011). These reports are organized in different ways and known as environmental reports, sustainability reports, or corporate social reports. Annual and standalone reports may have different disclosure models and thus may constitute different disclosure vehicles that reach different stakeholder audiences. Studies focusing on disclosure provided on web pages have also emerged (Hooks and Van Staden 2011) and there are also other media in which disclosure has been identified.

Beyond the diversity of media, the very quality of climate change disclosure varies depending on the media chosen (Coulson 2008). Sales de Aguiar and Bebbington (2014) find that Australian organizations tend to provide more comprehensive disclosure in standalone reports in comparison to annual reports. One explanation could be that the annual reports represent an organization's construction of its own logic and in these reports organizations tend to construct a financial image (Gray *et al.* 1995). Thus, the disclosure of social and environmental information in annual reports could result in conflicts with organizations' financial ambitions (Gray *et al.* 1995). Nevertheless, companies continue to use annual reports as a disclosure medium for practical reasons since this avoids multiplying the reports that could increase the

workload for companies and lose the reader. In addition, standalone reports may be read only by people who are specifically concerned with Sustainable Development Goals (SDG).

Although Sales de Aguiar and Bebbington (2014) find that the quality of information is better in standalone reports compared to that found in annual reports, Simnett and Nugent (2007) note that the levels of disclosure and external assurance provided in both media were still weak. Haque and Deegan (2010) also echoed these findings. In addition, studies show that standalone reports also provide a higher level of coverage on climate issues compared to web pages (Frost, Jones, Loftus and Van der Laan, 2005; Hooks and Van Staden, 2011). The other problem raised by the use of web pages as an information medium is that of the difficulty of a retrospective chronological analysis of the information: web pages are regularly updated and archives of previous versions are not always available.

1.3. Quantity and quality of disclosure: Does quantity rhyme with quality?

The content of climate change information has evolved significantly in recent years (Blanco 2021). Bouten et al. (2011) noted that much effort has been made to improve the quality and quantity of the disclosure. In the literature, several factors appear to influence the quantity, quality, and nature of corporate disclosure.

In terms of quality, we can mention the disparity that exists between the different disclosure media. As noted above, there are several possible media for climate change disclosure, including annual reports, standalone reports and company web pages. According to Dutta and Dutta (2021), the quality of information is better in standalone reports than in annual reports or web pages.

Bouten et al. (2011) pointed out that social and environmental reporting can be considered relevant only if disclosure focuses on actions rather than intentions. Thus, they suggested that companies produce disclosures that include: (i) vision and goals; (ii) management approach; and (iii) performance indicators (see also Beck et al. 2010). The literature also suggests that a “good” quality disclosure would thus contain both textual and numerical information (Beck et al. 2010; Hackston & Milne 1996; Hooks & van Staden 2011; Lang & Lundholm 1993; Toms 2002; Unerman 2000). It should also make it possible to monitor the progress of organizations in reducing emissions (Sales de Aguiar and Bebbington 2014) and provide evidence of the strategy that organizations adopt to reduce their emissions (Warsame et al. 2002).

Many studies that discuss the impact of climate change disclosure regulations draw on concepts from legitimacy theory to reinforce the belief that corporate disclosure is used for manipulation

and corporate reputation enhancement (Higgins & Larrinaga-Gonzalez 2014). However, the theory of the targeted disclosure cycle (Fung et al. 2007) assumes that disclosure influences the behaviour of its recipients, i.e., the company's shareholders and stakeholders. According to this theory, companies that communicate on the climate aspects of their activities either react directly to changes in the behaviour of their shareholders and stakeholders or preventively by anticipating changes in the behaviour of the latter.

In a recent literature review, Hombach and Sellhorn (2019) extend this theory to company disclosure. They identify criteria that corporate reporting must meet in order to be of high quality and to have real effects. First, corporate disclosure regulation must change actual disclosure, which implies effective enforcement of new disclosure requirements. Second, the new disclosure must contain the full range of information necessary for decision making by different users. Third, the information disclosed must meet the expectations of stakeholders. GHG emissions data are important because they shape a company's climate risks. Prior literature shows that investors consider environmental risks in their investment decisions, as there is a positive relationship of environmental risks with the cost of capital (Sharfman and Fernando 2008) and a negative association with the market value of a company. Furthermore, shareholders and other stakeholders have social preferences for low emissions beyond their financial or risk implications, i.e. shareholders and stakeholders do not just care about profits, but also the ethical behaviour of the company (Kim et al. 2019). Fourth, managers need to modify their emissions decisions in direct response to change in stakeholder behaviour or preemptively by anticipating that change.

Dutta and Dutta (2021) also suggest that external assurance has a positive and significant impact on the level and quality of climate change disclosure by firms. In contrast, further analysis reveals that the type of assurance providers (accounting firms vs. non-accounting firms) and the type of financial auditors (Big 4 financial auditors vs. non-Big 4 financial auditors) do not influence the level of climate change disclosure. Dutta and Dutta (2021) therefore view external assurance as an oversight structure that potentially reduces information asymmetry between management and stakeholders.

Another issue that has been raised in the literature is the comparability and completeness of information (Bouten et al. 2011). The majority of studies highlight problems with data comparability. Haque and Deegan (2010) observe that the literature on climate change disclosure is not well expanded, and conclude that there is no readily accepted categorization of disclosure. Sales De Aguiar and Bebbington (2014) studied standalone and annual reports

from companies that joined the UK ETS program to identify which climate change disclosures were most frequently cited. They found that the topics on which companies most frequently disclose are: Redesigning products/processes/services, Energy conservation, Renewable energy, Energy and efficiency, and Strategies/Management programs. However, climate change disclosures are not just about risks such as property damage or temporary loss of business (Harrast and Olsen 2016).

Furthermore, some companies can benefit from climate change. As an example, companies operating in Europe under the European Union Emissions Trading Scheme (EU ETS) can benefit from emissions trading if they can reduce emissions, thus providing an indirect benefit from climate change. Other companies can also disclose opportunities presented by climate change, such as the introduction of technologies that reduce GHG emissions or promote sustainability or a greener lifestyle.

Climate change disclosures are also highly dependent on the industry, where certain industries account for a large portion of disclosures (Harrast and Olsen 2016). The manufacturing industry recorded the highest number of disclosures, followed by the transport, communications, electricity, gas and sanitation sectors of the economy. The finance, insurance and real estate sector ranked third. The insurance sector even reported that climate-related threats are the greatest risk that the industry is facing today (Ernst & Young and Oxford Analytica 2018). Company size and asset age also appear to have a positive and significant effect on the extent of carbon disclosure (Dutta and Dutta 2021).

In addition, there is debate in the literature regarding the most appropriate unit of measurement to assess the quantity of disclosures (Sales De Aguiar and Bebbington 2014). There are page count, document count, word count, sentence count, percentage of pages or percentage of total disclosure (Unerman 2000; Guthrie *et al.* 2008). Gray *et al.* (1995) argue that accounting for the number of pages can identify the total space given to a topic, reflecting its relative importance, and that this is the simplest measure to do by hand. For his part, Unerman (2000) suggests that the measure based on the number of characters - words or sentences – misses non-narrative topics such as graphs and tables, in contrast to measures based on the number of pages. In addition, some studies (Hooks & Van Staden 2011) show that page count and sentence count have significant relationships with disclosure quality measures.

2. Normalization initiatives on climate-related financial disclosures

Over the last decade there has been an increasing need for organizations to identify climate risks and opportunities, to account for material climate risks, and to disclose also the impact of climate change risks on the environment. The objectives of this section are (1) to review climate risks and opportunities identified in the literature and highlight organizations' challenges in assessing the financial impacts of climate change for organizations and (2) to present an overview of normalization initiatives on climate-related financial disclosure and make a critical analysis of existing rules, guidance and practices.

2.1. Climate change risks and opportunities and their impacts on the organizations' financial performance

The most crucial issue in the climate change reporting process is the identification of climate-related risks and opportunities and the assessment of their impacts on the organizations' financial positions and performance. In fact, climate-related risks and the transition to a lower-carbon economy affect most economic sectors, industries and organizations. It is also acknowledged that the level and type of exposure and the impact of climate-related risks differ noticeably by sector, industry, geography and organization.

2.1.1. Climate-related risks

Climate risks can be the impacts of the regulation of GHG emissions on companies' activities, the effects of climate change on raw material supply (rubber, cotton, wood...), the effects of climate change on resources' consumption (water, energies...), the companies' exposure to natural disasters, the impact of natural disasters on companies' assets, liabilities, revenues and expenses, the impact of an internal carbon price on companies' activities and so on. One of the most important contributions of the TCFD's framework is the categorization of climate-related risks and opportunities. The TCFD's recommendations actually divide climate-related risks into two major categories: (1) risks related to the transition to a lower-carbon economy (**transition risks**) and (2) risks related to the physical impacts of climate change (**physical risks**). These recommendations give a strong focus on risks and opportunities related to the transition to a lower-carbon economy.

Transitional risks resulting from the transition to a lower-carbon economy include policy risks, litigation risks, technology risks, market risks and reputation risks (TCFD 2017).

Policy risks are risks related to policy actions which are aimed to reduce the adverse effects of climate change or policy actions that seek to promote adaptation to climate change. Examples of policy actions are implementing carbon-pricing mechanisms to reduce GHG emissions,

shifting energy use towards lower emission sources, adopting energy-efficiency solutions and encouraging greater water efficiency measures.

Litigation risks include the failure of organizations to mitigate impacts of climate change, the failure to adapt to climate change, and the insufficiency of disclosure on material financial risks.

Technology risks result from the organizations' transition to a lower-carbon economy. In fact, shifting to an energy-efficient economic system requires technological innovation, development and deployment, which can have a significant financial impact on organizations. Uncertainty about the timing of technology development and deployment therefore constitutes a principal source of technology risks. Furthermore, the development and use of emerging technologies such as renewable energy and energy efficiency will affect the competitiveness of certain organizations, their production and distribution costs, and the demand for their products and services from end users.

Market risks may result in changes to the supply and demand for certain products and services, as climate-related risks and opportunities are increasingly taken into account.

Reputational risks relate to changes in customer or community perceptions of an organization's contribution to or lack of the transition to a low-carbon economy.

Physical risks resulting from climate change can be temperature variations and increased severity of extreme weather events. Physical risks can be acute (event driven, for example, cyclones, hurricanes, floods, droughts...) or chronic (longer-term shifts in climate patterns such as sustained higher temperatures) (TCFD 2017). Physical risks may have significant financial implications on organizations. The impacts may be (1) direct: damage to assets, increase of litigations and liabilities; but also (2) indirect: supply chain disruption, sourcing problem, product quality, transport needs, food security, employee safety, etc.

2.1.2. Climate-related opportunities

While changes associated with the transition to a lower-carbon economy present significant risks, they also create significant investment opportunities for organizations focused on climate change mitigation and adaptation solutions through resource efficiency and cost savings. Those opportunities include the development of a low-carbon economy (electric vehicles, materials using renewable energies and reducing the consumption of polluting energies), development of new products and services, anticipation of changes in consumer behaviour, access to new markets, resilience building along the supply chain, etc. Climate-related opportunities will also vary depending on the region, market and industry in which an organization operates.

Finally, organizations shall develop **climate resilience**, that means, their capacity to respond to climate change in order to better manage transition risks and physical risks, but also to seize business opportunities arising from climate change mitigation and adaptation processes.

2.1.3. Challenges in assessing the financial impacts of climate change

Investors need to understand how climate-related risks and opportunities are likely to impact an organization's future financial position as reflected in its income statement, cash flow statement, and balance sheet. Furthermore, climate-related issues and mostly GHG emissions' regulation have significant impacts on credit risk analysis and on investment strategies of financial institutions. Banks need to take into account climate-related issues through their responsible investment strategies that include divesting from carbon-based sectors and financing environmental projects through green bonds' emission.

While investors have a growing need for consistent and reliable climate change financial disclosures, it is challenging for organizations to identify climate-related issues, define when climate-related risks might occur, assess potential impacts on their businesses and financial performance and ensure that material issues and impacts are reflected in the annual financial reports. These challenges are explained by: (1) the limited knowledge on climate-related issues within organizations; (2) the tendency to focus mainly on near-term risks without paying adequate attention to risks that may arise in the long-term; and (3) the difficulty in quantifying the financial effects of climate-related issues (TCFD 2017).

Many organizations misunderstand the risks that they face today in relation to climate change, incorrectly perceive the financial implications of climate change to be long term and therefore do not make relevant decisions imminently. The potential impacts of climate change on organizations are not just physical and do not manifest themselves only in the long term, but they are not always clear and direct for many organizations. Management, boards of directors and audit committees often perceive climate change to be a non-financial concern, and thus a matter for narrative disclosures that are not relevant to the financial reporting process (IIGCC 2020).

2.2. Normalization initiatives and practices on climate-related financial disclosure

In this subsection, we first draw an overview of normalization initiatives on climate-related financial disclosure, then identify a number of critical issues raised by current companies' practices on climate change disclosure as a result of multiple rules and guidance recommended by different private and international organizations.

2.2.1. Overview of normalization initiatives on climate-related financial disclosure

There are a number of important initiatives carried out by private and international organizations in the domain of sustainability reporting. Those initiatives include the Global Reporting Initiative (GRI), the International Integrated Reporting Council (IIRC), the Sustainability Accounting Standards Board (SASB), the Climate Disclosure Standards Board (CDSB), the Task Force on Climate-related Financial Disclosures (TCFD), the Carbon Disclosure Project (CDP) and the European Commission through the Non-Financial Reporting Directive 2014/95/UE (NFRD) and the proposal of Corporate Sustainability Reporting Directive (CSRD). Most reporting frameworks and guidelines proposed by international organizations such as GRI and IIRC provide companies with sustainable extra-financial reporting metrics in order to reflect their overall sustainable performance, not just their environmental performance.

The first CDSB framework, released in 2010, focused on the risks and opportunities that climate change presents to an organization's strategy, financial performance and condition. Since 2013, however, the scope of the CDSB framework has been expanded beyond climate change and GHG emissions to encompass environmental information and natural capital (CDSB 2019). The CDSB framework adopts relevant principles from existing standards and practices familiar to companies, and therefore aligns with the TCFD's recommendations. For its part, the SASB framework is an industry-specific sustainability reporting framework that comprises 77 industry standards, with each standard including a minimum set of industry-specific disclosure topics about sustainability accounting, not just climate accounting (SASB 2020)³.

It is important to note that only the TCFD framework covers exclusively climate change issues and disclosures on organizations' material climate-related risks and opportunities. The TCFD's recommendations are structured around four thematic areas: (1) governance (the organization's governance around climate-related risks and opportunities); (2) strategy (the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy and financial planning); (3) risk management (the processes used by the organization to identify, assess, and manage climate-related risks); (4) metrics and targets (used by the organization to assess and manage relevant climate-related risks and opportunities). Besides, one of the TCFD's key recommendations highlights the resilience of an organization's strategy,

³ In May 2021, SASB and IIRC merged to form the Value Reporting Foundation.

by taking into consideration different climate-related scenarios when assessing climate change issues and their potential financial implications.

Given that climate-related financial reporting is evolving, it is widely recognized that the TCFD's recommendations constitute a first step towards the acknowledgment of the climate change risks and opportunities (EFRAG 2021), and mostly, towards a normalization of mandatory climate change reporting which should be incorporated in an overall framework on sustainable performance reporting.

Most recently, there are two new normalization initiatives carried out by the IFRS Foundation and the European Union (EU). On 3 November 2021, the IFRS Foundation Trustees announced the creation of a new standard setting board - the International Sustainability Standards Board (ISSB), with the aim to replace a patchwork of voluntary guidance with a single set of norms for companies reporting the impact of climate change on their businesses.

In Europe, in order to meet its' ambitious objectives on sustainability reporting, the European Union has developed a green taxonomy⁴ and instructed the European Financial Reporting Advisory Group (EFRAG) to set up sustainability standards at the European level, based on existing benchmarks, and in parallel with future international sustainability standards. The adoption of European Sustainability Reporting Standards (ESRS) is intended to form a key aspect of the EU's Corporate Sustainability Reporting Directive (CSRD, Directive (UE) 2022/2464).

While recognizing the important work carried out by established initiatives such as GRI, SASB, IIRC, CDSB, TCFD and CDP, the European Commission (EC 2021) confirmed that "EU sustainability standards should be developed in constructive two-way cooperation with leading international initiatives, and they should align with those initiatives as far as possible while taking into account European specificities". That means, on the one hand, EU sustainability reporting standards should take into account existing standards and frameworks for sustainability reporting and accounting as appropriate. On the other hand, they should take into account any sustainability reporting standards developed under the auspices of IFRS Foundation. For the reason of political sovereignty, the EU is determined to set its own

⁴ The EU Taxonomy Regulation requires companies within the scope of the European Non-Financial Reporting Directive 2014/95/UE (NFRD) to disclose certain indicators about the extent to which their activities are environmentally sustainable according to the green taxonomy.

sustainability standards and does not intend to delegate them to an international standards setter as it was the case for the accounting standards (IFRS).

One of the biggest challenges for the European sustainability reporting standard setter (EFRAG) is to ensure consistency and comparability with other leading global sustainability reporting standards – in particular, those of the ISSB. We observe that the concept of “materiality” is a major point of divergence in the competition for the standardization of ESG information. The IFRS Foundation or the SASB want above all to inform investors about their risks. For its part, Europe wants to build the sustainability reporting framework on “double materiality” in order to measure both the impact of ESG risks on the company and also the impact of the company on society in general. It wants to set standards that serve all stakeholders, not just investors.

While the general direction of most major jurisdictions is towards improving, increasing, and mandating sustainability reporting, not everyone agrees that more needs to be done to support ESG disclosure. In a recent speech, US Securities and Exchange Commission (SEC) Commissioner Mark Uyeda outlined his views on ESG, arguing that the existing regulatory framework is sufficient to support investors⁵. He outlines concern that increased regulation on ESG is unnecessary, and risks going beyond merely financially material information and strays into nudging investors towards a political agenda.

In its educational document entitled *"Effects of climate-related matters on financial statements"*, the IASB (2020) sets out guidelines for the consideration of climate-related matters in financial statements and illustrates, standard by standard, certain potential impacts of climate change on the accounts. This document could help companies in their reflections on the risks and effects linked to climate change to be taken into account in the financial statements, but also the auditors in their risk assessment process in order to ensure that the significant financial effects are correctly reflected in the accounts. In addition, the level of information provided must be proportional to the materiality that climate change represents for the company. However, we note that the IFRS standards do not deal specifically with the accounting for greenhouse gas emission rights, energy saving certificates and carbon credits.

⁵ <https://www.sec.gov/news/speech/uyeda-remarks-california-40-acts-group>, accessed February 6th 2023.

2.2.2. Various normalization initiatives in place: so what's the problem?

A number of critical issues have been identified when reviewing the existing rules, guidance and disclosure practices on climate-related issues. We suggest that the following issues should be addressed in the future climate change reporting standards.

First, while there are many rules or regulatory guidance that require climate-related disclosure, most are not explicitly focused on climate-related financial information. Many existing standards focus on disclosure of specific climate-related information such as GHG emissions and other limited sustainability metrics (TCFD 2017). Furthermore, no existing standards and recommendations on climate-related disclosures (TCFD, CDSB and SASB) are mandatory and they are therefore applied on a voluntary basis. As a result, companies use a number of indicators and metrics proposed by various organizations and thus communicate non-comparable data about climate-related issues.

Second, disclosure requirements or recommendations remain general, are not practicable, giving rise to narrative, non-comparable and non-verifiable information for investors' decision making. Users observe inconsistencies in disclosure practices, lack of context for information, use of boilerplate and non-relevant environmental disclosure (Albertini 2014). From the perspective of analysts, reports are very long and don't always provide the data needed.

Third, one of the most important critics is the lack of practicable interim metrics, targets and verifiable information to measure the financial implications of climate-related issues on the organizations' businesses and financial performance. As a result, disclosure on the financial impacts of climate risks and opportunities lacks the transparency and consistency that would enable investors to consider climate-related issues in their asset valuation and allocation processes. For example, entities operating in sectors with high environmental impact and exceeding some thresholds could be required to elaborate the greenhouse gas balance sheet by providing a common set of standard metrics and disclosures.

Fourth, the locations of climate-related financial disclosures vary significantly depending on rules set up by regulators. Those disclosures are located in different documents and formats such as sustainability reports, integrated reports, annual financial reports, Registration Documents or other annual filings. When environmental disclosures are presented in the annual financial report, they are dispersed across various sections of the report (CSR section, corporate governance section, risk management section, financial statements, etc.). As a matter of fact, there are no common mandatory rules on the presentation of climate-related financial

disclosures, whether in terms of size and content of the document or in terms of data processing and calculation methodology.

Fifth, there is no mandatory standardized framework for disclosing climate-related issues, climate-related risks and opportunities as well as the financial implications of climate change on a “double materiality” basis. On the one hand, it would be necessary to clearly define the scope of CSR to encompass all sustainability responsibilities. Indeed, some companies do not address the environmental issues in their Registration Documents (Demaria and Rigot 2018). On the other hand, it would be necessary to set up a specific, but also common climate-related reporting standard that defines what information and metrics should be disclosed, how and in which format and section it should be presented, and to ensure that required information and metrics disclosures are comparable and verifiable by independent auditors or by other independent parties.

Finally, there is little evidence to show that companies take into account the physical impacts of climate change, as well as the impacts related to the transition to a low-carbon economy in the preparation of their financial statements. This is true even where their management discussion reports detail climate risks as recommended by the TCFD. It means that there is no consistency between narrative information on climate risks disclosed in the annual financial report or in another format and the financial statements. In fact, there is no requirement in the current rules and guidelines to request companies’ directors to confirm that material climate factors are properly reflected in the financial statements and that there is consistency between narrative reporting on climate risks and the accounting assumptions used when drawing up accounts. In addition, auditors are likewise silent on whether the financial statements fully incorporate material climate risks (IIGCC 2020).

3. Discussion: Towards a common mandatory climate change reporting standard?

We suggest that the three following preliminary questions should be addressed when elaborating a common mandatory climate change reporting standard.

First, who are the users of climate-related financial disclosures? We consider that the future climate reporting standard should not only meet the information needs of investors, lenders and insurance underwriters, but also those of policy makers who represent the population and make decisions for a clean planet and low-carbon future.

Second, what should be the format of climate change reporting? Should climate change reporting follow the same format as corporate financial reporting? In order to avoid boilerplate,

narrative, non-comparable and non-relevant information about climate-related issues, climate change reporting should follow the format of corporate financial reporting which consists of minimum compulsory indicators, metrics and qualitative information accompanied by explanatory notes.

Third, in which document should climate-related financial disclosures be located? Although some studies (Sales de Aguiar and Bebbington 2014) show that climate-related disclosure is more comprehensive in standalone reports than in annual reports, there is a consensus about the need for organizations to include all climate-related financial disclosures in annual financial filings (TCFD 2017). In fact, climate-related disclosure placed in annual financial reports enables users to verify the consistency between narrative information on material climate risks and potential impacts recognized in the financial statements. Furthermore, the International Accounting Standards Board (IASB 2020) affirms that various existing international accounting standards (IAS/IFRS) require the disclosure of material impacts of climate-related risks and opportunities on an entity's financial performance, and that they therefore must be reported in the financial statements and associated notes.

We also suggest that the seven principles for effective disclosure recommended by the TCFD are relevant, and should be adopted in the future common climate reporting standard. In order to achieve the objectives of high quality and decision-useful climate change reporting, climate-related financial disclosures must be (1) relevant; (2) specific and complete; (3) clear, balanced and understandable; (4) consistent; (5) comparable; (6) reliable, verifiable and objective; and (7) provided on a timely basis (TCFD 2017).

Furthermore, while climate change affects nearly all economic sectors, the level and type of exposure and the impact of climate-related risks differ by sector, industry, geography, and organization. Therefore, climate change disclosures should be specific to the entity and proportional to its sector, industry, businesses, location and size. The future climate reporting standard should define a set of minimum mandatory metrics and narrative disclosures about material climate risks to be provided by all entities, and additional disclosures to be reported by entities operating in sectors and industries with high climate change impact and exceeding some emission thresholds.

The IASB (2020) emphasizes that impacts of material climate risks on the financial position and performance must be reflected in the financial statements and associated notes in conformity with applicable accounting standards, and that disclosure must be company-specific and not boilerplate. We suggest that disclosure should otherwise be synthesized in a separate

note to the financial statements that is specifically dedicated to climate change financial disclosure. Directors must confirm in the annual financial reports that material climate factors are properly reflected in financial statements and that there is consistency between the narrative disclosures about climate risks and the financial statements. In addition, auditors, whose role is to reduce potential information asymmetry between management and stakeholders (Dutta and Dutta, 2021), should provide assurance on these two statements confirmed by directors.

Henceforth we suggest that the climate-related financial reporting scheme should include the following disclosures and characteristics:

- An entity shall identify specific climate-related risks and opportunities to which it is exposed. Climate-related risks and opportunities identified by the TCFD's recommendations constitute a relevant source and should be adopted in the future climate reporting standard;
- An entity shall assess and report the financial impacts of climate-related risks and opportunities on its current and future financial positions. It shall be required to consider the appropriate time frames when assessing climate-related risks and potential impacts on its financial positions. Furthermore, it shall carry out scenarios and sensibility analysis on key variables;
- An entity shall disclose its strategies and risk management decisions taken for managing those risks and for seizing those opportunities. The means of climate-related risks management are mitigation, transfer, acceptance and control;
- An entity shall determine materiality for climate-related issues in a consistent manner with the concept of materiality used for financial information disclosed in the financial statements;
- There are uncertainties about the timing of occurrence of climate-related risks and the quantification of their impacts on financial performance. Following the TCFD's recommendations (TCFD 2017), an entity shall include in its disclosures a description of gaps, limitations, and assumptions made as part of its assessment of climate-related issues.

Conclusion

There is a high consensus among investors and policy makers about the demand for more harmonized climate change reporting in order to improve the comparability, the relevance and the transparency of environmental communication, thus a need for setting up a common mandatory climate change reporting standard which should be placed in an overall coherent sustainability reporting framework at the international level. In order to achieve the aim to bring the publication of sustainability information to the same level as the publication of financial information, a number of questions need to be addressed.

First, how to build a high quality, comparable and decision-useful climate change reporting framework? There is a consensus in the literature about criteria of high quality reporting framework which are: (1) a common climate change reporting standard that encompasses relevant metrics, indicators and qualitative disclosure requirements in order to enable users to assess an entity's climate-related risks and their material impacts (Beck et al., 2010; Bouten et al., 2011); (2) directors' responsibility for climate-related risks assessment and management as well as for climate reporting process (IIGCC 2020); (3) external assurance provided by independent auditors on the consistency and reliability of climate-related financial disclosures (Dutta and Dutta 2021); and (4) effective regulatory enforcement of climate change disclosure requirements (Hombach and Sellhorn 2019). But when it comes to the question of who will set the future climate change reporting standard and what method will be used, the debate is divided.

We consider that the biggest challenge for climate change standard setters is to define relevant, applicable and verifiable metrics as well as critical disclosures about climate-related risks and material financial impacts in order to gain their worldwide recognition by investors and other stakeholders. We also expect that the future landscape of corporate climate change reporting would be probably similar to that of corporate financial reporting which already includes high quality accounting standards such as IFRS and US GAAP (United States Generally Accepted Accounting Standards).

Second, there is a need for further research and analysis by sector and industry experts in order to help organizations to better understand and measure how climate-related issues translate into potential financial impacts (TCFD 2017).

Third, organizations should develop knowledge and experiences to increase their understanding of climate-related risks and opportunities, and of their financial impacts on a “double

materiality” basis. For example, they should develop a broad understanding of the concentration of their carbon-related assets in the financial system as well as of the financial system’s exposure to climate-related risks.

Finally, there is a need for clarification and reinforcement of the responsibility for climate-related risks assessment and management within the organizations, and of its integration into the organizations’ financial reporting process. Significant efforts should be taken by the board of directors to appropriate and to consider long-term risks and opportunities associated with climate change. As long as climate affects the business model and corporate strategy of the entity, it must be anticipated and addressed by the board of directors and the audit committee, and fully integrated in the entity’s risk management and financial planning process.

In the second step of this research, we currently make an empirical study of climate change financial disclosure practices used by a sample of European companies for the 2021 and 2022 financial reporting periods. Our objective is to identify the best practices, but also gaps that exist and to come up with a list of recommendations that can be useful to policy makers and standard setters.

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