GETTING COMFORTABLE WITH CLIMATE SCENARIOS

A QUALITATIVE STUDY ON THE MICRO-STAGE OF MAKING THE TCFD SCENARIO ANALYSIS AUDITABLE

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Getting comfortable with climate scenarios: A qualitative study on the micro-stage of making the TCFD scenario analysis auditable

Abstract:

This study examines how the scenario analysis as an integral part of the novel TCFD framework is made auditable. Drawing upon the theoretical lens of Carrington and Catasús' (2007) comfort framework, we uncover professionals' discomforts with the TCFD scenario analysis and show how they address these discomforts to make the scenario analysis auditable. We illustrate conceptual challenges of forward-looking and quantified disclosures, which allow us to further develop our understanding of "making things auditable" (Power, 1996). Making things auditable consists of (1) creation of auditable environments and (2) negotiation of audit knowledge. We refine the concept of auditable environments by suggesting a distinction between actions performed "with" and "within" the auditable environment, where the latter refers to activities that do not change the auditable environment. Activities "within" can further be distinguished as *adopted* and *adapted* activities, where the latter are adjusted to a suboptimal auditable environment. Related to the negotiation of audit knowledge, we suggest a possible distinction between technical and "ritualistic" (Pentland, 1993) aspects of auditing and show how proximity between novel and legacy disclosures can impede auditability. Finally, we investigate the relationship between marketization and professionals' discomforts in making marketized disclosures auditable.

Keywords:

TCFD, Scenario Analysis, Auditability, Comfort, Marketization

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1. Introduction

The impact of climate change and the measures necessary to avoid the daunting consequences for humankind are widely debated within society, politics and business. The Paris agreement, stating combined global efforts to reduce global warming to 1.5 degrees Celsius above pre-industrial levels, and children striking for climate action worldwide are two remarkable examples of the shift towards more climate awareness and action (FFF, 2020; UN, 2015). In an attempt to responsibilize the business community, numerous sustainability reporting frameworks have been developed (FSB, 2015), leading to a divergence of practice and challenges for the disclosing entities, auditors and users. As a relatively new addition to these incumbent frameworks, the Task Force on Climate-related Financial Disclosures (TCFD), established by the Financial Stability Board (FSB), issued its recommendations for more effective climate-related disclosures in 2017. The recommendations target the financial sector in the initial phase of adoption to incorporate climate-related issues into risk management activities and "promote more informed investment, credit, and insurance underwriting decisions" (TCFD, 2020b). As such, the TCFD is embedded in a broader trend of "marketization" of corporate social responsibility (CSR), whereby profit-oriented motivations conceptualize CSR (and therefore sustainability) as a "risk to be managed" (Michelon et al., 2020, p. 1).

In order for disclosures to be effective in informing investment decisions, the reported information needs to be reliable (WBCSD, 2019b). For investors' risk management purposes, the TCFD scenario analysis is argued to be of particular significance (UNEP FI, 2019). As asserted by the Governor of the Bank of England, the TCFD scenario analysis is a key tool that responds to the financial sector's need "to appropriately price climate risk and to reward innovation" by enabling investors to access "the right information" (UNEP FI, 2019, p. 7). What distinguishes the TCFD scenario analysis from prior sustainability reporting practices is the concept of disclosing the financial impact of climate-related risks on the corporation, rather than a corporation's impact on the climate (O'Dwyer & Unerman, 2020). As such, the TCFD scenario analysis aspires to revitalize how climate-related risks and opportunities are managed in the financial sector (UNEP FI, 2019). Nevertheless, it is recognized that "translating climate models into economic and financial impacts is difficult" (UNEP FI, 2019, p. 7). Considering the need for reliable information to inform investment decisions (WBCSD, 2019b), the question of how disclosures from this novel reporting practice can be verified emerges. In this regard, auditing can play a key role in establishing credibility of corporate reports. Indeed, in contexts of uncertainty regarding the reliability of information, auditors provide comfort for public consumption (Pentland, 1993). However, auditing the TCFD scenario analysis likely involves considerable challenges (and thus discomforts) resulting from its forward-looking nature and its conceptual novelty of quantifying impacts of climate-related risks *on* the company, rather than the other way around (TCFD, 2020d). Indeed, as O'Dwyer

and Unerman (2020) point out, the TCFD scenario analysis is underpinned by subjective and qualitative data where "many assumptions will be unverifiable and/or debatable". Yet, little is known about the discomforts associated with the TCFD scenario analysis and how professionals address discomforts to make TCFD auditable. To empirically uncover these two elements, the paper employs a qualitative research approach by interviewing three professional groups consisting of practitioners in a financial institution, expert consultants and Big Four auditors.

As argued by Pentland (1993), auditors transform corporate reports from an untrustworthy state into a form that the public can find comfortable. However, to be able to provide comfort to the public, auditors first need to gain comfort themselves (Pentland, 1993). Achieving a state of comfort that enables the assurance requires sufficient relief of discomforts (Carrington & Catasús, 2007). Therefore, a critical question concerning the TCFD scenario analysis is how professionals address discomforts associated with this novel practice to enable the assurance. To support a more nuanced interpretation of the discomforts associated with the TCFD scenario analysis, the empirical findings are analyzed through the theoretical lens of the comfort framework developed by Carrington and Catasús (2007). The framework comprises three senses of comfort that are the state sense (making an assurance statement while accepting discomforts), relief sense (reducing discomforts), and renewal sense (changing the definition of acceptable discomforts). The interpretation offered in this paper is that "comfort" is an integral part of auditing, and by addressing discomforts associated with the TCFD scenario analysis, this reporting field can be made auditable. While the TCFD is a relevant phenomenon on its own, its pre-mature stage also enables us to further develop our understanding of making (new) things auditable (Power, 1996). Thus, by examining discomforts in the audit process and how these are addressed, one can gain a better understanding of how auditability is constructed. Accordingly, the research question to be addressed is two-parted:

What are professionals' discomforts with the TCFD scenario analysis? And how do they address discomforts to make the scenario analysis auditable?

Prior research on auditability suggests that making things auditable entails (1) creation of auditable environments and (2) negotiation of audit knowledge (Power, 1996). The former suggests that the system of auditing makes itself possible by actively creating the external organizational environment in which it operates (Power, 1996). The latter implies that the knowledge base of auditing must be institutionalized before the audit procedure can be applied by individual auditors (Power, 1996). More specifically, particular procedures and techniques come to be accepted or not accepted as constituting reliable audit knowledge through processes of negotiation (Power, 1996). In this regard, Power (1996) argues that there is a difference between technical auditability and what is claimed to be legitimate and acceptable audit knowledge. Pentland (1993) establishes an understanding of auditing as a ritualistic process where the notion of comfort plays a crucial role in enabling the assurance of corporate reports.

O'Dwyer (2011) and Canning et al. (2019) investigate the expansion of auditing into the area of sustainability. O'Dwyer (2011) problematizes the application of financial audit methods into a new area such as sustainability, specifically when characterized by qualitative data and insufficient control environments. Canning et al. (2019) utilize the concept of materiality to show how financial concepts are applied to sustainability and inter alia state that ambiguity of concepts is amplified and that assurors require flexibility in order to address non-financial data. While both O'Dwyer (2011) and Canning et al. (2019) investigate individual actors' practice (referred to as micro-stage by Pentland (1993)), this micro-stage of "making things auditable" (Power, 1996) and the respective audit challenges remain under-researched. These micro-interactions are linked to the macro-order of capital markets, implying that investigating professionals' discomforts also supports our understanding of the macro-order (Pentland, 1993). The marketization of sustainability can be described as a macro-stage process. Recent literature (see e.g. Christophers, 2017; Michelon et al., 2020; Michelon & Rodrigue, 2015) has problematized the conceptualization of CSR for risk management purposes. However, further exploration of how this might relate to micro-stage actors' discomforts with disclosure and assurance is required.

This paper makes three main contributions. First, it contributes to the emerging literature on the TCFD framework (see Ameli et al., 2020; Cho et al., 2020; O'Dwyer & Unerman, 2020; Scholten et al., 2019; Schumacher et al., 2020). To our knowledge, it is the first study investigating either the micro-stage activities of professionals working with TCFD or the auditability of the framework. In doing so, the paper uncovers practical challenges of the scenario analysis and how these are addressed to support the implementation and assurance of the framework.

Second, the paper contributes to the literature on "making things auditable" (Power, 1996). The two core themes of making things auditable are (1) creation of auditable environments and (2) negotiation of audit knowledge. Related to the former, the paper suggests that activities can be performed either "with" the auditable environment (e.g. Andon et al., 2015; O'Dwyer, 2011; Power, 1996), or "within" the auditable environment (e.g. Canning et al., 2019; Power, 1996). "With" represents activities that actively improve auditable environments, whereas activities "within" create auditability without actually changing the auditable environments. The paper further refines the concept of auditable environments by distinguishing between *adopted* and *adapted* activities that are performed "within" auditable environments. The *adapted* activities can be described as an "art of the possible" where the audit process is adjusted to its suboptimal environment, while the *adopted* ones are transferred from the financial audit domain without being adjusted to the new audit area as they can function within the existing environment. Related to the negotiation of audit knowledge, the paper adds a nuanced perspective to the application of financial audit methods into a new area (Canning et al., 2019; O'Dwyer, 2011). Leveraging the theorization of Power (1996) and Pentland (1993), this study

distinguishes between technical and ritualistic aspects of auditing. Drawing upon this distinction, the paper suggests that the transferability of audit methods can be decoupled (or even reversed) from the technical proximity of novel (here sustainability) and legacy (financial) disclosures. While O'Dwyer (2011) and Canning et al. (2019) problematize the differences between sustainability and financial reporting, this paper shows that also proximity can render disclosure and assurance challenging.

Third, the paper contributes to recent research on marketization of CSR (see e.g. Christophers, 2017; Michelon et al., 2020; Michelon & Rodrigue, 2015) by advancing our understanding of the discomforts underlying the production of such marketized information and how professionals seek to overcome them. Utilizing the notion of discomforts, the paper identifies central aspects of the scenario analysis that are particularly uncomfortable to micro-stage actors and thus also point towards macro-stage challenges. It suggests that frameworks (or specific parts of these) that go beyond vague disclosures for the disclosures' sake are the ones that are creating the largest discomforts and consequently seem to be the most difficult to both implement and assure.

The remainder of the paper is structured as follows. Section two reviews literature dealing with TCFD, the creation of auditability, transferability of methods and concepts from the financial to the sustainability area and marketization aspects. After providing the basis for and posing the research question, the section also sets out to motivate and outline the comfort framework as theoretical lens. The third section outlines the research design and explains the data collection and analysis processes. The fourth section, guided by Carrington and Catasús' (2007) three senses of comfort, illustrates the empirical analysis and thus showcases the developed empirical themes. The fifth section discusses the findings in light of the previously reviewed academic literature. Finally, the sixth section provides concluding remarks, limitations and suggestions for future research.

2. Theoretical development

This chapter presents the paper's theoretical development. Section 2.1 outlines the review of previous literature with a focus on both the TCFD framework and the creation of auditability. It finally problematizes the lack of research and poses the paper's research question. Section 2.2 introduces the concept of comfort and Section 2.3 concludes the chapter by developing the theoretical framework.

2.1. The TCFD framework and the creation of auditability

2.1.1. The TCFD framework

At the same time as the demand for climate action is growing, so does the critique towards the "plethora" (O'Dwyer & Unerman, 2020) of sustainability reporting frameworks. Just by their sheer number they diminish their meaning for decision-making purposes (WBCSD, 2019b), create "confusion among users and corporations themselves" (IFRS Foundation, 2019) and thus strengthen calls for consolidation (IFRS Foundation, 2019). Amid the numerous frameworks, the Global Reporting Initiative (GRI) and Integrated Reporting (<IR>) are among the most widespread and debated ones (Corporate Reporting Dialogue, 2019; GRI, 2020; La Torre et al., 2020; O'Dwyer & Unerman, 2020; Simnett & Huggins, 2015). Adding to these incumbent frameworks, the Financial Stability Board (FSB) established the industry-led TCFD to develop "voluntary climate-related financial disclosures that would be useful to investors and other in understanding risks" (TCFD, 2020c). In June 2017, the TCFD released its recommendations for climate-related financial disclosures. To understand why the FSB identified the need for *yet another* sustainability reporting framework, the next paragraphs aim to first uncover the conceptual differences of the TCFD to GRI and <IR> and second to give an outline of the TCFD framework's contents and implications from a marketization perspective.

The GRI is the most widely used example of a broad stakeholder-oriented sustainability reporting framework (GRI, 2020; La Torre et al., 2020). The disclosures aim to create transparency and accountability of the reporting entities' impact on their surroundings. As argued by O'Dwyer and Unerman (2020), GRI discloses corporate sustainability impact information to a broad group of stakeholders who are interested in exactly these disclosed sustainability impacts. Given GRI's pluralistic disclosures and broad stakeholder focus, the applied concepts tend to be stakeholder oriented as well (La Torre et al., 2020). O'Dwyer and Unerman (2020) claim that as GRI fosters the disclosure of the firms' impact on their surroundings, the broad group of stakeholders receives the information that is most relevant to them. As the TCFD is focused on the information needs of investors, the framework prioritizes a different stakeholder group and can thus be seen as complementary to GRI (O'Dwyer & Unerman, 2020).

The <IR> aims to facilitate concise communication of an "organization's strategy, governance, performance, and prospects, in the context of its external environment" (IIRC, 2013, p. 7). Despite the outspoken focus on investors and other financial stakeholders whose principle information needs relate to the impact of sustainability risks on the company, O'Dwyer & Unerman (2020) argue that the main focus of <IR> lies with disclosing the company's impact on its surroundings. Hence, the notion of users' needs in <IR> might be seen as a rhetorical device (Reuter & Messner, 2015). In this regard, the TCFD framework has the potential to reinvigorate the notion of user (investor) needs by actively engaging with the investor community to help "companies understand what financial markets want from disclosure in order to measure and respond to climate change risks, and encourage firms to align their disclosures with investors' needs" (Anderson, 2019, p. 9). Therefore, while having a mutual investor-focus (Cheng et al., 2014; Humphrey et al., 2017; O'Dwyer & Unerman, 2020), the TCFD might be seen as conceptually different to the <IR>. As such, O'Dwyer and Unerman (2020) claim that the TCFD explicitly addresses the potential <IR> weaknesses, focusing on the climate-related *financial* impacts *on* the reporting entity, which is in line with investor's information needs (Humphrey et al., 2017; O'Dwyer & Unerman, 2020).

The TCFD framework is structured around four pillars that represent core elements of how organizations operate: governance, strategy, risk management, and metrics and targets (TCFD, 2020d). Recommended disclosures on governance include a description of the board's oversight of climate-related risks and opportunities, as well as management's role in assessing and managing these (TCFD, 2020d). Strategy-related disclosures include actual and potential impacts of climate-related risks and opportunities on the company's business, strategy and financial planning if it is deemed to be material (TCFD, 2020d). More specifically, the TCFD recommends that companies elaborate on the resilience of their strategy when faced with different climate scenarios (TCFD, 2020d). As part of the scenario analysis, the companies should aim to assess the financial impact of such climate scenarios, a quantification exercise that is new to the majority of reporting entities (O'Dwyer & Unerman, 2020; TCFD, 2020c). With regard to risk management disclosures, the companies should disclose how climate-related risks are identified, assessed, and managed and how these processes are integrated into the companies' overall risk management (TCFD, 2020d). Lastly, companies should disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities if material (TCFD, 2020d). To facilitate the communication with investors and other financiers, the TCFD recommends that these disclosures are included in mainstream annual financial filings, or other official company reports (TCFD, 2017a, 2020c).

Despite the growing number of TCFD supporters and the increasing climate related-disclosures, the task force found in its latest status report that the current climate-related disclosures remain insufficient for investors (TCFD, 2020d). More specifically, the task

force expressed concerns that "not enough companies are disclosing *decision-useful* climate-related financial information. This could be problematic for financial markets if market participants do not have sufficient information about the potential financial impact of climate-related issues on companies" (TCFD, 2019, p. 4). In this regard, the scenario analysis was called out as a central but challenging part of the framework as the usage of climate scenarios in business is relatively new (TCFD, 2017b, 2020a, 2020d). The scenario analysis' aim is to "better understand how a business might perform under different future states" (TCFD, 2017b, p. 2) and is thus used to identify potential risks and opportunities of climate change *on* the company (TCFD, 2020d). Additionally, quantifications, which "should be a goal in a mature scenario process" (TCFD, 2020a, p. 15), are challenging to implement due to both a "lack of consistent data on financial exposures to climate-related risks and the difficulties of translating climate change outcomes into changes in financial exposures" (TCFD, 2020d, p. 72). Whether the inputs to the scenario analysis should be standardized is debated (I4CE, 2020; IIGCC, 2019; O'Dwyer & Unerman, 2020).

The disclosures become even more relevant and tense when theorizing around the potential impact on financial reporting. The IASB published an overview, demonstrating that the principles-based International Financial Reporting Standards (IFRS) already incorporate parts of the TCFD recommendations, at least in theory and implicitly (Anderson, 2019). Through that link from disclosures on climate-related risks to financial disclosures, the financial statements could be impacted accordingly. Incorporating the climate-risk effects could, inter alia, impact (non-)financial asset impairments, expected credit losses or provisions (Anderson, 2019).

Considering the pronounced focus on information needs of investors and other financial stakeholders to "promote more informed investment, credit, and insurance underwriting decisions" (TCFD, 2020c, p. 7), TCFD can be seen as part of a broader marketization that "contribute[s] to the instrumentalization of CSR as a risk to be managed"(King & Gish, 2015; as cited by Michelon et al., 2020, p. 1). Given TCFD's conceptual basis to provide input to investors' risk management tools and thus capital allocation decisions, Ameli et al. (2020) argue that the framework's underlying rationale is the "efficient market hypothesis" (Fama, 1970). Further, it is proposed that transparency can support climate action and that the TCFD's disclosures are needed to "support and inform investors' decision making [and] help overcome the principal-agent problem" (Ameli et al., 2020, p. 579). Low-quality data and lacking disclosures and information are seen as a major explanation for underinvestment in low-carbon assets (Ameli et al., 2020). While acknowledging the potential positive impact of market-based climate risk disclosures, Ameli et al. (2020) allude and criticize the implicit capital market expectation to avoid regulation beyond disclosures (Christophers, 2017) and thus advocate for more regulatory interventions. On a broader perspective considering marketized solutions in general, Michelon et al. (2020) claim that this approach towards risk management privileges the

provision of information (Andrew & Cortese, 2013; Malsch, 2013; Power, 2007), rather than demands for actions affecting decisions or operations (Michelon & Rodrigue, 2015).

2.1.2. Making things auditable

The preceding section has outlined the institutional context of the TCFD framework and explained its positioning vis-à-vis prominent incumbent frameworks such as GRI and <IR> as well as reflections from a marketization perspective. This section unfolds how new things (or new areas) are made auditable and draws heavily on concepts theorized by Power (1996, 1997, 1999, 2000, 2003). In this regard, Pentland (2000, p. 307) argues that if there is a tendency towards the "verification of everything", there is also a need for more detailed studies on the extension of auditing practices into new domains. One such study is presented by Power (1996), who theorizes the process of making new things auditable. More specifically, Power (1996) argues that making things auditable is an active process that involves (1) the creation of auditable environments, (2) and the negotiation of a legitimate and institutionally acceptable system of audit knowledge.

The creation of auditable environments implies that the system of auditing makes itself possible by actively creating the external organizational environment in which it operates (Power, 1996). While the construction of a whole organization solely by and for audit processes is unlikely, Power (1996, p. 295) suggests that "a significant "auditable sub-organization" is constructed [corresponding] to the audit process". In this regard, the critical question is whether controls, measurement systems and their associated forms of documentation pre-exist the audit process or have been created to make the organization auditable (Power, 1996). The negotiation of audit knowledge implies that the knowledge base of auditing must be institutionalized before the audit procedure can be applied by individual auditors and "involves processes of closure which render knowledge acceptable and stable" (Power, 1996). Power (1996, p. 294) argues that the codification of acceptable knowledge is based on auditor consensus and thus an area can be made auditable by auditors "taking a view" that something is auditable. Power (1996, p. 294) further argues that "making things auditable in this specialized sense is not simply a technical matter and the variability of how auditability is accomplished *and claimed* cannot simply be attributed to improvements in audit technique [as the functioning of the technique itself] depends on what gets accepted as common (legitimate) sense within the system". According to Fischer (1996), the process of negotiating audit knowledge reflects a cycle of externalization from specific practices, objectification as knowledge in official documents and the reinternalization of this institutionalized knowledge in the audit practice.

The co-production of a stable knowledge base and auditable environments for audit practice requires what Power (1996), based on Latour (1987), refers to as "fact building". A central finding with regard to this process is that once these facts have been "built", the context of their construction is erased, and one is left with auditors' common sense and

routine practice (Power, 1996, p. 309). Thus, the audit environment assumes a "natural" externality to the audit process (Power, 1996, p. 309), which is exemplified by Power (1997), where the environmental audit task is displaced from direct forms of verification of physical things, such as emission levels, to indirect verification of the systems to control such verification. Thereby, the external audit process becomes a form of "control of control" (Power, 1994, p. 15) which, in turn, implies that auditors do not have to be experts in the field under review, and this has enabled them to expand into new audit domains (Power, 1997).

In response to the call for more research in new audit spaces, Andon et al. (2015) examine attempts at jurisdictional expansion in the audit field and critically evaluate its professional implications. The study finds that "Big-4 P[rofessional]S[ervices]F[irm]s and professional accounting bodies hold the potential to influence the emergence, nature and construction of new audit spaces, as they seek to annex new audit spaces by attaching them to their historical expertise in financial audit, as well as to the symbolic characteristics of independence, integrity and ethics" (Andon et al., 2015, p. 1417). The subsequent section focuses on the creation of auditability within the area of sustainability as this is the domain of the TCFD framework.

2.1.3. Making sustainability reporting auditable

Leveraging Power's (1996, 1997, 1999, 2003) theorization on making new domains auditable, O'Dwyer (2011) investigates the creation of auditability of sustainability reporting and the role of auditors in constructing the novel practice. More specifically, O'Dwyer (2011) seeks to empirically uncover the practices on an organizational level by shedding light on individual actors, their perceived challenges and methodological approaches to rendering the new domain of sustainability auditable. To accomplish that, he employs a qualitative longitudinal case study on two Big Four firms. O'Dwyer (2011, p. 1259) outlines the difficulty of making sustainability auditable by highlighting its "fragile nature". He adds to the theorization of the individual actors' involvement in making a new domain auditable (Power, 1996, 1997) by specifically focusing on their role on the micro-stage. The curtain to the "audit rituals" (Pentland, 1993; Power, 2003) on this micro-stage is lifted by the means of an empirical investigation of "the processes through which auditability is negotiated and determined" and focusing on "auditability – the ability to audit" (O'Dwyer, 2011, p. 1232).

O'Dwyer (2011) further outlines the trial-and-error iterative as well as the experimental process of developing methods to cope with the reported sustainability data. The early engagements can be characterized as pioneer work depicted in the framings of entering "unknown ground […] heightened levels of uncertainty [and] discomfort, given a lack of formal internal and external guidance" (O'Dwyer, 2011, p. 1245). Discomfort is amplified when deficiencies became visible to clients, for instance, when auditors are unable to elaborate on necessary steps to reach higher levels of assurance (O'Dwyer,

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2011). The auditors, however, become increasingly comfortable in dealing with uncertainty and data collection issues over time, showing a development of emotional and cognitive processes and the creation of tacit knowledge. These processes have been uncovered and discussed in different contexts before, for example, in the in-part ethnographic studies of Radcliffe (1999) and Pentland (1993), where the former addresses making efficiency auditable and the latter informs on creating and employing working papers. The notion of comfort and the auditor's "gut feel" seem to be particularly relevant for establishing consensus within an ambiguous environment (Pentland, 1993).

The client companies in O'Dwyer's (2011) study exhibit severe deficiencies in systems, documentation, data quality and data linkages, thus challenging the auditors' comfort with auditing the sustainability reports and evaluating their completeness. This is explained by the inherent difference of sustainability vis-à-vis financial information as well as the organizational control environment. The assessment of financial data is more straightforward, for example, through double-entry book-keeping procedures that create linkages between data points and ensure completeness (Canning et al., 2019). From an organizational perspective, the sustainability reports were created within an underdeveloped control environment with insufficient systems and procedures, relying, for example on manual spreadsheet calculations (O'Dwyer, 2011). Given these deficits in a nascent corporate reporting landscape, the engagements were claimed to have a "natural advisory element" (O'Dwyer, 2011, p. 1247) to construct auditable environments and improve internal controls. Radcliffe (1999) shows a "dialectical" relationship between auditors and their audit environment, manifested inter alia in repeating certain recommendations. These advisory elements, however, raise questions of independence.

The discussion and problematization of auditor's independence is, arguably, as old as external assurance itself and the concept of independence is of fluid nature (Andon et al., 2015; Power, 1997, 2011). Power (1997) argues that independence of external actors is required to effectively connect the internal workings within the organization with the external regulations and stakeholders. The balancing act between independence and supporting clients, and thus improve stakeholder usefulness, through the provision of more reliable and relevant data is especially relevant when entering a new audit space, as creating auditability entails a "need to "change" clients" (O'Dwyer, 2011, p. 1261). The natural advisory element, as mentioned by O'Dwyer (2011), is also observable in Andon et al.'s (2015) study, driven by users who are more concerned about the quality of the report than the auditors' independence. Being aware of the concerns regarding independence, the Big Four used broader guidance to support their clients, e.g. through a bandwidth of best-practices examples and benchmarking. O'Dwyer (2011) also observes an increasing formalization and documentation to structure sustainability assurance. Both firms use financial audit frameworks and techniques, which they iteratively developed further. This is perceived as disputable, as financial audit mechanisms have long-year merits but do not necessarily fit to non-financial disclosures. While there are difficulties

in transferring financial audit techniques, procedures (or routines) are transferred from traditional auditing. These routines are accompanied by tacit knowledge and subjective judgements, that prevail despite increasing formalization and are leveraged in a ritualistic sense (Pentland, 1993) to overcome challenges of auditability. Canning et al. (2019) show that team interactions enable auditors to incrementally gain comfort in an ambiguous reporting context and therefore develop our understanding of the role of comfort in auditing, as theorized by Pentland (1993).

Canning et al. (2019) build on O'Dwyer's (2011) findings of challenges in transferring financial auditing methods and concepts to new fields by investigating the concept of materiality in sustainability assurance. Canning et al. (2019) aim to further uncover how auditors translate audit methods into new domains by conducting a case study with one Big Four firm. Similar to O'Dwyer (2011), Canning et al.'s (2019) study takes place on the micro-stage and develops Power's (1995, 1996, 1997, 2003) theorization on making new things auditable by inter alia displaying that materiality is constructed in the audit process itself (Canning et al., 2019; Power, 1996). O'Dwyer (2011, p. 1259) illustrates the "inherent difficulties involved in directly transferring traditional audit techniques and mindsets to new areas [sustainability]". While recognizing that the application of financial audit techniques provides "comfort" (Pentland, 1993) that is needed to make sustainability auditable (Power, 1996), O'Dwyer (2011) highlights technical differences (such as qualitative nature of data, lack of double-entry book-keeping and information systems) as impediments in the translation process. In Canning et al.'s (2019, p. 19) study, the usage of "credible" financial audit methods is also recognized as a way to lend comfort to the auditors. Canning et al. (2019, p. 3) further "show how assuror flexibility underpinned by assuror intuition facilitates the discovery of technologies deemed capable of offering assurance on non-financial data". The flexibility is needed due to the differences of the sustainability and financial audit field requiring a translation of the audit methods (Canning et al., 2019).

This relates to Power's (1997, p. 142) proposal that "the field of environmental audit is one in which existing audit knowledges are both transferred and transformed". Power (1997) refers to claims in expertise and similarity to create legitimacy, as well as the role of accountants vis-à-vis other professions in non-financial areas such as sustainability. Canning et al. (2019, p. 20) find "little evidence for transformation [but rather] a tentative *translation* occurring where […] techniques were lightly adapted to fit this new domain, often by non-accountant assurors". Therefore, both Canning et al. (2019) and Power (1997) highlight that existing audit knowledge can evolve as a result of claims and divergent practices by different professional groups "as part of a competition for hierarchical precedence" in audit knowledge (Canning et al., 2019, p. 20).

2.1.4. Making the TCFD framework auditable

Power's (1997, p. 142) statement that the "construction of relevant expertise in the environmental auditing field is an ongoing process" is arguably - given the fast-paced developments and accumulation of frameworks - as relevant as more than twenty years ago. The expertise and knowledge systems necessary to make things auditable are most visible when entering a new domain (Power, 1996). The emergence of these new audit spaces is a "recent and fractured phenomenon [providing] a useful base to examine the nature of new audit spaces and offers important insights into the future operation of auditing firms and auditors more generally" (Andon et al., 2015, p. 1403). It is an important yet under-researched area (Andon et al., 2015).

There is still little to no academic research that explicitly focuses on the TCFD framework. This is quite astonishing considering both its innovative nature and its recognition in politics and finance. O'Dwyer and Unerman (2020) bemoan the lack of research and problematize academia's slow reaction to policy initiatives within sustainability in general, and to TCFD in specific. The limited number of papers dealing with TCFD rather aim for a non-academic audience (Cho et al., 2020; Schumacher et al., 2020), interrogate years-old financial statements (Scholten et al., 2019) or problematize TCFD's underlying assumption of an efficient market hypothesis (and thus plead for higher degrees of regulation) (Ameli et al., 2020). Consequently, O'Dwyer and Unerman (2020) recently outlined an agenda with abundant potential research areas for TCFD. They explicitly point out the urgent need for research investigating the framework's implementation involving practitioners in the form of fieldwork.

O'Dwyer and Unerman (2020) highlight challenges of the ongoing TCFD implementation and argue that the reported information, if disclosed at all, remains insufficient. They show interest in the decision-making processes within identification and reporting of physical and transitional risks and the alignment of the different bodies of operational expertise. A significant role in the implementation of TCFD should also be played by the audit profession, as "any focus on implementation also needs to acknowledge the role of assurance in ensuring the credibility of TCFD reporting" (O'Dwyer & Unerman, 2020). Several auditability challenges are identified in the context of the novel TCFD framework as "many assumptions will be unverifiable and/or debatable and assurors will need to find a way of dealing with this lack of auditability" (O'Dwyer & Unerman, 2020). These include the development of procedures enabling a statement on future outcomes, possible and desired levels of assurance and the role of auditors rendering TCFD auditable in Power's (1996) sense and resulting implications for their independence (O'Dwyer and Unerman, 2020). Hence, there is a need to examine the processes that auditors apply to provide assurance on TCFD disclosures. One of the central challenges identified is the scenario analysis, posing a hurdle for disclosures as well as assurance.

O'Dwyer and Unerman (2020) problematize the assurance of the scenario analysis and its underlying assumptions and assurance levels that could reasonably be provided. For both corporates and the financial market, the scenario analysis seems to be a highly relevant and challenging aspect of the framework (TCFD, 2019). The TCFD acknowledges that the scenario analysis is challenging for professionals given that the concept as such, and especially in the area of sustainability, is new in the corporate reporting landscape (O'Dwyer & Unerman, 2020). Its goal is to disclose the climate-related risk a company faces to its financial stakeholders. As described earlier, the scenario analysis introduces a new logic of quantifying future financial impacts on the reporting entity, which might be considered a key differentiating aspect to other frameworks (O'Dwyer & Unerman, 2020). These scenario analysis' specifics induce new challenges to the assurance and therefore require new ways of dealing "with this lack of auditability" (O'Dwyer & Unerman, 2020) and thus making it auditable (Power, 1996). As the scenario analysis intends to "promote more informed investment, credit, and insurance underwriting decisions" (TCFD, 2020c, p. 7), the relevance of assurance in "reassure[ing] the public and other interested parties that the interpretations are trustworthy" (Pentland 1993, p. 606) is arguably increasing. Capital providers' confidence can be increased through assurance, as stated by the Chair and CEO of the Australian Auditing and Assurance Standards Board: "in order to rebuild trust in organizations and society, this information must be seen to be credible. Independent assurance is an important element of these credibility-enhancing procedures" (WBCSD, 2019a, p. 4).

In other words, assurance represents a key function in transforming information from an untrustworthy state into a form that the public can find credible and thus comfortable (Pentland, 1993). To fulfill this function in society, however, auditors themselves need to gain sufficient comfort in the audit process (Pentland, 1993). This implies that auditors need to relieve discomfort in order to feel comfortable enough to provide an assurance statement (Carrington & Catasús, 2007). The interpretation offered here is that "comfort" is an integral part of auditing, and by addressing discomforts associated with the TCFD scenario analysis, this novel reporting field can be made auditable. While the TCFD is a relevant phenomenon in its own, its pre-mature stage also enables us to further develop our understanding of making things auditable (Power, 1996). Thus, by examining discomforts associated with the TCFD scenario analysis and how these are addressed, one can develop a better understanding of how auditability is constructed. Accordingly, the research question to be addressed is two-parted:

What are professionals' discomforts with the TCFD scenario analysis? And how do they address discomforts to make the scenario analysis auditable?

2.2. The production of comfort with(in) assurance

> How would it feel to own stock in a corporation whose annual financial statements were never audited? The reader who seriously engages in this thought experiment will no doubt feel a distinct sense of discomfort. The relative absence of this feeling in the normal conduct of affairs demonstrates how effectively the audit ritual has succeeded in transforming chaos into order. (Pentland, 1993, p. 606)

By challenging the reader to envisage what business would be like in the absence of auditing, Pentland (1993) effectively underlines the fundamental role of auditors in offering a sense of order and safety. While accounting is described as "institutionalized means of making sense out of the world" by constructing "a stylized interpretation of the fiscal health of a corporation", auditing is said to play a "more specialized role in the economic order" as auditors "reassure the public and other interested parties that the interpretations are trustworthy" (Pentland, 1993, p. 606). Drawing upon agency theory (Eisenhardt, 1989), Pentland (1993) argues that auditors serve the investors, who are the principals, by monitoring the activities of management, who are the agents. In fact, it is suggested that "auditors give "comfort" to people who are vulnerable to erroneous, self-interested, and possibly fraudulent statements from corporate management" (Pentland, 1993, p. 606). Based on field observations of two audit engagements, Pentland (1993) develops our understanding of comfort through his finding that "micro-interactions within the engagement team create comfort, which makes the macro-order of capital markets and other financial institutions possible" (Pentland, 1993, p. 606). The links between micro-stage and macro-stage are further described by Power's (1995, p. 317) notion of auditor expertise as "a product of more primitive social processes" and added on by Fischer (1996), who finds that the unknowability of audit quality means that auditor consensus is essential before something can be seen as legitimate knowledge. In Fischer's (1996) study, cost efficiencies of a new audit approach could not be realized until it was accepted by auditors as providing sufficient evidence, which suggests that techniques must be seen as legitimate before they can be efficient, rather than the other way around. The interplay indicates that auditing is a process of providing comfort at the micro level, which in turn enables its macro systemic function of legitimation, thereby impacting micro-stage interactions. When the macro-order of capital markets and other financial institutions is depending on the production of comfort through micro-interactions, it is important to understand how comfort is created on the micro-stage. To be able to address this question, one needs to understand how the comfort of individuals may be defined and how the individual's perception of comfort may evolve due to changing circumstances.

Carrington and Catasús' (2007) comfort framework allows us to shed light on this micro-stage by investigating individual actors' perception of (dis-)comfort. Their comfort framework builds on prior research of Pentland (1993) and Kolcaba & Kolcaba (1991). In the former, auditing is theorized as a ritual of producing comfort through micro-level

interactions. The latter originally developed the comfort framework with its three "senses" of comfort within the area of nursing. By adopting the framework to the field of auditing, Carrington and Catasús (2007, p. 36) respond to Power's (1995, 1999) call for a deeper understanding of the processes that lead to comfort and show "how comfort is constructed, defined and changed".

- The state sense of comfort relates to a situation in which all relevant actors are convinced and when the time has come to "give a (positive) opinion" (Carrington & Catasús, 2007, p. 38). While the state sense acknowledges that it is not possible to reach "100% assurance" (Carrington & Catasús, 2007, p. 38), and discomforts remain and are accepted even at the very end of an assurance engagement, the auditors need to find a situation where they are comfortable enough to make an audit statement.
- The relief sense of comfort refers to "the acts that move the auditor from a state of uncomfort to a state of comfort" (Carrington & Catasús, 2007, p. 38), where the state of uncomfort is portrayed as a situation where a person experiences too many discomforts. To achieve relief, the auditors "take measures to mitigate any discomforts and incrementally gain comfort along the way"(Jenkins et al., 2018, p. 1787). These acts of relief can be regarded as "obligatory to perform" (Carrington & Catasús, 2007, p. 38).
- The renewal sense of comfort "relates to new definitions of what is an acceptable audit" (Carrington & Catasús, 2007, p. 38), meaning that an audit approach that led to auditor's comfort at one point in time might not be comfortable enough under changed circumstances. In other words, comfort as renewal relates to a "change in the definition that determines the state of comfort" (Carrington & Catasús, 2007, p. 39).

2.3. The comfort framework as theoretical lens

The research question of how auditability of the TCFD scenario analysis is created on the micro-stage is crafted in light of a rapidly developing empirical context, which gives rise to the need to revisit prior research on the construction of auditability. The notion of (dis-)comfort allows us to uncover challenges of individual actors on the micro-stage, which in turn might give additional insights on the macro-stage order. As argued by Pentland (1993), the macro-order of capital markets and other financial institutions depends on the production of comfort through activities on the micro-stage. To uncover and interpret these micro-stage activities, it is important to understand individual actors' perception of comfort and how this perception may evolve due to changing circumstances.

Drawing upon the research of Carrington & Catasús (2007), this paper aims to leverage the comfort framework to gain a deeper understanding of how auditability is constructed

in the context of the novel TCFD framework. More specifically, the comfort framework provides a theoretical lens, supporting the analysis of empirical data of professionals' perceptions of (dis-)comfort, which is a fundamental part of auditing as discussed in prior research (e.g. Carrington & Catasús, 2007; Pentland, 1993; Power, 1996). As argued by Carrington and Catasús (2007, p. 38), auditors need to be comfortable enough to "give a (positive) opinion". Hence, the process of gaining comfort (by inter alia addressing discomforts) can be seen as central for the ability to make an audit statement.

As outlined in the previous section, the comfort framework comprises three "senses" of comfort. Neither Kolcaba and Kolcaba (1991) nor Carrington and Catasús (2007) argue for a specific order of the senses. While they start with the relief sense, followed by state sense and renewal sense, this paper presents the framework as (1) state sense, (2) relief sense, and (3) renewal sense. For this paper, this has merely pedagogical reasons, as the state sense offers the possibility to introduce the reader to observations which support the empirical storyline. Further, while Carrington and Catasús (2007) utilized the comfort framework for the purpose of uncovering (dis-)comfort of auditors only, this paper broadens the focus by investigating professionals involved in the audit process. This focus, however, is still very centralized around the perception of auditors' (dis-)comforts.

3.   Method

This chapter describes the research methodology. The first section motivates the research design and the utilization of the interviewee groups. The second section presents the process of data collection and an overview of the different interviewees. The third section outlines the iterative process of data analysis.

3.1.   Research design

As this study aims to uncover professionals' discomforts with the TCFD scenario analysis and how the actors address discomforts to make the scenario analysis auditable, a qualitative research approach has been selected. The qualitative approach facilitates the paper's endeavor to uncover processes and activities of the professionals involved on the micro-stage (see for example Cooper & Morgan, 2008; Edmondson & Mcmanus, 2007; Gephart, 2004). The study focuses on the individual level of the participants and by that aims to uncover the micro-stage activities that create auditability. Earlier examples include but are not limited to Pentland (1993), O'Dwyer (2011) and Canning et al. (2019). Carrington and Catasús' (2007) comfort framework provides a suitable theoretical lens to analyze data on individual actors' activities gathered through a qualitative research approach.

The research design seeks to accommodate the perspectives of different professional groups who are directly or indirectly involved in the construction of auditability to understand the nuanced processes and complexities surrounding the construction of auditability. The three groups consist of practitioners of a financial institution (anonymized as "Alpha") that is leading in the implementation of the TCFD's recommendations, sustainability consultants and Big Four auditors. Ideally, a research design that accommodates a certain reporting entity would also involve the individuals from external professional services firms, working with this entity. This, however, induces an inherent conflict due to the highly valued confidentiality standards of the work of professional services firms, especially when focusing on uncomfortable aspects. By talking about clients more generally and in anonymity, the interviewees are able to give concrete examples of their daily work without breaking their confidentiality agreements. Further, considering the novelty of the framework, experts in any single firm are rare. Motivated by these two factors, the paper, therefore, sought out a more dispersed interviewee base.

As the TCFD framework explicitly focuses on the financial sector in the current phase of adoption (TCFD, 2020c), it was essential to study a firm from this sector. While being headquartered in the Nordic region, Alpha's business activities have a global reach. As a front runner in the implementation of TCFD's recommendations in general and the scenario analysis in specific, Alpha was identified as an appropriate case company for the

purposes of this study. In fact, Alpha has worked with climate-related risks and opportunities for several years and is one of the few examples of a financial institution that managed to disclose a quantified scenario analysis and obtained reasonable assurance on their sustainability report including TCFD. Other corporate initiatives that have recently taken place include the decentralization of the sustainability function to further incorporate sustainability into the daily decision-making processes of the organization as a whole. Furthermore, sustainability aspects have been incorporated into the generic risk assessment process. Nevertheless, the main responsibility of the sustainability-related work remains with the Head of Sustainability who has a leading role in the development of the firm's TCFD related work. Additional professionals, who are advancing Alpha's work with TCFD, include but are not limited to the Head of Internal Control, Head of External Reporting, as well as multiple experts in the risk management department.

In many cases of external changes, so too the introduction of the new TCFD framework leads to emerging consultancy offerings in that field. Given the work of these expert consultants in the implementation of the framework and the interplay of implementation and auditability (O'Dwyer & Unerman, 2020), they represent a valuable source of insights. The participating consultancies operate in the Nordics, are of small size and niched towards sustainability and offer advice on TCFD. While none of the consultancies offers sustainability assurance, their active work with their clients and involvement in enhancing disclosures can play an important role in rendering the TCFD reporting auditable. Further, their involvement in the study was beneficial in generating a more holistic perspective on the framework and allowed us to dwell deeper in the technical aspects of preparing disclosures.

The third interviewee group comprises the so-called Big Four, consisting of Deloitte, Ernst & Young, KPMG and PricewaterhouseCoopers. Besides assurance, which is their main business, these professional services firms provide a range of advisory services. The interviewees selected for the research project are working in the firms' respective sustainability divisions in the Nordics and range from Managers to Signing Partners. The interview questions were specifically targeted at the work conducted within assurance engagements only, regardless of potential interviewee experiences in advisory engagements. As these interviewees are highly relevant to understand how auditability is created on the micro-stage, their professional perspectives further enhance the quality and relevance of the data gathered for this study.

3.2. Data collection

A series of semi-structured interviews was carried out with Big Four professionals, expert consultants, as well as practitioners of a financial institution. All interviews were conducted virtually using video conferencing platforms. Table 1 details the data collection of the study. Semi-structured interviews empower the interviewee to steer the

interview's direction and grant the researcher the flexibility to ask follow-up questions in order to achieve an in-depth understanding (Bryman & Bell, 2015). The data gathered through the interviews was supplemented by documents from both the financial institution and auditors. In some instances, follow-up questions were answered via e-mail.

Table 1. Interviewee details

Interview group	Interviewee	Date of interview	Duration (minutes)
Big Four			
1	Auditor A (Partner)	May 2020	55
		Nov 2020	60
2	Auditor B (Director)	Sep 2020	60
3	Auditor C (Partner)	Oct 2020	60
4	Auditor D (Manager)	Oct 2020	60
4	Auditor E (Director)	Oct 2020	60
4	Auditor F (Manager)	Nov 2020	65
Financial institution (Alpha)			
	Head of Sustainability	Sep 2020	60
	Head of Internal Control	Sep 2020	60
	Risk Analyst	Oct 2020	55
	Risk Analyst	Oct 2020	55
	Head of External Reporting	Oct 2020	60
Sustainability consultancy			
1	Consultant A	Jun 2020	60
1	Consultant B	Sep 2020	65
2	Consultant C	Jun 2020	60
3	Consultant D	Oct 2020	60
4	Consultant E	Oct 2020	60
4	Consultant F	Oct 2020	60

At the beginning of each meeting, permission was asked to record the interview. It was explained that the recording would only be used for the purpose of transcribing the interview, and the interviewee's personal identity and the firm's name would be anonymized in the research paper. The authors' commitment to the confidentiality of the interviewee perspective was further accentuated through the use of a formal consent form to participation in the study, which was also communicated at the beginning of each interview. These interviews lasted approximately 60 minutes. Most of the interviews took place with both researchers present and were carried out in English. In cases where the interview was conducted by one researcher, it was carried out in Swedish as this was the native language of the meeting participants in those instances. All interviews were recorded with a mobile device and subsequently transcribed, either by the authors themselves or an external agency. In the limited number of cases where the interview was

carried out in Swedish, the transcript was translated to English by one of the authors. Upon Auditor C's request, the relevant quotes used in the empirical analysis were smoothened to facilitate readability, without changing the meaning of the statements.

Contact with all Big Four firms was established through Partners, Directors and Managers known professionally to other researchers in the authors' network. Following a request to study sustainability assurance in one of the Big Four firms ("Big Four 1"), an initial interview was held between the authors and Auditor A in May 2020. At this stage of the study, the authors had yet to define the research focus within the field of sustainability assurance. Therefore, an open research approach was used by the authors in this meeting to identify specific areas within sustainability assurance to explore further. During the meeting, the Partner agreed to a follow-up meeting to discuss the refined research topic in the fall of 2020 when the research project would formally take place. Similarly, an open research approach was employed when interviewing the Director of Sustainability Assurance Services in Big Four 2. During this interview, the novel TCFD framework emerged as a pressing topic for audit professionals and their clients. The TCFD scenario analysis and its potential impact on the financial statements were highlighted as a particularly challenging aspect of the framework. Hence, the challenges of the TCFD in general and the scenario analysis in specific emerged inductively as the key empirical phenomenon of this paper.

Through their professional network, the authors established contact with the Head of Sustainability at the financial institution ("Alpha"), who in turn provided access to additional members of his organization. Interview data gathered from the financial institution was supplemented by internal documents to provide further support and context. Examples of such documentary evidence include the organization's risk management strategy as well as management presentations on the internal sustainability work and therein information on TCFD reporting. In some instances, these materials were discussed during interviews. Most of the documentary evidence mainly acted as support for a broader understanding of the organization's risk management. However, parts of the management presentations were directly related to TCFD and the development of their scenario analysis which provided a better understanding of the firm's TCFD related work.

Contact with expert sustainability consultants was initiated independently by the authors who gathered information and contact details of sustainability consultancy firms in the Nordic region by searching the web using keywords such as "sustainability reporting" in the initial phase and "TCFD" in the later phases of the study. Subsequently, all interviewees were selected and contacted by the authors through email requests. Of the eight contacted sustainability consultancies, four companies agreed to take part in the study.

3.3. Data analysis

The paper adopts the process of qualitative data analysis described by Huberman & Miles (1994), O'Dwyer (2004), and Irvine & Gaffikin (2006). The three subprocesses outlined are data reduction, data display and data interpretation. The analysis of the empirical data gathered through the interviews is of a highly iterative nature and involves the (re-)creation of empirical and theoretical categories. Consequently, the authors conducted the different steps iteratively and in a partially overlapping manner. For clarity purposes, however, the steps are described distinctively. The transcripts, notes and documents gathered as explained in the preceding section are the starting point for the analysis.

The first step (data reduction) requires the development of core themes. To accomplish this, the authors re-read the transcripts, notes and documents and identified core empirical themes. Following Huberman & Miles (1994), the authors developed an intuitive coding scheme for each theme. As the core themes emerged, the interview guides were re-developed and narrowed down to allow an in-depth exploration of the empirical field. As the scenario analysis inductively emerged as a central cause of discomfort and as a key differentiator to other sustainability frameworks, the interview guides were tailored towards this phenomenon. In a second step, the data was displayed in a matrix that included the core empirical themes horizontally and the interviewees vertically. Re-reading both the empirical data and domain literature led to an iterative revision of the matrix to finally involve theoretical concepts of comfort and the creation of auditability. The third step (interpretation) led to the intuitive emergence of comfort theory as the theoretical lens. The notion of comfort in relation to the creation of auditability became visible both explicitly and implicitly within the empirical findings. The method theory, utilized as theoretical lens, helped the authors to identify a nuanced perspective on and explanation of the empirical observations and the resulting theoretical implication for the domain of auditability. Thus, the paper utilizes the concept of domain and method theory (Lukka & Vinnari, 2014). The interpretation and subsequent arrival at the conclusions involved a back and forth analysis of the empirical data, condensed matrices (see Appendix B) and literature. The three steps of data reduction, data display and data interpretation iteratively continued and involved discussions among the authors as well as with peers and researchers of the authors' alma mater.

4.   Empirical Analysis

The empirical analysis is guided by Carrington & Catasús' (2007) comfort framework which is comprised of three "senses" of comfort, i.e. (1) state sense, (2) relief sense and (3) renewal sense. By leveraging the comfort framework, the following analysis aims to develop an understanding of how auditability is constructed on the micro-stage in the context of the novel TCFD framework and the scenario analysis in specific. The empirical themes developed during the data analysis can be viewed through more than one specific lens (sense of comfort), however, are placed where deemed most associated with by the authors.

4.1.   State sense of comfort

To be able to provide an audit statement, the auditors need to be comfortable enough with the information at hand. This situation can be reached when "sufficient efforts have been invested to give an opinion" (Carrington & Catasús, 2007, p. 38). Hence, the state sense of comfort determines what is deemed to be an acceptable audit and "acknowledges that auditing is not about reaching a 100% assurance of the audited number" (Carrington & Catasús, 2007, p. 38). In fact, "the auditing rationale is to accept some discomforts" (Carrington & Catasús, 2007, p. 38), which becomes apparent when examining how the TCFD scenario analysis is audited. While the scenario analysis is a central piece of the framework, TCFD (2020c, p. 34) acknowledges that companies "may need time internally to work through using scenario analysis and determining whether the results of such analyses warrant disclosure". Given that the scenario analysis is to function both as strategy tool and disclosure vehicle for investors and other stakeholders (TCFD, 2020c), it impacts the reporting entities in several core areas. The companies need to build up certain reporting capabilities, which if deficient, are a source of (acceptable) discomfort.

4.1.1.   Internal control systems

Internal control systems can be regarded as a central part of the internal and thus external reporting and finally auditing (Koo & Ki, 2020). Power (2007, p. 63) argues that internal controls rather functions as an extension of the risk management and impacts "every corner of organizational life". While internal control systems nowadays might reach across the whole organization, controls within the area of sustainability are still not as developed and integrated as in financial reporting (Liu, 2018).

> We do not use systems per se, we use Excel and other sorts of databases, it's not in scope of S[arbanes]OX[ley] controls [...] our control environment is that we are aware of the risks and we have segregation of duties for example, that is also in line with the TCFD report. It is not the trading department that performs these kind of stress-tests, it is the risk department [...] Our internal control system doesn't support the TCFD reporting, for now anyway. (Head of Internal Control)

This excerpt shows the distinction between the internal control systems for financial reporting (based on the Sarbanes-Oxley Act) and those for the TCFD disclosures. The data for sustainability disclosures is not recorded and aggregated in dedicated systems but rather in a generic spreadsheet program. While the Head of Internal Control emphasizes the regulatory differences and indicates the willingness to develop more sophisticated controls once "regulators or others see these as mandatory", the current status opens up areas of discomfort for the auditors.

> [Clients] are not always using that sophisticated systems for measurement, data collection and storing of the data on climate. If you have an IT system, there are rules and controls who can submit data, how you manage data rights, who will check, who will approve, how to consolidate? […] And these are the kind of controls that might not be in place, especially if the company does the reporting once or twice a year in Excel. (Auditor E)

Due to the flaws of companies' internal control systems for sustainability reporting data, it becomes more challenging for auditors to verify the process of data preparation. The sense of discomfort arising from the underdeveloped internal control systems is also reflected in the auditors' statements on the level of assurance that they are able to provide at the current stage. Reasonable assurance is the most common level of assurance provided for financial reporting. However, as explained by Auditor A: "Companies would [also] need internal controls and so on for these items that they report on, then we could move to reasonable assurance". In other words, the existing internal control systems are a source of discomfort and are currently not "stable enough to provide reasonable assurance" (Auditor B). The implications of the scope and level of assurance are discussed in further detail in section 4.2.1 Assurance coverage.

While auditors "just have to live with it [meaning the current status of internal control systems]" (Auditor A), they comfort themselves with a systematic approach that firstly identifies the relevant processes and secondly includes an analytical review. An analytical review is a structured breakdown of the key figures into their underlying drivers to identify potential inconsistencies for further investigation.

> It's analytical review that everything is based on. But we do need to understand the processes. So, the internal control environment [...] often the processes are broken somewhere [...] in terms of automatic, but there are other … manual handlings to ensure that it's working all the way up to the consolidation. And then we do an analytical review on the consolidated numbers and maybe we drill down if we find any major gaps. (Auditor D)

The deficiency of the internal control systems manifested in the manual work within spreadsheets and interrupted processes is a source of auditors' discomfort. Being aware of the deficits, the auditors have found a situation of acceptable discomfort.

4.1.2. Forward-looking data

In addition to the shortcomings of internal control systems, the TCFD scenario analysis' forward-looking nature gives rise to further discomfort for both practitioners and auditors. This temporal dimension of the data is adding to the complexity of the scenario analysis in specific. As metaphorically described by the Head of Internal Control at Alpha: "when you have worked a lot with financial reportings, you look into a mirror, now you look into a crystal ball". This temporal difference leads to discomforts driven by uncertainty when looking into this "crystal ball", where the result is - contrary to a mirror - not anticipated ex-ante. This consequently leads to discomforts also for the auditors when it comes to implications for the reports' auditability. Auditor E showcased his discomfort by stating that "it's almost impossible to audit the future". This phrase was reiterated by Auditor A in a separate interview. Compared to forward-looking disclosures within financial reporting such as those included in IFRS 9, the qualitative and broader nature of inputs is claimed to make it "much harder" within the area of sustainability (Auditor A). There are, however, some strategies to ensure acceptable comfort and auditability, as this section shows. Auditor C explains that the methodologies and data selection are investigated to uncover any inconsistencies.

> […] look into the methodologies that you have used if they seem consistent, and if the data you have used in order to provide your scenario or the forward-looking information [seem consistent], and that you could have a view on. Because that is something that has happened. [Then] it's for the company to present that this is forward-looking and the risks associated with the uncertainty and it is based on the following assumptions. […] Because it is important for the company to present for the readers so they could also form an opinion on whether this is true or a best guess at the moment. (Auditor C)

In that statement, another factor becomes visible: the transparency of clients' disclosures. Transparency was brought up by each of the Big Four interviewees as a means to deal with a suboptimal approach or data. The underlying rationale might be explained by the auditors' discomfort with the underlying forward-looking data and methods. The discomfort with the forward-looking data becomes acceptable if the clients' disclosures are sufficiently transparent. Consequently, the auditors push the clients to enhance the transparency of their reports.

> Going back to the ground or basics for reporting to be transparent on your thoughts when you picture the future. What are the background information you base your analysis on. And that is what we challenge our clients on: be transparent, be transparent. And then the reader, the analyst, the investor can at least understand how they thought or how they think about the future. (Auditor D)

In addition to looking for inconsistencies in the methods and pushing for increasing levels of transparency, the auditors also challenge the clients' assumptions when it comes to forward-looking data. Given the complexity of the task, the tolerance of discomfort is comparably high. Therefore, the auditors seem to only interfere once assumptions are perceived as clearly wrong.

We try to not to be too demanding for the companies in those parts. But if they are constantly thinking some things that are obviously incorrect, we question those kinds of statements. […] If they are truly wrong in their assumptions, surrounding a path forward, we would comment on that […] We have some companies describing those RCPs [scenarios] with a great temperature rise and saying that the political pressure will be low. Then we will try to challenge those companies in to: do you really think that Europe will let go of the CO2 emissions compliance issues still in a high-temperature future? (Auditor E)

This section has outlined sources of discomfort with the novel TCFD framework. The state sense of comfort illustrates that while discomforts with the status quo persist, clients and auditors can still find situations of sufficient comfort to provide disclosures and assurance. The next section investigates acts to actively relieve discomforts to enable a positive audit opinion.

4.2. Relief sense of comfort

The prior section has showcased two empirical themes of discomforts that are largely accepted, but to some extent also managed, to find a situation of sufficient comfort to provide an audit opinion. Not free from overlaps to the aforementioned themes, this section covers activities that aim to actively relieve discomforts. This encompasses activities related to assurance coverage, evidence collection and the application of financial audit methods, which are "obligatory to perform" (Carrington & Catasús, 2007, p. 38). Given the novel, yet impactful TCFD framework and the related challenges for practitioners to prepare and disclose the information, the need for auditor-client support is perceivably higher than in more mature areas such as financial audit. This theme uncovers how auditors can perform activities that are changing the clients' auditable environment and thus relieving discomforts while being attentive to implications for their independence.

4.2.1. Assurance coverage

As outlined by the auditors interviewed, there are two levels of assurance: reasonable and limited assurance. In the former "it would say that nothing is wrong", whereas in the latter "it would say that nothing has come to our attention that anything is wrong" (Auditor A). Further, Auditor D explains that limited assurance "focuses on what is materially not wrong" while reasonable assurance requires "substantive testing" with "samples from all units" to be able to provide a statement that nothing is wrong. Generally, reasonable assurance demands a more sophisticated control environment as demonstrated by the auditors' comments in the section about internal control systems. As this control environment is far less mature in sustainability reporting compared to the financial area, it is perhaps not surprising that "in 99 out of 100 cases, with a few exceptions it's limited assurance, it's not reasonable assurance" (Auditor C). While the control environment is a

major factor with regard to enabling reasonable assurance, it is not necessarily a determining factor, as "it's still possible to provide the assurance, but it would be more time consuming, because there are more angles to cover [and] would require a lot of time and a lot of effort from all parties [where] you end up in a cost-benefit analysis" (Auditor C). Providing limited assurance is a way to transparently disclose to the reader that the assurance level is reduced. Therefore, opting for limited assurance is part of what auditors do to relieve from discomforts arising from an immature control environment.

The actions related to the assurance coverage are more comprehensive than the decision of whether to provide reasonable or limited assurance. In fact, the inputs used to prepare the disclosures are also considered in the assurance coverage. The aforementioned forward-looking information - a central part of the TCFD scenario analysis - is in most cases excluded within the "assurance statement" (Auditor A) by using a "caveat" (Auditor C).

> In the audit profession and the branch organization, we haven't really yet seen how this is going to be performed. I believe that we need to look into, I shouldn't say new standards but new methods on what can we do and what can't we do. If you look at a lot of assurance statements, if that is what we are talking about, you will see that we are not looking at future-oriented information, that is taken away. And the whole idea with TCFD, basically is looking at future-oriented information and how that is impacted now and in the future. It's something we need to look into. I'm not afraid that the audit profession will fix this. (Auditor A)

Although forward-looking information is oftentimes excluded from the audit scope, there are exceptions as exemplified by Alpha where the sustainability report including the TCFD scenario analysis is covered by reasonable assurance. With regards to forward-looking information, the assurance statement explicitly states that the audit scope "consider[s] future events that are inherently uncertain" (Alpha Sustainability Report 2019).

The assurance coverage is also determined by decisions on both breadth and place of disclosures in the report. This is exemplified in the statements of Alpha's Head of Internal Control, who describes both aspects as major discussion points with the auditors.

> […] the only thing that was an obstacle was the question of how much to disclose [...] We wanted to disclose this much [shows arms wide open] and then we got this much [shows small space between two fingers]. (Head of Internal Control)

> Is it in the scope of the external auditors or not? Where to publish it in the annual report including in the notes where it would be in the scope of the auditors or somewhere in front of the report? So, we've had discussions over several years on how to include this kind of metric. Because, when it comes to metrics, external auditors have the discussion on where to place it in the annual report and therefore have a second opinion on it. (Head of Internal Control)

These statements show that especially in a new area, discussions with auditors on the coverage are both in-depth and of persistent nature. By reducing the coverage of disclosure, the biggest sources of discomforts can effectively be mitigated. Complimentarily, by shifting certain disclosures to other parts of the annual report, these fall out of scope as well and thus are perceived as less discomfortable.

4.2.2.   Evidence collection

Similar to internal control systems, which were described as unstable, the degree to which auditors can rely on documentation to evaluate information is found to be more challenging in sustainability vis-à-vis financial audit. Auditor A, who has a background in financial audit, depicts challenges and processes in relieving discomfort. While "financial auditors are used to being able to get whatever documents [and where] it's easy to follow in the system" (Auditor A), the same cannot be said for sustainability assurance. Hence, auditors "need to find other ways of ensuring that the documents and materials are good enough for us in order to make a statement" (Auditor A). Indeed, discomforts can be mitigated by adopting an alternative approach when collecting and reviewing documentation. As explained by Auditor A, issues of inadequate documentation from the auditee can in some instances be addressed by drilling down into externally provided data to gain comfort in the auditee's processes. Another method to collect evidence and thus relieve discomforts when evaluating qualitative information is to conduct "interviews, interviews, interviews [with the auditee]. And if they have any data that confirms what they say, we, of course, look at that" (Auditor D). These discussions with auditees, also referred to as "process interviews" (Auditor F), include but are not limited to questions aimed at understanding the underlying processes and scope of the analysis.

> We would ask the client to describe the process that lead to the outcome, to the numbers. So, we would want to understand the process, how is it done? What kind of instructions are there? Is it part of generic, let's say risk management process? […] from scenario analysis perspective, we could ask: what is in the scope? So they could say that it is encompassing the physical risk and transition risk, or it could be either one of them […] we want to understand whether the scope is relevant or whether something material is left out. So, that's really a qualitative process to understand and build up an understanding of what the data means and how it's comprised. (Auditor F)

These process interviews can, where applicable, also involve the sustainability consultants who have helped the auditee in preparing the report. Thus, in cases where the auditors' question become "too technical" (Consultant B) for the clients, the sustainability consultants can assist in the audit process by answering the auditors' questions. If it was known that the report was going to be audited, the sustainability consultant would also produce more detailed documentation of how the information had been prepared to facilitate the audit process. Thus, the documentation would include "more mass text as well, not only sources but also text, how we have done the calculations" (Consultant B).

In the case of Alpha, the scenario analysis' quantification of the financial impact was perceived to be the main hurdle in the audit process. As explained by the Head of Internal Control, challenges emerged "when we were talking about publishing figures". In line with the objectives of the TCFD scenario analysis, Alpha "want[ed] to publish a figure: how much will our [asset] portfolio be affected when we see through this crystal ball" (Head of Internal Control). Considering the novelty of this practice, the external auditor review comprised "a lot of discussions on what kind of figure to use, because there were no guidelines at that time" (Head of Internal Control). Thus, the question of how much they could disclose to the public represented "a hurdle with the external auditors because they wanted to assure the figure as well [which] is made up by not quite certain data" (Head of Internal Control). Nevertheless, the auditors managed to relieve enough discomforts to provide a positive opinion on the scenario analysis. An essential contribution to this outcome can be attributed to the role of documentation.

> [...] worked a lot with the methodologies to have it robust, to have it documented and also to have it reviewed within the organization before we let the auditor in […] And these are the sources we have used and being quite picky in the documentation to get a good document for the auditors to go through. So, when they saw that we have worked so much with the methodology, they could relax about it and then they could dig into the figures and see if they actually matched and could be assessed as viable. So, there was lots of work before we let in the auditors, to have everything documented beforehand. (Head of Internal Control)

As exemplified in this excerpt, the ability to provide carefully prepared documentation on the methodologies to calculate figures "made up by not quite certain data" helped the auditors to "relax about it" (Head of Internal Control). In other words, in the face of discomforting ambiguity, the provision of extensive documentation can help alleviate these discomforts and move auditors from a state of uncomfort to a state of comfort. In this regard, process interviews as well as rigorous documentation can function as evidence collection mechanisms, which in turn relieve the auditors' discomforts.

4.2.3. Application of financial audit methods

The rationale for applying financial audit methods into other areas such as sustainability is that "those processes are fairly mature, it's been done for quite some time and it's working fairly well" (Auditor C). Auditor A even states: "I would not say financial audit methods, because this is also non-financial. It is assurance methods, if I put it that way". Further, Auditor A asserts that they are "just assurance methods" which are generally applicable "because that is how you do things". Nonetheless, the auditors still recognize that the assurance methods originate from financial audit and see further reasons to draw upon financial audit methodologies when addressing the scenario analysis due to its proximity to the financial domain.

> The scenario part will likely be even more comparable to the audit of other financial areas that include significant financial assumptions and estimates. […] When it comes to the actual review of information, I would say that we try to replicate as much as possible from how we address financial information [...] looking at internal controls in relation to the process, performing analytical reviews that you compare to previous periods or to other relatable metrices [...] and then obviously substantive testing, where you pressure test the process by drilling down into data and see whether it's accurate data that is coming through the reporting. I would say those two are the key aspects if you go into detail what of you actually test. (Auditor C)

Hence, translating well-established financial audit methodologies to address the uncertainty of assumptions and estimates in the scenario analysis is seen as an essential part of the acts to relieve discomfort. Furthermore, leveraging the expertise of "specialists" in "financial modeling" (Auditor C) is advocated to evaluate the process undertaken by the auditee in developing the scenario analysis, thus stressing the commensurability of scenario analysis and financial disclosures.

> We would need to apply the same sort of audit procedures that we do in other areas that are subject to significant estimates, and judgements and assumptions. So, that would likely be a specialist review to understand the process, how they control that the assumptions used are valid and well-controlled by the company etc. [...] And if you do scenario analysis by the book and in a sophisticated way, that would need to be in part related to financial modeling. (Auditor C)

Generally, the application of financial audit methods is seen as a valuable tool to relieve discomforts with assuring new areas in general and the new TCFD framework in specific as its scenario analysis is financializing sustainability disclosures by "assess[ing] how the company's business will be impacted by climate change, that is financially impacted" (Consultant C). Intuitively, one would assume that the closer the novel reporting processes and disclosure results are to the legacy (financial) processes and disclosures, the easier the application of audit methods would be. The scenario analysis disclosures, however, appear to be more challenging to assure *because* of their resemblance to financial disclosures. Using "exact figure[s]" as opposed to "qualitative assessment[s]" (Auditor C) could therefore intensify rather than relieve auditors' discomforts.

> Some companies are, instead of going all the way and do this more sophisticated scenario analysis, they do a more qualitative approach: not that much data and more on a gut feeling […] that is not as precise and as sophisticated […] as long as you are clear on what you are presenting, that this is a qualitative assessment based on management views: to me, at least, it would be easier to audit, because then it is more about reviewing whether it is consistent in the way you have done it and whether you have support for your assumptions. But if you go all the way with data and [...] present it more as a real view or exact figure, or a very, very thought through and correct information piece, then obviously it would require much more audit work, because then it's a stronger statement. (Auditor C)

The challenges of auditing a qualitative vis-à-vis quantitative scenario analysis are further explained by Auditor A who distinguishes between the technical ability to audit the

information and the perceived risk associated with providing the assurance statement. In fact, it is argued that it is easier to audit a more sophisticated, quantitative scenario analysis with a "precise number" as it needs to be backed up by scientific evidence unlike a qualitative assessment. Nevertheless, when considering the risk of "put[ting] your name on it", the level of discomfort is heightened for the auditor as "you would have hard facts showing" (Auditor A).

> If you have a precise number, that number must have come from somewhere and is backed up. And it's easier in that sense to assure than if you have vague statements "we believe it is going to be somewhere between this and this", where did you get this number from? If it is backed up by scientific evidence and you are getting a number, that's easier. Having said that, putting out that number, and we are assuring it and we are putting a risk on it. And if it is much broader, we believe somewhere between 5 and 10%, yes, I mean, it's easier to put your name on it, but it's not easier to assure. (Auditor A)

While being expressed in slightly different manners, both auditors perceive further challenges associated with assuring more sophisticated, quantitative forms of the scenario analysis. Hence, the increased integration of sustainability and financial aspects in TCFD reporting does lend support to auditors in relieving discomforts in the audit process. Nevertheless, the resemblance to the quantified nature of financial reporting could also induce the opposite effect on auditors' perceived comfort as a "precise number" inherits a higher level of risk and the assurance statement implies that "we [,the auditors,] are taking over some of that risk" (Auditor A).

4.2.4. Client support

Whilst the Big Four provide both advisory and assurance, none of the sustainability consultancies provide assurance. This is driven by the perception that the reporting entities "like to have the same auditor for financial reporting and sustainability reporting" (Consultant A). Moreover, local regulation implies that "it is the auditor that has to assure that the sustainability report has been prepared, although they are not required to audit the content of the report and how it has been prepared [...] and therefore it becomes more natural for the auditor to also provide assurance for those companies" (Consultant C). This section does not focus on advisory offered by either specialized sustainability consultants, or the advisory divisions of the Big Four Auditors, but on the guidance that clients receive within the assurance engagement.

In the context of TCFD, challenges of adopting the framework and related client requests for support are repeated during the interviews. The Head of External Reporting at Alpha describes the TCFD as being "more open for interpretation, more about how you think you fit into a context, or what risks you think you are facing" in comparison to financial reporting in which case "there is a right answer to most things, or documentation, reports [...] you have done it in a certain way for many, many years [...] and there are clear

regulations". The perception of ambiguity and the increased need for guidance in the context of TCFD are further emphasized by the Head of Internal Control as there are not "any benchmarks or standards" and "there is no data available, there is no knowledge available and there are no tools available". As a front runner in TCFD related work, Alpha experience challenges in understanding what and how to report.

> […] I think we have had really good discussions with our external auditors and they helped us in the way they could have helped us. And also they used their international network to benchmark some sort of benchmark that could help. But I think there will be continuous discussion with the external auditors on how to handle this kind of information and get it in a way that is possible to the external auditors to evaluate it. (Head of Internal Control)

Benchmarking is seen as a "very good tool, both for us [the auditors] and the clients [as] if there is a risk for company X in the same area as you are, it is probably a risk for company Y" (Auditor A). The auditors, however, cannot "tak[e] any decision" (Auditor A) to not undermine their independence. This is repeatedly stressed by Big Four auditors who claim to be "truly independent" (Auditor A) and that "it is extremely important to show the integrity of the auditor" (Auditor B). Nevertheless, it is acknowledged that in emerging sustainability audit spaces, the need to support clients could be more pronounced than in financial audit engagements.

> […] as it's so new, and it's much more a moving target […] there are more discussions. "So, how should we record it, if we can't do it like this how should we do it for you to be happy?" [...] And then you can question is that … is this an advisory piece where we are not independent as we told him how to do it and that is a thin line you need to walk [...] maybe in sustainability now these questions are more frequent than they are in financial statement audits. (Auditor A)

This balancing act is particularly evident in auditor-client dialogues concerning the scenario analysis. In response to the clients' increased need for guidance, discussions are held where clients ask questions such as "can we release this information, what does it mean in financial terms and can we even say what it means in qualitative terms and where do the impacts occur" (Auditor F). Also related to the internal control systems, the auditor would "explain what does it take and what are the steps that are needed to develop the work" (Auditor F). To guide the client while not breaching independence, auditors can iteratively "check whether this is already good enough and in that way support them through this continuous improvement to build up the [reporting] capability [without] do[ing] a decision on behalf of the client". (Auditor F).

This section has shed further light on the interactions of auditors and their clients. It has illustrated how auditors support clients and improve the clients' auditable environment while being very attentive to possible implications for their independence. The following section investigates the professionals' (dis-)comfort under changing circumstances.

4.3.   Renewal sense of comfort

The renewal sense of comfort deals with new definitions of what is deemed to be an acceptable audit. In this sense, Carrington & Catasús (2007, p. 50) highlight the role of "exogenous discomforts [that] can ignite a renewal of the audits". These can change the "point where the seniors get comfortable […] over time" (Carrington & Catasús, 2007, p. 51). Carrington & Catasús (2007) illustrate this with the metaphor of a bar that needs to be jumped over by the auditor in order to achieve a state of comfort. Renewal of comfort changes the height of the bar and thus the level of comfort that needs to be attained. Carrington & Catasús (2007, p. 50) state that the "most prominent actors for changing the level where comfort is achieved come from outside the audit firm" and refer to laws, regulation and expectations of the public society.

The exogenously infused changes explained at the outset of this section become apparent when all three interview groups state that their current and future activities are related to external expectations and pressures. While investors play a dominant role in these reflections, the role of regulatory and supervisory bodies also seem to be highly relevant.

> […] we also need to educate ourselves and our colleagues that are into this. What does that really mean in the future? How do you audit it? […] That being said, it depends a little bit on the pressure of the investors, from regulation, from stakeholders more or less, how far they push this in the agenda [...]. (Auditor D)

A significant discomfort would be created by linking the TCFD scenario analysis' outcome to the financial statements of the reporting entity. In 2019, the IASB provided an overview demonstrating that several IFRS standards and respective concepts such as impairments and useful life should – if applied consistently – be impacted by climate-related risks (Anderson, 2019). While several Big Four auditors see this as the underlying idea of the TCFD (Auditors B and C), Auditor B sees challenges of realization without further regulation since "no company would really volunteer to devalue its assets" (Auditor B). This leads to questions on "what is the obligation to report on risks and how should you incorporate these risks in the value of your assets? Because there is a direct relation" (Auditor B). It would further invoke questions about the reporting capabilities given the formulated gap between financial and sustainability reporting. A direct link between the TCFD's disclosures and the financial statements implies a stronger statement and thus the information would need to be even more certain, as explained by Auditor C.

> The TCFD wanted to end up in the Financial Statements obviously, pricing in the risks of climate change in the balance sheet for example […] when it hits the financial books, then it gets very, very tangible. And I guess that's one of the reasons that TCFD wanted that. Because then it gets real in some respect. Then you need to be really certain on the information that you actually put in there. And I think that is, due to the challenges that we discussed, companies don't feel all that comfortable in that respect, with a few exceptions. (Auditor C)

While the consequences of an integration of TCFD disclosures into the financial statements may be considered speculative since these changes have not (yet) occurred, the importance of external actors for disclosure and assurance practices is also observable in other discussions. For instance, the investor-centric perspective of TCFD and practitioners' fear of investor (over-)reaction to the scenario analysis' disclosures emerged as a recurring topic. As stated by the Head of Sustainability, "there is a big risk, reputational risk, when you go out and tell the story and people sort of just interpret the figures just as they wish."

The practitioners' fear of investor misinterpretation is largely driven by the lack of clear guidance and standardized scenarios, which has induced diverging approaches among industry peers. While the lack of standardization could also render the audit process more challenging (Auditor C), it is primarily a source of discomfort for practitioners as illustrated in the Head of Internal Control's statement.

> It could be the case […] that we are having another crystal ball than the other [financial institutions] have and we came up with a figure that impacts our balance sheet in a huge way and other [financial] institutions will say: no, it will not affect us in that way. And then our investors will react in a way that we are not happy with. We do not want them to react […]. (Head of Internal Control)

> […] if our supervisory will have the same scenarios. So, if [the supervisors] would come up with scenarios and also guidance that will make this challenge comparable between the [financial] institutions, then I think, we will be able to disclose more information as well. (Head of Internal Control)

This section has explored the role of external actors on the professionals' perception of (dis-)comforts. It has re-emphasized the implications of the investor-centric nature of the TCFD framework, but also the role of other external actors such as regulators and implications of (increased) standardization on assurance and disclosure practices.

5. Discussion

The empirical analysis guided by the comfort framework (Carrington & Catasús, 2007) unveils professionals' discomforts associated with the TCFD scenario analysis. The interpretation offered in this paper is that "comfort" is an integral part of auditing, and by addressing discomforts associated with the TCFD scenario analysis, this novel reporting field can be made auditable. While the TCFD is a relevant phenomenon on its own, its pre-mature stage also enables us to further develop our understanding of making (new) things auditable (Power, 1996). Therefore, the following discussion interprets the empirical findings in light of Power's (1996) theorization of making things auditable, which comprises (1) creation of auditable environments and (2) negotiation of audit knowledge. The former suggests that the system of auditing makes itself possible by actively creating the external organizational environment in which it operates and indicates that auditors actively change their clients (Andon et al., 2015; O'Dwyer, 2011; Power, 1996). The latter implies that the knowledge base of auditing must be institutionalized before the audit procedure can be applied by individual auditors (Fischer, 1996; Power, 1996). To facilitate the discussion, the section is divided into the two pillars of Power's (1996) theorization on making things auditable, followed by reflections on marketization implications for disclosures and assurance.

5.1. Creation of auditable environments

Considering the novelty of the TCFD framework in general and the climate scenario analysis in specific, suboptimal reporting capabilities are perhaps not surprising. Internal control systems for sustainability data appear to be less mature than in the financial reporting domain, exemplified by the usage of manual spreadsheets instead of comprehensive and more sophisticated IT systems. This is also visible in prior studies such as O'Dwyer (2011), who shows the discrepancy between financial and sustainability reporting environments and the associated discomforts for the auditors. The current status of control systems seems to limit the auditors' possibilities of performing indirect verifications known as "control of control" (Power, 1994, p. 15). Therefore, whilst the "control of control" has enabled auditors to enter new audit areas (Power, 1994, 1997), it is the very same thing that seems difficult to achieve within these new areas, given the typically underdeveloped control environment. Consequently, some imperfections or discomforts are accepted, expressed in Auditor A's statement: "I think we just have to live with it", which embodies Power's (2003, p. 387) notion of the "art of the possible". This notion becomes very tangible when considering the assurance coverage. Shifting disclosures to parts of the report where the auditors' responsibility is scaled down, reducing the disclosure scope or lowering the level of assurance are ways to create auditability without actively changing the client.

Besides considerations related to assurance coverage, the empirical analysis uncovers some actions of creating auditability within the audit environment. In this suboptimal control environment, auditors perform evidence collection procedures (such as reviewing documentation and process interviews) and analytical reviews to become comfortable enough to issue an audit statement. These methods, "like any technique, demand the environments in which they can be perceived to succeed; problems and their technical solutions are tightly coupled" (Pinch & Bijker, 1987, p. 30; as cited by Power, 1996, p. 295). So, while there are these actions that are performed "within" the audit environment, there are also actions performed "with" the audit environment, embodied in auditors' attempts to improve clients' auditability. By providing benchmarks and iteratively guiding clients to improve the control environment and thus disclosures, the empirics display a "dialectical" (Radcliffe, 1999, p. 357) relationship between auditors and the auditable environment. The reporting entity also shows attentiveness to the auditors' requirements to enable the assurance by considering such requirements when designing their processes. This points to the importance of rendering the audit process possible by aligning how the information is prepared with how the audit process is conducted. The auditors, in turn, provide information on what would be necessary to develop the control systems and thus improve or even enable disclosures. In this instance, this indicates that the control and disclosure processes "have been created with a view to making the organization auditable [rather than] pre-existing the audit process" as questioned by Power (1996, p. 295).

These activities performed "with" the auditable environment, whereby auditors' actively change the external organizational environment in which they operate, might have implications for auditors' independence. As observed by O'Dwyer (2011), the auditors were very attentive to these implications throughout all interviews and discussed methods to guide the clients without compromising their independence. That being said, both the practitioners and the auditors referred to the novelty and ambiguity of the disclosure field where it is seen as natural that "these questions are more frequent than they are in financial statement audits" (Auditor A). This again exemplifies the "need to change clients" (O'Dwyer, 2011, p. 1261) within assurance engagements in a new area. As argued by Andon et al. (2015, p. 1412), this might be explained by the user-focused reporting in which "a natural advisory element is necessary to allow companies to develop appropriate systems and procedures to facilitate the creation of auditable environments". Furthermore, Andon et al. (2015, p. 1412) argue that in new assurance domains, such as sustainability assurance, users may be less concerned about auditors' independence "when this advice is seen to enhance the quality (relevance and reliability) of the information on which they seek to rely". In the context of the highly user-centric TCFD reporting, the perceived necessity to help companies develop appropriate reporting capabilities, the (ongoing) consensus building around the notion of independence seems to be very visible and particularly relevant. This exemplifies the fluid nature of the concept of independence in new audit spaces (Andon et al., 2015).

As part of the creation of auditable environments, (non)-standardization emerged as a source of discomfort, mainly for the reporting entity. The practitioners demand increased standardization and firmer guidance on scenarios and see it as a major disclosure impediment. This illustrates that the aspiration of standardization goes beyond the widely debated harmonization of reporting standards and frameworks (see O'Dwyer & Unerman, 2020) to also include disclosure inputs. In this regard, practitioners assert that standardized inputs (in form of scenarios) would enable them to "disclose more" (Head of Internal Control). Using the same "crystal ball" (Head of Internal Control) as industry peers to look into the future is perceived to mitigate the risk of investor misinterpretation. From the auditors' perspective, increased standardization would also ease the audit process. While the question of whether climate scenarios should be standardized is debated (I4CE, 2020; IIGCC, 2019; O'Dwyer & Unerman, 2020), the lack of standardized inputs (scenarios) can be a major source of discomfort for practitioners, finally impacting both implementation and auditability of disclosures.

To support the creation of auditable environments, sustainability consultants can have an *active* role in micro-stage activities aimed at improving disclosures. However, their role within the negotiation of audit knowledge might best be described as *passive* as none of the interviewed consultancies offers assurance services or is actively involved in overarching branch organizations. Consequently, our study suggests that sustainability consultants might not be seen as part of the "relevant social groups" who determine what counts as audit knowledge by taking a stance on whether a problem can be considered as solved (Pinch & Bijker, 1987, p. 44; as cited by Power, 1996, p. 295). Arguably, the consultants' passive role in the negotiation of audit knowledge leaves more room to the voice of auditors, but also regulators and investors. These findings might be specific for the research context since local legislation requires the auditor to state that a sustainability report has been prepared and clients prefer to engage the same auditor for this mandatory statement and the voluntary assurance of the content of the report. Given this outset, the paper does not contrast the groups as two different (accounting and non-accounting) providers of sustainability assurance as done in prior literature (see e.g. Channuntapipat et al., 2020; Martínez-Ferrero & García-Sánchez, 2018; Simnett et al., 2009). Rather, sustainability consultants are seen as a group of actors on the micro-stage who contribute to the creation of auditable environments by inter alia providing documentation to facilitate the audit process. In regard to the negotiated nature of audit knowledge (Fischer, 1996; Power, 1996), the findings support our understanding of how audit knowledge is negotiated by shedding light on who is – or who is not – involved in the negotiation of what counts as audit knowledge. The question of how audit knowledge is negotiated in the context of TCFD is discussed in further detail in the following section.

5.2.   Negotiation of audit knowledge

The application of financial audit methods in the area of sustainability audit is rationalized with statements that "those processes are fairly mature, it's been done for quite some time and it's working fairly well" (Auditor C) or simply "because that is how you do things" (Auditor A). The auditors' perceptions point to the institutionalization of these procedures and techniques as constituting reliable audit knowledge, which Power (1996, p. 294) claims is a product of "processes of closure which render the knowledge acceptable and stable". What is perhaps even more intriguing is that these procedures and techniques, which originate from financial audit, are not necessarily perceived to be financial audit methods per se but rather generally acceptable audit methods. One auditor expresses that they are "just assurance methods" (Auditor A) that are generally applicable, thus supporting the notion of "fact building" as theorized by Latour (1987, p. 104). Elaborating on this notion, Power (1996, p. 309) argues that "once facts are "built" the context of their construction is effaced and one is left with practitioner common sense and routine practice". Thereby, these "facts" become stabilized as constituting reliable audit knowledge at the institutional level which in turn impacts activities and perceptions on the micro-stage. Although some of the paper's findings indicate a progressed fact building process within the sustainability audit realm, the knowledge negotiation process is visibly ongoing in many other findings. The next paragraphs thus investigate the TCFD scenario analysis' implications by first examining forward-looking data and second the quantification of disclosures.

The forward-looking nature of the scenario analysis appears to challenge the audit knowledge base, as explained by Auditor A: "in the audit profession and the branch organization, we haven't really yet seen how this is going to be performed. I believe that we need to look into, I shouldn't say new standards but new methods on what can we do and what can't we do". In other words, the forward-looking nature of the TCFD scenario analysis gives rise to the need for a re-negotiation of audit knowledge and thereby challenges the perseverance of current assurance methods in use. The challenges of forward-looking information may also be encountered in other reporting contexts, such as expected credit losses under IFRS 9. In terms of financial reporting, however, both the control environment and the inputs are different in terms of maturity and perceived reliability. Further, a common way of excluding forward-looking information from the audit scope is to use a caveat in the assurance statement. However, doing so for the assurance of TCFD reporting can be problematized since "the whole idea with TCFD, basically is looking at future-oriented information and how that is impacted now and in the future" (Auditor A). As a caveat of such an integral part would arguably undermine the value and relevance of assurance, the question of how to address forward-looking information is "something we [the audit profession] need to look into" (Auditor A). Thus, the perseverance of existing audit knowledge is being challenged as new processes of

"fact building" (Latour, 1987, p. 104) are set in motion by the TCFD scenario analysis, whereby new audit techniques may be created (Power, 1996).

However, despite the auditors' statements that they cannot "audit the future" (Auditors A, E), one of these two related audit firms has provided reasonable assurance for Alpha's sustainability report including forward-looking and quantified disclosures of the TCFD scenario analysis. In contrast to previously mentioned caveats that exclude forward-looking information from the audit scope, the assurance statement for Alpha explicitly states that the audit scope "consider[s] future events that are inherently uncertain" (Alpha Sustainability Report 2019). This assurance statement is an example where auditability on the level of practice is achieved before audit knowledge has been institutionalized (Power, 1996). While any generalization based on a single case is problematic, our findings suggest that micro-stage audit activities do not necessarily require an advanced negotiation of audit knowledge and can thus function to some extent before audit knowledge has been institutionalized (Fischer, 1996; Power, 1996). Hence, it is proposed that micro-constructions of auditability might not be strictly defined by negotiations of audit knowledge on the macro-level in the context of new audit spaces, which contributes to our understanding of how new areas are made auditable as theorized by Power (1996).

As discussed in the preceding paragraphs, the novelty of disclosing financial impacts of climate-related risks in the sustainability reporting landscape has induced a re-negotiation of audit knowledge. Ex-ante, one would assume that the closer the disclosures in the new field are to the traditional financial reporting field, the easier the application of financial audit methods would be, which in turn should facilitate the overall audit process. However, when dissecting the perceived challenges of auditing the scenario analysis, it appears that the "ability to audit", in a technical sense, can to some extent be distinguished from the ability to provide an audit opinion in the symbolic, ritualistic sense of Pentland (1993). This distinction builds on Power's (1996, p. 294) statement that "making things auditable in this specialized sense is not simply a technical matter and the variability of how auditability is accomplished *and claimed* cannot simply be attributed to improvements in audit technique [as the functioning of the technique itself] depends on what gets accepted as common (legitimate) sense within the system". While Power (1996) contrasts the technical auditability with the negotiated knowledge base, this paper adds a nuanced perspective to this concept by investigating a potential distinction between technical and ritualistic aspects of auditing. This distinction becomes visible in the professionals' discomforts associated with the TCFD scenario analysis. Both auditors and consultants emphasize the resemblance to financial disclosures, which renders the audit process "even more comparable to the audit of other financial areas that include significant financial assumptions and estimates" (Auditor C). Although the proximity to financial disclosures could lend further support to the application of financial audit methods and make it easier to evaluate a "precise number", the resemblance in having "hard facts showing" also amplifies the risk of "put[ting] your name on it" (Auditor A).

In other words, when the scenario analysis' disclosure is less precise "it's easier to put your name on it, but it's not easier to assure" (Auditor A). Hence, the notion of (dis-)comfort on the micro-stage plays a crucial role in what auditors describe as a transfer of risk from the reporting entity to the auditor when providing the assurance statement. Thereby, the findings develop our understanding of auditing as a ritual and shed further light on the importance of "the sacred signature" (Pentland, 1993, p. 613). Furthermore, the findings provide a nuanced perspective on how financial audit methods are translated into the area of sustainability (Canning et al., 2019; O'Dwyer, 2011) by suggesting that the transferability of audit methods can be decoupled (or even reversed) from the technical proximity of novel (here sustainability) and legacy (financial) disclosures. While O'Dwyer (2011) and Canning et al. (2019) problematize the differences between sustainability and financial reporting, this paper shows that also proximity can render disclosure and assurance challenging.

The observed discomforts associated with the forward-looking nature of the scenario analysis coupled with the perceived risk of signing off on "exact figure[s]" as opposed to "qualitative assessment[s]" (Auditor C) might point to more systematic implementation challenges of the TCFD framework. As argued by O'Dwyer and Unerman (2020), assurance plays a key role in implementation by "ensuring the credibility of TCFD reporting" and may thus be seen as a cornerstone for its continued adoption on a larger scale. At the same time, this might suggest that if auditors are unable to transform the disclosures "from an inherently untrustworthy state into a form that the auditors and the public can be comfortable with"(Pentland, 1993, p. 605), the usefulness of the disclosures could be impaired which in turn might impede the adoption of the framework. Put differently, the TCFD framework strives to provide more tangible and useful disclosures for investors and other (financial) stakeholders. However, it is the very same aspect that creates discomfort for reporting entities as well as auditors who "are taking over some of that risk" (Auditor A) through "the sacred signature" (Pentland, 1993, p. 613).

5.3. Implications of marketization for disclosures and assurance

Investors represent the key target audience for TCFD and the framework was developed with their specific information needs in mind (TCFD, 2017a). According to O'Dwyer and Unerman (2020) this is a key differentiation point of TCFD compared to <IR> and other sustainability frameworks. The discomfort of practitioners and auditors is underpinned and further amplified by the pronounced focus on investors and their use of TCFD disclosures for risk management and capital allocation decisions. One approach to account for the resulting disclosure challenges and discomforts is to "be transparent, be transparent and then the reader, the analyst, the investor can at least understand how they thought or how they think about the future" (Auditor D). Auditors "taking a view" (Power, 1996, p. 294) that being transparent on how disclosures are prepared is somewhat sufficient to provide an audit opinion, implies that increased transparency as such is

utilized to enable the assurance. This, in turn, is driven by the fundamental principles of TCFD that builds on the notion of efficient markets (Ameli et al., 2020; Fama, 1970) guiding investors' decision making and effective (climate) risk pricing (FSB, 2015; O'Dwyer & Unerman, 2020). Transparent and adequate climate risk disclosures are to support investors' management of climate-related financial risks and thus capital allocation decisions (O'Dwyer & Unerman, 2020; TCFD, 2020c).

While marketization contributes to explaining investors' emphasis on transparency in disclosures (Andrew & Cortese, 2013; Malsch, 2013; Michelon et al., 2020; Power, 2007), it also seems to impact the professionals' discomforts in working with TCFD. As demonstrated earlier, both disclosure and assurance practices are influenced by the perception of risk. Indeed, disclosures of a precise nature are regarded as a stronger statement and hence associated with heightened risk and discomfort. When driven by a marketization logic, where disclosures' usefulness for investors' risk management purposes is emphasized, the perceived risk of disclosing and assuring information might be further amplified. Consequently, the idea of decision-usefulness, which permeates the aspirations of TCFD framework, could be linked to the discomforts associated with this novel reporting practice. On the other hand, the investor centrism of marketized frameworks and the resulting focus on decision-useful disclosures might also impact how the notion of auditors' independence is perceived. Building on Andon et al.'s (2015) finding that users of reports within new reporting fields are more concerned about disclosure quality than with auditors' independence, our study suggests that this aspect might be amplified in a marketization logic where the decision-usefulness of disclosures is privileged (Michelon et al., 2020). In other words, at the same time as the marketization logic might support "the transformative potential of TCFD reporting" (O'Dwyer & Unerman, 2020), its logic can provoke considerable discomfort for the professionals who are tasked with the implementation and assurance of it. Further, this could also impact the discourse around auditor's independence.

6. Concluding remarks

In the wake of the introduction of TCFD, the number of supporters and climate-related disclosures have increased rapidly (TCFD, 2019, 2020d). Nevertheless, the task force finds in its latest status report that current climate-related disclosures remain insufficient for investors and calls out the scenario analysis as a particularly challenging area (TCFD, 2020d). Considering the ambiguous reporting context presented by TCFD, O'Dwyer and Unerman (2020) argue that the role of assurance is central to ensure its credibility. However, the question of how auditors shall address this novel reporting practice to be able to provide assurance remains under-researched. Therefore, this paper revisits prior research on how auditability is constructed (principally Power (1996)) and how financial audit techniques are translated into the area of sustainability (Canning et al., 2019; O'Dwyer, 2011) to explore this theoretical domain in the context of the TCFD scenario analysis. The empirical data was gathered using a qualitative approach with a total of 18 interviews from the Big Four audit firms, a financial institution as well as expert consultancies. By drawing upon Carrington and Catasús' (2007) comfort framework, this study uncovers professionals' discomforts with the TCFD scenario analysis and how these are addressed to make the disclosures auditable. Thereby, the study aims to contribute to the extant knowledge base on the construction of auditability as well as the nascent sustainability accounting field targeting the TCFD framework. Furthermore, the paper strives to identify implications for disclosure and assurance practices from a marketization perspective. Accordingly, the following section outlines concluding remarks on the creation of auditable environments, the negotiation of audit knowledge as well as broader reflections in the context of marketization.

Based on the discussion of the paper's findings, it is proposed that the creation of auditable environments comprises two forms of activities performed by auditors, that are activities performed "with" auditable environments and activities performed "within" auditable environments. "With" represents activities that actively improve auditable environments, including auditor-client interactions aimed at aligning control systems and processes of the auditee with the auditors' procedures. Related to Power's (1996) question of whether (at least some) control and disclosure processes "have been created with a view to making the organization auditable [rather than] pre-existing the audit process", the findings support the idea of (at least some) processes being established to make disclosures auditable. This, however, might have implications for the auditors' independence. Contrary to activities "with" the auditable environment, those "within" create auditability without actually changing the auditable environments. Related to the latter, the paper further refines the concept of auditable environments by distinguishing between *adopted* and *adapted* activities. *Adopted* activities, such as evidence collection, are carried out "within" the auditable environment, unperturbed by the suboptimal auditable environments. At the same time, there are activities where the audit process

itself is *adapted* to the suboptimal auditable environment. This is exemplified by auditors altering (reducing) the assurance coverage, such as the disclosure scope or the level of assurance, to relieve discomforts caused by the clients' suboptimal reporting capabilities. While both *adopted* and *adapted* procedures support the construction of auditability without actually changing the clients by operating "within" auditable environments, *adapted* procedures might be interpreted as the "art of the possible" (Power, 2003, p. 387) in a new audit space.

As proposed by Power (1997, p. 142), existing audit knowledge can be "transferred and transformed" in the context of new audit spaces. This distinction relates to "a new configuration of expertise" (Power, 1997, p. 142) that arises when divergent competences of different professional groups collide. Related to Power's (1997) proposal, Canning et al. (2019) find only a light transformation of methods (referred to as translations) and highlight the role of non-accountants in translating the methods into the area of sustainability. While both Power (1997) and Canning et al. (2019) focus on the different professions that are engaging in audits and implications for the negotiation of audit knowledge, this paper seeks to develop our understanding of activities performed "within" auditable environments. This paper argues that *adopted* and *adapted* activities performed "within" auditable environments can be investigated in their own right to further develop our understanding of auditable environments. Hence, the variation in terminology is not merely semantic but results from a different angle.

Further, the paper identifies indications of an ongoing re-negotiation of audit knowledge related to the TCFD scenario analysis' characteristics of forward-looking and quantified disclosures. The former relates to auditors' discomforts in dealing with assumptions on the future. These, however, are a central aspect of the framework's disclosures, which consequently might require a re-negotiation of the knowledge needed to deal with this information. Further indications of the ongoing re-negotiation of audit knowledge relate to the quantified disclosures of the scenario analysis. Power (1996) proposes that the technical aspect of auditing is not necessarily linked to what is accepted as legitimate audit knowledge. Drawing upon Power's (1996) distinction, this paper suggests that the aspect of technical ability to audit can be distinguished from the ritualistic aspect of auditing (Pentland, 1993). While the proximity to financial disclosures might facilitate the technical aspect of auditing, it is the very same thing that increases the (perceived) risk and makes auditing more difficult from a symbolic perspective. Thereby, the study draws upon Pentland's (1993) theorization on auditing as a ritual to develop our understanding of how auditability is constructed in the context of the TCFD scenario analysis. By revisiting the meaning of "the sacred signature" (Pentland, 1993, p. 613), it can be inferred that the signature remains highly regarded by the auditors as a symbol of the transfer of risk from the reporting entity to the auditors. The extent to which auditors are willing to take on parts of that risk remains negotiable, especially as discussions of how these disclosures might impact the financial statements evolve (see Anderson, 2019).

Ultimately, this paper provides a nuanced perspective on the transferability of financial audit methods into the area of sustainability (Canning et al., 2019; O'Dwyer, 2011). To this end, the paper suggests that transferability of audit methods can be decoupled (or even be reversed) from the technical proximity of novel (here sustainability) and legacy (financial) disclosures. While O'Dwyer (2011) and Canning et al. (2019) problematize the differences between sustainability and financial reporting, this paper shows that also proximity can render disclosure and assurance challenging.

While the marketization of the framework and the resulting investor focus explain certain activities on the micro-stage, micro-stage activities also have implications for marketized frameworks on the macro-stage. Relating to the former, disclosure and auditing activities might be altered when considering the respective users, their needs and perceived relevance. Following the latter, challenges in performing certain acts on the micro-stage might suggest more systematic challenges (e.g. for implementation and auditability) on the macro-stage. Arguably, disclosures for the disclosures' sake, which is a common critique on marketized frameworks (see e.g. Ameli et al., 2020; Christophers, 2017; Michelon et al., 2020), are easier to publish and assure from a risk perspective in comparison to disclosures directly related to decisions and actions. This is exemplified by the quantitative disclosures of the TCFD scenario analysis that move away from the vagueness, oftentimes prevailing in sustainability disclosures, towards concrete information for investors' risk management purposes. Here, the paper uncovers inherent challenges and discomforts for the reporting entities (auditors) when actually providing (auditing) this form of decision-useful information. Whether the TCFD framework will end up as *yet another* sustainability framework, functioning as a communication piece rather than a decision-useful and actionable reporting piece, will arguably not least be decided by how its scenario analysis is disclosed and audited.

This final paragraph elaborates on the paper's limitations and gives suggestions for further research. The paper faces several limitations, especially related to its spatial and temporal context. To the former, the research context in the Nordics, and the Swedish legislation in specific, may explain why the participating sustainability consultancies do not provide assurance which cannot necessarily be generalized to other geographies. Regarding the latter, the chosen context is particularly relevant as the paper specifically studies a front-running financial institution to investigate implementation and auditability challenges of TCFD in the current (early) stages of adoption. However, the discomforts uncovered might be different for reporting entities adopting the framework at a later stage. Further, the timing is also relevant when investigating the arguably fluent negotiation of audit knowledge. As the knowledge base for the TCFD framework, in general, is limited, this paper joins O'Dwyer and Unerman's (2020) call for further attention from academia. The TCFD scenario analysis' specifics and this paper's findings warrant further research on its implementation and assurance. In this regard, further qualitative research, especially embodied in an ethnographic form (Kalyta & Malsch, 2018; Power, 1991),

could be well-suited to further uncover micro-stage activities related to the TCFD's implementation and assurance. Additionally, future studies could investigate the role of sustainability consultants in making things auditable, with an increased focus on the negotiation of audit knowledge as this was constrained by this paper's research context. As previously outlined, the TCFD framework also offers fruitful ground to investigate broader marketization considerations. While it might be too early to draw inferences regarding the capital allocation impact (thus actual actions based on the disclosures) of TCFD's disclosures now, it should become even more relevant when, or if, adoption has progressed at a larger scale.

7.   References

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8.   Appendix

Appendix A: Interview guide

The following themes have been used to guide the study's semi-structured interviews.

Auditors

- Main challenges in assuring TCFD
- Interactions with clients related to TCFD
- Clients' main challenges with TCFD
- Specifics of the TCFD scenario analysis
- Assurance coverage (e.g. levels of assurance, assurance scope)
- Implications of TCFD for the financial statements
- Involvement in branch organizations

Financial Institution (Alpha)

- Internal setup and collaboration
- Main challenges in reporting TCFD
- Internal control systems and processes
- Collaboration with professional services firms
- Implications of assurance
- Investor considerations

Consultants

- Main challenges in advising on TCFD
- Interactions with clients related to TCFD
- Clients' main challenges with TCFD
- Specifics of the TCFD scenario analysis
- Implications of assurance
- Involvement in branch organizations

Appendix B: Matrices

Matrix 1: Identifying and consolidating empirical themes

	Internal control systems	**Forward-looking data**	**…**	**Role of external actors**
Interviewee 1				
Interviewee 2				
…				
Interviewee n				

Matrix 2: Developing theoretical concepts

	Creating auditable environments	**Negotiation of audit knowledge**
State sense		
Relief sense		
Renewal sense		