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Dollars and Sense; Reviewing Industry Implementation of the Climate-Related Disclosures Mandate in New Zealand

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ABSTRACT:
The global commitment to sustainable development has catalysed the climate policy environment and its multiverse of non-financial reporting frameworks. One such framework, the TCFD (Task Force on Climate-Related Financial Disclosures) is dependent on assumptions that organisations view risk management the same way as the framework's intent; prioritising the decarbonisation pathway. The purpose of non-financial reporting is to challenge existing business-as-usual values of profit-seeking without regard for the environment. This study employs a systems-based methodology (Critical Systems Heuristics) to uncover the issues that arise as a result of organisations implementing the TCFD, as demonstrated by their risk management process. The key findings of this study show that organisations are primarily motivated by financial growth, which directly competes with the intentions of the TCFD. Mandating the TCFD fails to address the tensions between business-as-usual business models and the regulatory intent towards decarbonisation. The findings raise concerns about the TCFD's potential effectiveness; unchanged risk management processes risk a continuation of existent best practices leading to status quo outcomes.

Keywords: Non-financial reporting, sustainable development, systems thinking, climate risk, risk management, critical systems heuristics

1. Introduction

The environmental, social, and economic landscape organisations operate in has been transformed by the threat of climate risk and consequential goals of sustainable development. Industries and businesses are considered vulnerable to climate risk due to potential supply-chain disruptions caused by extreme weather events, resulting in productivity losses and reputational damage (Surminski, 2017). Industries and businesses are also considered significant contributors to climate risk, particularly those that operate in the Global North who have exploited finite environmental resources for financial gain without sufficient regard for environmental and social impacts (Timperley, 2020). Organisations are now forced to operate in the Anthropocene era (Bril et al., 2020).

A global commitment to sustainable development demonstrates the prioritisation of the decarbonisation pathway, and with it, the expectation that organisations will also prioritise the net zero carbon transition. Multilateral agreements such as the United

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Nation's Sustainable Development Goals, the Kyoto Protocol, and the 2015 Paris Agreement, alongside the globally announced net zero targets of 90 nations worldwide (Schumer et al., 2023), perpetuate the expectation that organisations will adopt sustainable activities within their business models and align themselves with decarbonisation commitments (Baumüller & Sopp, 2021; Talman, 2023; Whittingham et al., 2023). Corporate responsibility is not new (Carroll, 1979; Carroll, 1991). Conflict occurs when stakeholders expect organisations to adopt sustainable behaviours in response to global commitments, and organisations operating in a capitalist economy exhibit business-as-usual practices that prioritise profit-seeking activities; "...the economic bottom line still dominates corporate decision making" (Schaltegger & Hörisch, 2017, p. 261).

New Zealand's largest organisations were the first in the world to be forced to disclose their climate risk financial information under the new Task Force on Climate-Related Financial Disclosures (TCFD) legislation, effective 2023 (Shaw, 2020). The TCFD mandate follows the increased accountability placed upon organisations by governments and multilateral organisations to transition to net zero activities (Carney, 2019). Sustainable reporting (SR) seeks to hold businesses accountable for climate change, but the voluntary nature of reporting has produced inaccurate and ambiguous reports (Armour et al., 2021; Hahn & Lülfs, 2014).

There is a disconnect between what policymakers hope to achieve with SR regulations and what organisational behaviours and practices are occurring, even when regulatory compliance is achieved, suggesting that the process of SR is merely performative or symbolic (Ashraf & Nazir, 2023; Barraclough & Morrow, 2008; Christensen et al., 2021). The proposed TCFD mandate assumes that forced compliance will result in businesses taking appropriate measures to mitigate climate risk given organisations must disclose their climate risk mitigation actions accurately to their audience of investors and shareholders. Failure to comply with the TCFD mandate will result in regulatory consequences for organisations (MBIE, 2022). But are the consequences of noncompliance enough to sufficiently motivate organisations to reorientate business activities towards sustainable long-term value creation?

The TCFD uses the concept of double materiality (positioning climate risk as financial risk) to incentivise firms to integrate the TCFD requirements into their strategic management (De Cristofaro & Gulluscio, 2023). Mark Carney foreshadowed the importance of double materiality assessment in his famous 2015 speech, "Breaking the tragedy of the horizon - climate change and financial stability". Carney claimed climate-related financial risks were being underestimated by financial actors, and therefore bore the risk of triggering the next financial crisis (Bingler et al., 2022) Despite this, voluntary SR has seen organisations produce inaccurate and deliberately ambiguous climate risk disclosures, suggesting they are ill-equipped to dive into the realm of deep uncertainty associated with complex reporting requirements (Hahn & Lülfs, 2014; Schaltegger & Hörisch, 2017). The limiting factors that affect reporting standards can be summarised as a concentration of market power, simultaneous over and under-estimation of climate risk costs, the inability to predict future scenario costs on long-term value structures, and the excess of number of patchwork and top-down frameworks available (Armour et al.,2021; Antoncic, 2019; Christophers, 2017; Harper Ho, 2018; O'Dwyer & Unerman, 2020). Against these challenges, the mandated TCFD framework for New Zealand demands a

'sink or swim' approach by organisations due to pending forced compliance milestones (TCFD, 2019).

To achieve the global expectation of preventing further global warming, climate risk mitigation requires more than the linear cause-and-effect thinking we have seen evidence of in existing sustainable reporting (Madden, 2022, Oware & Mallikarjunappa, 2022). As societies have no choice but to organise in the face of climate risk (Power, 2004), policymakers action these regulatory demands. However, "the fear of liability drives companies and their counsel to over and under disclose simultaneously when it comes to risk: they over disclose by producing lengthy generic or boilerplate risk disclosures that are less meaningful to investors but are hesitant to provide more extensive firm-specific disclosures that might expose the firm to litigation if some portion of the disclosure is found to be affirmatively misleading" (Harper Ho, 2018, p. 407). Regulatory pressures can negatively affect the quality of voluntary sustainable reporting, despite their intention to provide safeguards for accurate and transparent reporting (Hahn et al.,2014). Applying a systems thinking lens enables us to make explicit the areas of conflict that potentially undermine accurate climate risk reporting (Checkland, 1985).

This paper uses Critical Systems Heuristics (CSH), a systems-based methodology, to reveal the points of conflict that impact firms affected by the TCFD mandate in New Zealand (Ulrich, 1983). When defining CSH, critical refers to the fact that there is not a single right way to define or approach an issue, systems refer to systems thinking – avoiding focusing on a single aspect or part, heuristics refers to the art of discovery, implying that CSH is appropriate for ill-defined problems such as climate risk mitigation (Ulrich, 2005). CSH highlights the inevitable partiality that comes from making boundary judgments and is used in this study to make explicit the boundary judgments organisations hold when responding to the TCFD requirements.

The subsequent sections of the paper are organized as follows: Section 2 presents literature that explains the development of the TCFD framework, and the value of utilising Critical Systems Heuristics in sustainable development research. Section 3 describes the research methodology used in the current study. Finally, Sections 4, 5 and 6 present the primary finding; the revealed conflict affecting legislative effectiveness, the recommendations for future research, and practitioner/policymaker suggestions.

2. Theoretical Background

2.1 The Development of the TCFD Framework

The TCFD shares the primary goal of the Paris Agreement, a multilateral agreement that advocates for industry decarbonisation (Baumüller & Sopp, 2020). In 2015, world leaders responded to the global call to action to reduce global warming. New Zealand was one of 194 parties signed the Paris Agreement which declared, under the advice of climate scientists, that decarbonisation was the primary pathway to combat climate risk (United Nations, n.d.). Mark Carney, the UN's appointed special envoy, proposed the creation of a climate change task force in alignment with the goals of the Paris Agreement. Michael Bloomberg, the chair and announcer of the TCFD, responded to this proposal (Elliott, 2015). In 2017, the final recommendations of the TCFD were launched (TCFD, 2019). In an interview with the Financial Times, Bloomberg expressed

the same principles as Carney which signified the rationale behind the TCFD, that climate risk is financial risk and must be disclosed as such (Christophers, 2017).

The TCFD recommendations are structured around four components that represent core elements of how companies operate: governance, strategy, risk management, and metrics and targets (TCFD, 2019). What differentiates the TCFD from prior sustainable reporting standards is the inclusion of transitionary risk as well as physical risk (TCFD, 2019). The TCFD defines transitionary risk as the risk that occurs from the social and economic impacts of moving to a decarbonised industry (TCFD, 2019). To measure transitionary risk, organisations must conduct scenario and stress testing which requires an engagement with future-forward thinking (TCFD, 2019). Future forward thinking is transformative because it prioritises the consideration of environmental outcomes (for example carbon emissions) as opposed to short-term thinking which focuses on financial outcomes and profit-seeking (Zenghelis & Stern, 2016). The means by which the TCFD promotes future forward-thinking is set out in Figure 1.

Figure 1: Key Features of TCFD Recommendations (TCFD, 2019)

Since its announcement in 2017, the TCFD has been recognised as a trailblazing framework and has consequently been integrated into regulatory disclosure mandates in Brazil, Hong Kong, Japan, New Zealand, Singapore, Switzerland, the United Kingdom, and the European Union (Auzepy et al., 2023; Di Marco et al., 2023; Hummel & Jobst, 2024; Principale & Pizzi, 2023; TCFD, 2021). In acknowledgment of the 'multiverse' or alphabet soup of non-financial reporting standards (Ashraf & Nazir, 2023; Baboukardos et al., 2023, Christensen et al., 2021; Diwan et al., 2023) a unification of standards has been undertaken by the International Sustainability Standards Board (ISSB), formed in 2021 (de Villiers et al., 2024; Kirkland & Ellis, 2022). The ISSB framework pulls foundational recommendations from the TCFD and other non-financial reporting standards to coordinate a flexible, interoperable, and comparable standard, this development is demonstrated in Figure 2. The authoritative group overseeing this standardisation, named the International Financial Reporting Standards (IFRS), is the International Accounting Standards Board (IASB) (de Villiers et al., 2024; Hummel, & Jobst, 2024; IFRS, 2023).

Cognizant of the TCFD's legacy, the IASB released the IFRS S1 and S2. S1 pertains to broad sustainability disclosure, whereas S2 is specifically climate-related risk disclosure (IFRS, 2023).

The dual approach of general-purpose sustainability and climate-related disclosures is mimicked in mandated reporting directives. One such example of this is the European Union Corporate Sustainability Reporting Directive (CSRD), which as of financial year 2024, supersedes the EU Non-financial Reporting Directive (NFRD) (Hummel & Jobst, 2024). This reiteration falls under the jurisdiction of the European Sustainability Reporting Standards (ESRS); its refinement was developed in parallel to the European Green Deal (an agreement stating Europe will be carbon neutral by 2050) and optimised the conceptual foundations the TCFD set in 2017 (Di Marco et al., 2023; Mezzanotte, 2023; Principale & Pizzi, 2023). The EU CSRD has a phased-in process, capturing small and medium-sized enterprises within the disclosure regime by 2028 (Brown et al., 2023; Hummel & Jobst, 2024). Further global development positions the TCFD as a stand-alone disclosure framework; in the UK it has been praised by the UK government as "one of the most effective frameworks for companies to analyse, understand, and ultimately disclose climate-related financial information" (Auzepy et al., 2023, p. 1). As of 2022, the largest UK institutions must meet the TCFD disclosure recommendations as part of the existing Non-Financial Information (NFI) Statement within their strategic reporting (Gov.Uk, 2024). The original financial standards board behind the TCFD framework has now disbanded, and the IFRS Foundation is now managing and monitoring the progression of the TCFD within global standards (IFRS, 2023; TCFD, 2023). Despite this development, the TCFD framework's conceptual foundations will be fundamental to climate-related disclosures.

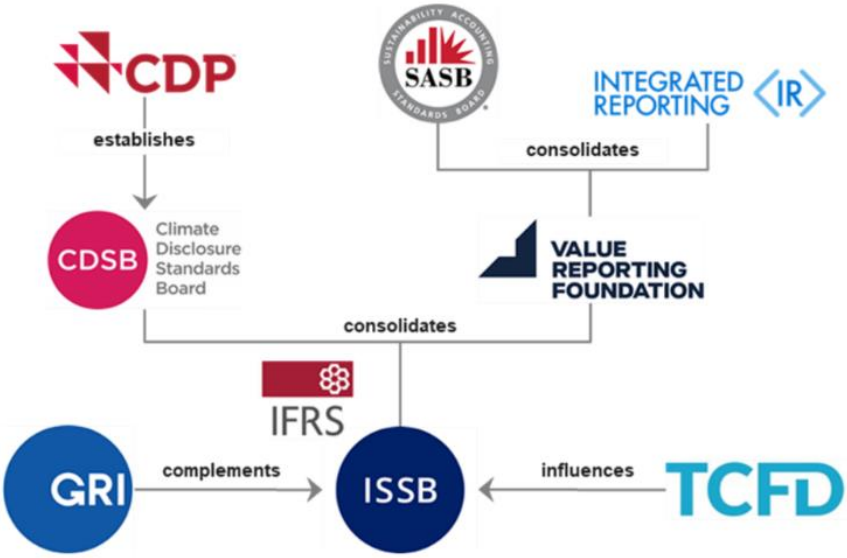

Figure 2: Convergence of Voluntary Sustainability Disclosure Standards (Kirkland & Ellis, 2022)

The legislative framework under which the TCFD is governed in New Zealand will be regulated by an External Reporting Board (XRB) and comes under The Financial Sector (Climate-related Disclosures and Other Matters) Amendment Act 2021 (XRB, 2022). The Act is an evolving mandate, meaning it has been subject to several rounds of public consultation (MBIE, 2022), and is proposed to come into effect in 2023. Organisations that are legally required to disclose under the mandate are large, publicly listed debt and equity issuers with a market capitalisation exceeding $600 million and large financial organisations, including banks, insurers, and managers of investment schemes with total assets over $1 billion (XRB, 2022). While the mandate provides a promising opportunity for New Zealand to be a first mover in modernised climate risk reporting, consideration must be given to the already understood challenges of voluntary sustainable reporting (Hahn et al., 2014; Schaltegger & Hörisch, 2017).

Prior voluntary sustainable reporting often involved organisations' 'cherry picking' risk information to disclose, largely decoupled from forward-thinking analysis (Bingler et al., 2022; Kouloukoui et al.,2019). Standard practice for sustainable reporting in New Zealand was summarised in the June 2021 report by the Ministry of Business, Innovation and Employment (MBIE), titled International Developments in Sustainability Reporting. It specifically classified sustainable reporting as a consideration of Environmental, Social and Governance factors, and using Global Reporting Initiative as a metric. The report gave succinct criteria that formed the basis of an effective sustainable reporting scheme, which should be widely adoptable, accessible, credible and consistent (MBIE, 2021).

The introduction of the TCFD framework in 2017 recognised a 'changing tide' in risk management, where climate risk translated to financial risk and organisations were forced to account for this in their risk management processes (Bingler et al., 2022; O'Dwyer & Unerman, 2020). The TCFD relies on the assumption that organisations are prepared to enter the realm of deep uncertainty when predicting factors that determine transitionary risk, and engage with future-forward thinking, to achieve industry decarbonisation (TCFD, 2019; Zenghelis & Stern, 2016). An example of this is the TCFD's inclusion of transitionary risk, which is determined by scenario testing. However, such tests face criticism as the foundational assumptions vary in accuracy and influence test decision-making (Chenet et al., 2019). Tests also require a level of interpretation competency that investors may not have to make informed decisions (Armour et al., 2021).

Regulatory and reputational risk has shifted organisations' internal risk management processes from a private to public conversation, but why has this happened? Power (2004) attributes this to the fact that the world has gotten riskier. Specifically, social and technological advances have created ongoing risks (Beck, 2006). Risk management as a discipline changed from a financial exercise to one of societal and environmental considerations because of these sustained macro pressures on business viability (Andersen, 2008).

The prevalence of double materiality assessment within the TCFD framework also emphasises the changing tide of risk management. When an organisation identifies a transaction or business decision that is significant enough to warrant reporting to investors or an organisation's financial actors, that information is considered material and must be disclosed (Tysiac, 2018). As Carney acknowledged, previously categorised non-financial

risk has transitioned to financial, as the outcomes of climate change perpetuated by social and market factors have circled back to organisations (Antoncic, 2019). This transition has been identified as double materiality (Baumüller & Sopp, 2020; Gourdel et al, 2022). Double materiality reinforces the integrated relationship of economy, society, and environment. The relationship between climate change and material risk was evident in a study conducted by Amel-Zadeh (2021) where most investors when asked if climate risk posed a material threat, responded yes. However, because it is the organisations that decide what is significant enough to warrant disclosure, double materiality is a process that has attracted great attention due to its variable application (Baumüller & Sopp, 2020). A recent report from the European non-financial reporting standard stated that there were problems with materiality, as "many companies do not disclose material non-financial information on all major sustainability-related matters" (Raith, 2023, p. 17). The report was referring to CSR reporting, there is yet to be evidence of how organisations will interpret double materiality in the TCFD.

Several of New Zealand's largest organisations currently face the challenge of accurately reporting climate financial risk to satisfy the TCFD mandate in an environment of financial pressures. Bloomberg, chair of the TCFD, announced to the Financial Times in early 2016 - "From an investment point of view, if you can measure it, you can then manage it." (Christophers, 2017). Based on the flaws identified with existing sustainable reporting practices it could be argued that you can only measure risk if you know what metrics to use and how to use them accurately. Presently, best practice narrates how organisations should approach sustainable reporting (MBE, 2021). However, as the TCFD requires a new way of measuring transitionary risk, it is no longer appropriate to see a continuation of best practice. This prompts the question, how does the TCFD's priority of decarbonisation compare to an organisation's goal of economic growth?

2.2 Critical Systems Heuristics

Critical systems heuristics has been overlooked by researchers in the space of non-financial reporting. This paper considers non-financial reporting research outside of the standard parameters of the accounting and finance disciplines and instead frames it within sustainable transitions research. The research area of sustainable reporting covers a multiverse of non-financial reporting frameworks (Baboukardos et al., 2023) that play a pivotal role in sustainable transitions. Consequently, sustainable transition researchers are paying increased attention to political action within the decarbonisation pathway (Köhler, et al., 2019). Within reporting and transitions research institutional theory has been identified as one of the most commonly applied explanatory management theories for unintended consequences (outcomes that differ from the policymaker's intention (Blavoukos & Oikonomou, 2023; Chollete & Harrison, 2021; Laurenti et al, 2016; Oliver et al., 2020)) (Ali & Wilson, 2024; Ali et al., 2023). While this paper's purpose is not to explore institutional theory, it must be brought to the reader's attention as it recognises how influential a firm's need to survive is. The influence of institutional theory is evident in sustainable reporting criticisms when we see examples of coercive isomorphism; organisations mimicking patterns displayed by others, or adhering to institutional pressure, but presenting actions decoupled from efficiency or usefulness (Fernanado & Lawrence, 2014).

Sustainable transition researchers have considered the role of institutional theory as an explanation for firm behaviour in response to macro pressures (Geels, 2020; McCloskey & Silvestri, 2021; Ocasio & Gai, 2020). It can be argued that it is short-sighted not to question the structures, values, and dynamics affecting sustainable development tools such as sustainable reporting, given the multi-faceted complexity of sustainable transitions. Systems thinking enables researchers to review the whole picture of sustainable development (Reynolds et al., 2018). Systems thinking is praised by Madden (2022) as a means to "actively seek, diverse points of view, along with a sustained curiosity about mapping the intricacies of interrelationships in a complex system" (Madden, 2020, p. 2).

Systems thinking methodologies align with the collaborative intention of the sustainable development goals; a further justification for their application to transitions research. There are many voices to be heard in a transition, as recognised by the interdisciplinary focus of the sustainable development goals, and each voice operates within their constructed realities. Achieving sustainable development goals requires embracing multi-stakeholder pluralism; there is a positive bidirectional relationship between empowering stakeholders and building capacity for action (Doll & Blaisiak, 2013). CSH recognises this pluralism and "encourages a dialogical and practical normative, rather than merely expert-driven and theoretically based, notion of professional competence" (Ulrich, 2012, p. 1244). CSH enables researchers and practitioners to engage in systems thinking, rather than adopt the ontological traditions of thinking about systems (Reynolds, 2008).

Simply put, CSH is a framework of 12 questions, see Figure 3, that asks 'what is' versus 'what should be' to uncover participants' perceived boundaries; what they determine as relevant, of value, or factors they have awareness of but do not include as relevant to them (Ulrich, 2000; Ulrich, 2005). A strength of CSH is that its use of boundary judgments enables theoretical and normative reflexivity. Boundary critique rejects the idea that system structures are 'given' and that when actors rationalise their visible structures, marginalisation occurs (Midgely et al., 1998). Ulrich (2012) refers to this rationalisation process as built-in selectivity, and Midgely (1998) refers to it as sacred versus profane, or valued versus devalued. The actor's selectivity or visibility is determined by what facts, values and system structures the actor perceives; within CSH and boundary critique, these system structures are known as boundary judgments (Lyons-White, et al., 2022). The interplay between judgments of fact, value judgments, and boundary judgments is presented by Ulrich's triangle (Ulrich, 1983). Reynolds (2008) poses colloquial phrases that, upon inspection, frame the dilemmas of corporate social responsibility in alignment with Ulrich's triangle; these dilemmas are phrased as "'getting real', 'getting it right', and 'getting a grip'" (Reynolds, 2008, p. 386). A further way to consider this phrasing could also be what a firm practices, what their level of understanding is, and what their level of responsibility (to shareholders and stakeholders) is. A weakness of CSH is it can be difficult to understand and apply (Ulrich, 2012). However, when considered in a practice-based application such as Ulrich's 12 boundary judgment questions, CSH considers both ethical and political influences relevant to researchers and practitioners such as policymakers (Hutcheson et al., 2023).

Sources of Motivation

(1) Who is (ought to be) the **client**? That is, whose interests are (should be) served?
(2) What is (ought to be) the **purpose**? That is, what are (should be) the consequences?
(3) What is (ought to be) the **measure of improvement**? That is, how can (should) we determine that the consequences, taken together, constitute an improvement?

Sources of Power

(4) Who is (ought to be) the **decision-maker**? That is, who is (should be) in a position to change the measure of improvement?
(5) What **resources** are (ought to be) controlled by the decision-maker? That is, what conditions of success can (should) those involved control?
(6) What conditions are (ought to be) part of the **decision environment**? That is, what conditions can (should) the decision-maker *not* control (e.g. from the viewpoint of those not involved)?

Sources of Knowledge

(7) Who is (ought to be) considered a **professional**? That is, who is (should be) involved as an expert, e.g. as a researcher, planner or consultant?
(8) What **expertise** is (ought to be) consulted? That is, what counts (should count) as relevant knowledge?
(9) What or who is (ought to be) assumed to be the **guarantor of success**? That is, where do (should) those involved seek some guarantee that improvement will be achieved—for example, consensus among experts, the involvement of stakeholders, the experience and intuition of those involved, political support?

Sources of Legitimation

(10) Who is (ought to be) **witness** to the interests of those affected but not involved? That is, who is (should be) treated as a legitimate stakeholder, and who argues (should argue) the case of those stakeholders who cannot speak for themselves, including future generations and non-human nature?
(11) What secures (ought to secure) the **emancipation** of those affected from the premises and promises of those involved? That is, where does (should) legitimacy lie?
(12) What **worldview** is (ought to be) determining? That is, what different visions of 'improvement' are (ought to be) considered, and how are they (should they be) reconciled?

Figure 3: Ulrich's original 12 CSH questions (Ulrich, 2000)

In systems of asymmetric power distribution, CSH has the capacity to be used as an emancipatory process for marginalised voices (Hutcheson et al., 2023; Nicholas et al., 2019; Parrilla & Neyra Belderrain, 2023; Raza et al., 2019; Ulrich, 2012). Marginalised voices are made easily identifiable under Ulrich's 12 boundary judgment questions. When broader stakeholders than just the primary decision-maker have their boundary judgments revealed, the gap between a wide and a narrow boundary judgment can become evident. This gap is where the unheard or uninvolved reside (Midgely et al., 1998). The 12 boundary judgment questions designed by Ulrich not only purposefully prompt the interviewee to question the structures within their reality, but offer an opportunity for reconciliation of the differing worldviews systemically operating (Hutcheson et al., 2023). By using an 'is' versus 'ought to be', rather than an 'either, or', framing, the potential for improvement to the system in question is implied, providing an opportunity for participants to think beyond social and ideological confinement (Lyons-White, 2022; Raza, 2022).

It is acknowledged within the sustainable development discourse that large firms maintain and enforce dominating institutional structures (Andersen & Geels, 2023). The desired destabilisation of such economic structures reflects that sustainable development is not only inherently political but places firm behavior under a morality microscope (Hahn et al., 2023; Köhler et al., 2019). As discussed, CSH offers an emancipatory process for marginalised or disadvantaged voices, typically affected within environmental and social structures, and given the advantageous position large firms have does this mean CSH is no longer appropriate? This paper argues no, and this is supported by Ulrich's (2003) point that "The "emancipatory interest" in this sense is without regard for persons; its only advocacy is in favour of a situation of undistorted communication in which all concerned parties have as equal a chance of articulating their concerns as possible" (Hutcheson et al., 2023, p 8). CSH reveals an actor's cognitive mapping as it makes their assumptions transparent; this transparency is beneficial to understanding societal and environmental challenges affecting disadvantaged actors, but it is not exclusively beneficial to underrepresented parties.

Much like systems thinking, CSH is applied to complex socio-ecological problems as a means to explore divergent perspectives and multi-interrelationships (Lyons-White, 2022). Unfortunately, as a methodology, CSH has been under-utilised to explore economic problems. Kish et al., (2021) suggest that this under-utilisation is due to ecological economics failure to internalise "the limitations and possibilities presented by looking at society as messy and complex slates rather than a blank one" (Kish et al., 2021, p. 4). Raza (2022) echoes this sentiment and credits the unwillingness to depart from positivism to the threat of inaccuracy and unpredictability. It should also be considered that the connotations of the terminology of complex problems have evolved as socio-technical transitions discourse leans on phrases such as wicked problems and grand challenges, phrases that have become politicised (Head, 2022; Lönngren & Van Poeck, 2021). A complex problem is merely many different moving parts, often unstructured, and is characterised "by the existence of multiple actors, multiple perspectives, conflicting interests, distinct objectives, intangible aspects, and uncertainties" (Parilla & Belderrain, 2023, p. 2). It is not the field or system in which these aspects or actors exist that make a problem complex, it is the dynamic multi-dimensional uncertainty. Non-linear reflexivity that reaches beyond hermeneutic tradition is required to unravel complexity.

The research question that guided this study's methodology is; what impact does an organisation's forced compliance with TCFD legislation have on their risk management process? It is imperative to understand what impact compliance with the TCFD mandate on an organisation, and their risk management process, to be able to ascertain if forced compliance is an effective strategy to combat climate risk. The ripple effect climate risk management has on overall sustainable development goals must be considered when answering the research question, supporting the use of a systems thinking approach.

3. Research Methodology

This study used semi-structured interviews to collect data about what impact implementing the TCFD recommendations had on an organisations' risk management processes. The interview questions were developed from Ulrich's original twelve questions

(Ulrich, 1983) However, Ulrich's twelve questions are difficult to apply in practice due to their academic framing (Hutcheson et al., 2020; Foote et al., 2014). The original questions use language ('ought to') and were adapted to reflect modern phrasing ('could be' or 'should be'), and present-day business operations.

The search criteria for the interview participants was a senior member of sustainable reporting or climate risk management function in a publicly listed company that was implementing the TCFD framework (affected by the upcoming mandate). Eight representatives from separate organisations with in-depth knowledge of the TFCD implementation agreed to an interview. The sample was sourced from the professional business networks of Otago University's Finance Department, Otago University's Sustainability Office, and the New Zealand Sustainable Business Council. (Otago University is located in New Zealand).

Given the commercially sensitive nature of using the TCFD framework and potential organisational sensitivities about greenwashing, the subject matter of disclosures is considered topical. To mitigate the potential risk of a lack of willing interviewees, the information sheet reassured participants that this research process was not designed to cast judgment on the organisations' climate risk management process or implementation of TCFD; rather, it focused on understanding the decision-making process that prompted such processes/implementation. The interviews were conducted at a time convenient to participants and took 30 minutes to an hour. The eight interviews were conducted online.

The data was thematically analysed (Braun & Clarke, 2006). The transcriptions were reviewed, initial codes were developed to stay close to issues raised by participants and then initial codes were synthesised into higher-order codes related to Ulrich's sources of motivation, control, expertise, and legitimacy (Reynolds, 2008). A thematic analysis revealed commonalities and differences among the participant responses. To ensure the research had credibility, dependability, confirmability, and transferability, triangulation of that data and member checking was conducted (Golafshani, 2003; Moon et al., 2016; Nowell et al., 2017).

4. Findings

The following presentation of findings focuses on Ulrich's sources of influence as this line of responses reveals the most relevant points of contention between the TCFD's risk management ideology, and that in which the organisations interviewed operate. What is most consistent is the underpinning of cost-benefit analysis that drives the organisation's behaviors. Because of the boundary critique conducted, these findings display judgments that operate outside of the organisations perceived fact or perceived value; the judgments that support their frame of reference are inherently financially driven.

4.1 Benefactors, Purpose, and Measure of Success

How has the implementation of the TCFD framework impacted organisation's existing risk management processes, and what purpose does it serve?

The TCFD was identified by interviewees as a financial document that required organisation's to report the impact of physical and transitionary risk as financial information.

> "All I've really done is taken acknowledgments of risks that we already have, and bring it into a consolidated report, our investors are capable of understanding." (Interviewee F)

The reporting of such information was primarily to benefit investors and satisfy the required compliance under the legislative mandate. Secondary benefits were noted as increased legitimacy/creditability; all organisations recognised that the decarbonisation of industry is the governments and multilateral organisations decided course of action to mitigate climate change, and compliance with the TCFD indicated an alignment with reputable and highly visible actors. It was identified that the TCFD mandate was not a surprise to organizations, which again indicates a deliberate alignment with national and global actors' intended transition to net zero.

> "You want to have a Paris-aligned investment strategy or a company because whether you like it or not, the government will eventually implement policy a lot more tighter than it is or force your company to do that. So why not think opportunities futuristically in advance, how can we reduce those costs? How can we take advantage of those opportunities? How can we use this to kind of retain and attract customers?" (Interviewee C)

When asked what the term 'climate risk management' meant to the organisation, three interviewees stated that it meant controlling risk and specifically used the word 'control'. When explaining the process of risk management, interviewees described an identification of risk, and then controlling or mitigating this risk. A variety of practical examples were used to illustrate the significance or categorisation of the risk identified.

> "[Climate risk mitigation is] really about ensuring that we have controls in place to mitigate various aspects of climate risks that we've identified through scenario modelling." (Interviewee H)

The implementation of the TCFD framework had not significantly changed the organisation's risk management purpose and the process of identifying and mitigating risk was the same before and after the announcement of the TCFD mandate. Interviewees stated that the TCFD requirements had focused their processes by offering a structured approach to risk, and provided a comparable framework.

> "It's [climate risk mitigation] such a complex issue. And I think what the regulation does is just kind of help you to think about it in quite a methodical way." (Interviewee D)

Further applied examples of the focus and structure TCFD has encouraged were changing the timeline of risk mitigation action (the TCFD requires annual financial reporting), creating a separate risk register for climate risk, building a separate sustainability team, and creating sustainability sub-committees within executive boards. Two organisation's specifically stated that there has been no change in their definition of mitigating climate risk because they were already mitigating it sufficiently through their operations.

The findings presented here significantly show that the TCFD has been viewed by the organisations implementing it as a financial document, that benefits their financial audience. The alignment with decarbonisation is seen to offer financial reward from investors, as they are expected to respond positively because the organisations

implementing TCFD are aligning themselves with the government's decarbonisation pathway.

4.2 Decision Environment and Decision Makers

What motivated the decision-makers to view the purpose of the TCFD as they did, and what considerations did they bring into the decision-making environment?

The decision-makers identified in the interviews were identified as financially motivated and held finance expertise. Decision makers were noted as executives and board members. Interviewee C specified the "Chief Investment Officer and CEO and investment strategist" as the key decision maker to approve climate risk mitigation action. Decision makers were highlighted as having financial expertise and operated within a financial mindset. Interviewee A identified that their executive team may also be motivated by the impact climate risk would have on their children, however, it was still emphasised that the underlying motivator was preventing loss of capital via poor risk management. Furthermore, Interviewee H, whose business operations relied on international trade, stated that maintaining market access was a clear rationale for TCFD compliance. Interviewee D identified that the organisation's CFO was the executive sponsor for "anything climate risk related' within the organisation.

The main motivator behind TCFD compliance, aside from the obvious legislative driver, is the financial impact of firstly, perceived value of the organisation, and secondly, the cost of risk exposure compared with the cost of climate risk mitigation action. Regarding perceived value, the outcome of non-compliance with the TCFD was stated not in relation to environmental impact, or public relations impact but rather shareholder impact. One organisation explained that the perceived value of the organisation from investors and shareholders is jeopardised when the financial information disclosed is inaccurate or misleading;

> "We've really been very focused on keeping it very, very much a disclosure document that speaks to the risks that we are exposed to as an organization (...) I don't face a greenwashing risk here I'm facing an investment fraud risk, because we're disclosing our risk. And this forms part of our disclosure suite which the people that purchase our bonds in New York are looking at." (Interviewee G)

An additional six interviewees agreed with the above statement; that they would face accusations of investment fraud as opposed to greenwashing, if inaccurate financial information within the disclosures were provided for investors and shareholders.

The resources that the decision makers had control over were considered under pressure or at capacity already, this included human capital (staff).

The findings presented here demonstrate that the decision-makers signing off on the TCFD recommendations within their organisations held positions that control financial resources, and how these are spent. The resources used or spent were considered within the confines of cost-benefit analysis, along with using resources that were already available to the organisation, whether they be human or financial.

4.3 Experts and Expertise

What resources and expertise were sought under the implementation of TCFD? Why were those particular resources/expertise utilised?

The TCFD mandate ensures organisations disclose the financial cost of their response to climate risk, whether that response be action or inaction in a transition to net zero. These costs are determined by scenario and stress testing, a resource-intensive process that the interviewees stated was a new and unknown process for them. This knowledge gap was filled with expertise that was predominantly sourced externally. Interviewee E questioned the cost of this resource gathering compared to the potential benefit compliance with the TCFD has on climate risk mitigation, and suggested this cost would be a barrier to TCFD compliance for other organisations;

> "Most businesses will have a sustainability budget for the year that you get to allocate to various things, ... and have spent half that budget on sustainability, finance costs, they're not pleased ... because they're still accountable to shareholders to provide money, they still want to pay their staff so they still have to make all of these things work financially". (Interviewee E)

To provide further detail on the aforementioned point, all eight organisations interviewed utilised consultants or third-party data holders during their implementation of TCFD.

> "We've definitely used consultants, especially for our physical risk assessments. That's (where) the real climate change experts can tell us what's the modeling saying." (Interviewee A)
>
> "Getting those kind of external or expert views has been so critical to making sure are we doing similar things to others." (Interviewee B)

This process required funding to obtain the required information. Human resources were also noted as limited, specifically Interviewee G stated that they had the competency to complete the financial risk modeling, however they lacked the staff. Interviewee F's organisation was specifically creating a postgraduate scholarship to help find young academics to learn the skills required to complete scenario modeling. The response to ability in accessing required resources was varied. Interviewee B specified their organisation utilised all of their networks to find appropriate consultants, whereas Interviewee D stated it was easy to find the information. Interviewee H identified their organisation as an early adopter and had used both in-house data collection and consultants, whereas Interviewee A highlighted that typically they would look to other world leaders in the industry for information however were unable to do so as NZ is the first to mandate the TCFD framework. The same organisation stated they would have liked more guidance from governance regulators, whereas another organisation identified they felt content with the amount of information and guidance given, specifically by the XRB.

As previously stated, it was identified that scenario modeling was a challenge for organisations. Three organisations identified that they had been measuring their carbon footprint, and had been measuring under scope 1 and 2, for at least 12 months prior to now. As previously stated, it was made clear that the metrics required by the TCFD

framework posed challenges that could only be met by external data contributors. However, one organisation questioned the value of diverging resources to accommodate the TCFD requirements;

> "And so I think we do with having extremely stringent guidelines, that resources get diverted towards compliance and not towards actually helping the planet which is what we're trying to do." (Interviewee E)

Interviewee E also expressed criticism of the TCFD framework and the requirements detailed by the XRB. They identified that the requirements needed a great level of detailed information to be met. They advised that while it is a valuable exercise for any organisation to investigate how they will respond and adapt to the predicted events of global warming, they questioned just how many resources should be focused on predicting the reactions;

> "All businesses regardless of who they are should be doing this, the question in my mind is just the level of detail we should be doing it." (Interviewee E)

Interviewee E was the only one to mention the role of the XRB, the difference in requirements between the general TCFD framework, and the specifics requested by the XRB. Their organisation had a smaller organisation with less than twenty employees. They discussed the challenges scenario analysis prompted when they are reliant on other risk-affected agents in their supply chain. They identified the challenges of visibility and the complexity of identifying what is material under the regulations.

> "If (something) was material [under] these new XRB standards, the idea is that it could be disclosed, but it's quite difficult to measure. And so you have to try and work out what's material, how you measure those things? Can you even measure them? If not, how are you going to disclose that you can't measure them?" (Interviewee E)

The findings here demonstrate that the sought-after experts and expertise predominantly reside externally from the organisations interviewed. Outside sources are viewed as having greater knowledge, which organisations must engage with to meet the requirements of the TCFD. The relationships built with consultants and third-party experts have been established both before the TCFD implementation and as a result of the recommendations.

5. Discussion

The value of this study is its contributions to understanding the limitations of the TCFD framework in practice and bringing attention to the use of CSH to explore the effectiveness of sustainable reporting as a sustainable development tool. This study found that there is a conflict in values that the TCFD prioritises and that organisations possess, which detracts from the TCFD's intended effectiveness. The conflict arises because organisations still operate with a cost-benefit analysis at the forefront of their actions, supporting the claim of Schaltegger et al, (2017), that organisations focus on maximising profit as the primary operational value that drives decision-making. This is contradictory

to the TCFD's priority that the decarbonisation pathway is the primary concern of organisations.

The main criticism of mandating the TCFD established in this research, is that mandating compliance alone is insufficient to counter-act the systemic conditions affecting organisations decision-making. The organisations will comply, they have stated so and it is legislatively mandated. It is evident that they believe they can comply whilst still maintaining economic growth as their primary value. Their compliance is utilising pre-existent practices and pre-existent values, as evident in the interview responses.

The TCFD prioritises long-term thinking; it situates risk identification as a deep dive into uncertainty, labelling this as double materiality. For organisations to effectively integrate the TCFD into strategic management practices, a mindset shift from organisations is required, where the value of short-term profit-seeking is proposition against long-term resource and firm sustainability. The conflict signifies a question firms must face around value, whether longevity or acceleration is more valuable. The TCFD firmly argues that it is longevity and that firms will identify strategic pathways to ensure their longevity by disclosing their imminent and long-term physical and transitionary risks. But particularly when considering the costs associated with strategically optimising the disclosure requirements, such as the human cost of staff and consultants, and financial expenses presented in the findings, the upfront cost and lack of short-term value may demotivate or disincentivise a firm's adoption of long-term strategic value perceptions.

When considering the organisational structure and activities pursued to enrich the TCFD's strategic value, it is clear that this is limited by the internal versus external sustainable literacy development occurring. External expertise is sought in the form of consultants, recognising that there is valuable knowledge pertinent to regulatory compliance outside of the organisation. Interview respondents questioned the value of the information collection process; those who decided to outsource this process may maintain reluctance to develop internal processes to meet reporting requirements long-term. This is concerning as interview respondents expressed difficulty working out what is material to them and what risk components to quantify; the opportunity to overcome this challenge will be undermined by activities that keep it distanced from internally integrated strategic decision making.

The relationship between corporate governance and non-financial reporting standards is a precarious one; there is an acknowledgment that the sustainability literacy gap is pervasive among boards and firm decision makers (Dimes & Molinari, 2023; Gilchrist et al., 2023), and the TCFD deliberately addresses this in its governance requirements (TCFD, 2019). However, the limitations of non-financial reporting articulated throughout the voluntary reporting literature, highlight that compliance is not automatically equitable to meaningful change (Bingler et al., 2022; Hahn et al., 2023). Presently, decision-makers are aware of institutionalised financial risks, evident in their boundary visibility of fiscal rewards and risks. To support the positioning of disclosure as conducive to systemic change, decision makers must reconsider the legitimacy of non-financial reporting; strategically, it should no longer be viewed as an add-on but a practice "analogous to existing financial accounting practices" (Monciardini, 2022, p. 26), to shift the mindset from a burdensome to opportunistic practice.

The behaviour of using pre-existent practices is supported by institutional theory, which implies that organisations will stick to what they know and do what other organisations are doing in the face of legislative pressure (Fernanado & Lawrence, 2014). Institutional theory contributes to explaining why an organisation would have financially enforced reference points, but it fails to explore what and how these have developed. When looking at the results of the boundary critique, there is a visible reinforcement, a doubling-down, or attachment to the boundary judgments permeated by profit-seeking cognizance; the sustainability 'experts' are limited to the role of informer rather than decision-maker, the value of sustainable reporting is bound by financial value, the socio-environmental ramifications of improper reporting are superseded by potential investor decision-making. Furthermore, in relation to the TCFD's treatment of double materiality, the boundary judgments uncovered signify that long-term climate risk is not considered pertinent nor as immediate as short-term financial risk. The TCFD fails to infiltrate what organisations deem material in the way that Carney advocated for; there is a lack of shared meaning, reflecting again the need for interpretivist methodologies in transition research.

6. Implications and further research

6.1 Recommendations

The sustainability context gap, referring to the lack of sustainable development knowledge in large organisations, is addressed in the TCFD frameworks governance metric and contingencies to develop board members reporting literacy are required (TCFD, 2019). To mitigate the perseverance of the boundary judgements held by organizations new behaviours and new expertise must be brought into the conversation. Encouraging an interconnected dialogue that brings in the values of the uninvolved brings new opportunity for shifting mindsets. Innovation, research and development, and resource optimisation led by new norms and values can help create the unique response climate risk mitigation requires. As an action, this may look like government R&D subsidies, or new policy that encourages a percentage of profit to be redirected into R&D. It would also be beneficial for organisations to review the hierarchical structure of sustainability teams being subservient to financially driven decision makers. Again, this would encourage an equal footing for the values that the TCFD relied upon to be effective, rather than dominated by financially motivated values.

6.2 Limitations and Future Research

This paper leans heavily into the ideology of critical systems heuristics, however, a limitation is that CSH only identifies conflicts and marginalisation, it does not provide guidelines for practitioners on how to apprehend these but CSH can be combined with other systems thinking methodologies. Systems thinking includes hard, soft, and critical approaches; the interpretivist groundings of soft systems methodologies often used in conjunction with CSH, for example, support interventions incorporating multiple actor perspectives and worldviews (Flood & Jackson, 1991; Jackson, 1982; Checkland, 1985).

It is unlikely that a country with a small population like New Zealand will drastically impact the financial markets; the contribution would be, at best, qualitatively admirable and quantitatively marginal. The conceptual foundations of the TCFD

significantly contribute to the IFRS initiative to create a globally accepted and comparable non-financial reporting framework that acts as a vehicle for change in sustainable transitions. The IFRS' inclusion of the TCFD foundations suggests that this is the start of a development period where organisaitons must become comfortable with disclosures. New Zealand firms alone will not influence market forces, but they offer valuable reflections on firm adaptability to a quickly developing regulatory environment, a present research gap demanding attention (Diwan & Amarayil Sreeraman 2023; Turzo et al., 2022). However, it should be considered a limitation of this research that, because of the population size, there was little diversity in organisational structure, size, and governance composition between participating organisations, which may impact the homogeneity of findings.

It could be argued that literature questioning the effectiveness of disclosures in creating systemic change is becoming redundant because of global government's continued emphasis on disclosure mandates to change firm behaviour; despite misgivings, disclosures are here to stay. The value of this research is that it starts to explore the assumptions, values, and responses to mandated disclosures in a Western context, presenting findings that neither support nor denounce disclosures but seek to reflect on the "mandate now, but how?" question posed by Armour et al., (2021). One consistent acknowledgment from participants was that meeting disclosure requirements was a challenge. This finding expands upon the limitations expressed in voluntary reporting literature, as mandated forced compliance means that organisations have no choice but to overcome these challenges rather than opt out of reporting. However, the caveat is that compliance does not accurately reflect an organisation's position on prioritising climate risk mitigation, as evident in this study. This calls for continued research that implores critical analysis of organisations' responses to disclosures in different countries, with varying sizes of population, and different industries, to ensure policymakers and stakeholders do not mistakenly interpret compliance as a guarantor for changed business processes.

Regarding the identification of a marginalised voice in non-financial reporting, large organisations will be subjected to regulatory and stakeholder pressures that many deem necessary to hold organisations accountable for the impetuous behaviour of capitalism. There may be a disproportionate urgency for accountability, that reflects the increasing influence morality has on non-financial reporting and changing perceptions of value (van Bommel et al., 2023). As sustainable development becomes a conversation rife with morality complexities, exploratory conversations could remind audiences that financial actors are both subjected to and enforce economically driven institutional structures prioritising capitalist or industrialist value. In addressing this, future research should continue to question the cultural, political, and economic context in which actors operate in relation to sustainable reporting. The power dynamics of macro-political pressures should be explored, as social and institutional factors shape the relationships between actors that can either support or hinder sustainable transitions.

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