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Local government enterprises climate action: An exploration of New Zealand container seaports' climate-related disclosure practices

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Abstract

This study examines voluntary climate-related disclosure practices among New Zealand (NZ) container seaports, in achieving Sustainable Development Goal 13 (SDG13) on climate action. Using a uniquely constructed Climate Change Disclosure Index (CCDI) and interviews, it assesses disclosure practices aligned with the Task Force on Climate-related Financial Disclosures (TCFD) framework. The CCDI results indicate a 20% average level of climate-related disclosures. Governance (36%) is the leading thematic area, whereas others track behind with limited disclosures among the sampled hybrid seaport entities. Evidence from the interviews reveals financial and legitimacy considerations, stakeholders, and community expectations, including forthcoming regulations, to be motivations for climate-related disclosures. However, technological limitations, Scope 3 measurement, and regulatory inconsistencies constrain progressive climate actions of these entities. The study emphasizes the need for adaptable approaches to climate change beyond policy mandates and contributes to our understanding of sustainability practices in public sector hybrid entities. The

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findings hold implications for SDG13 attainment and the development of climate-related accounting standards.

KEYWORDS
climate action and reporting, hybrid, local government enterprise, New Zealand, SDG13, TCFD

JEL CLASSIFICATION
H42, M48, Q54, Q58

1 | INTRODUCTION

The United Nations' 17 Sustainable Development Goals (SDGs) aim to proffer solutions to a plethora of multidimensional issues[1] confronting humanity (Bebbington & Unerman, 2020; Moses et al., 2022; Roy & Pramanick, 2019; United Nations, 2015). In this light, countries are crafting policies to accomplish the SDGs, especially those linked to positive environmental outcomes such as SDG13 on Climate Action. SDG13 calls upon governments and companies to act urgently to address climate change through resilient, adaptable, and integrative climate change policies (United Nations, 2015). A positive step here is the call for enhanced decision-useful and transparent climate risk information. To help provide comparable climate-related information, the recommendations of the Task Force on Climate-related Financial Disclosure (TCFD) have gained traction as a framework (Ngo et al., 2023), which provides guidance in preparing and reporting climate-related information in four thematic areas of *governance*, *strategy*, *risk management*, and *metrics and targets* (TCFD, 2017).

TCFD's recommended disclosures are consistent with SDG13 and aim to improve sustainability practices of organizations as well as develop transformational capabilities to decarbonize global economies (O'Dwyer & Unerman, 2020). Established by the Financial Stability Board, the TCFD aims to develop voluntary climate-related financial disclosures to guide stakeholders in assessing material risks of entities and facilitate the transition to a lower emission economy (TCFD, 2017). The Sustainability Disclosure Standards released by the International Sustainability Standards Board (ISSB) are based on TCFD's recommendations to achieve uniform, comparable, and mandatory sustainability disclosures (IFRS Foundation, 2023).

We engage with the emerging literature on climate-related disclosures and investigate how New Zealand (NZ) hybrid seaport entities,[2] with significant local government control, are tracking with respect to TCFD-aligned disclosures. We focus our study on NZ seaports for the following reasons. First, these seaports have a significant mix of public and private interests, as they are controlled by local governments but also operate as commercial enterprises with profit-making objectives. They have oligopolistic characteristics given their industry and size and play significant roles in NZ's economy as critical infrastructural assets with high implications for achieving SDG13 and Net Zero commitments (Acciaro, 2015; de Vicente-Lama et al., 2023). Their hybridity provides theoretical motivation for this study as these companies operate in a complex and ambiguous situation regarding their public accountability, social responsibility, and tend to have wider accountabilities beyond the narrow market interests of private firms (Argento et al., 2019; Dragomir et al., 2022; Liu et al., 2017; Manes-Rossi et al., 2021; Moses et al., 2024). Dragomir et al. (2022) advocated the use of multiple theoretical lenses for explaining nonfinancial disclosures by hybrid SOEs.[3]

We engage in this debate by contextualizing two intersecting perspectives: stakeholder and legitimacy theories, given these seaports complex and multiple stewardship obligations (Moses et al., 2024), within the extant praxis of nonfinancial disclosures. As hybrid entities, NZ seaports contend with competing stakeholders' interests (Jansson, 2005; Zollo et al., 2023), requiring trade-offs between market-based performance and adherence to legitimacy tenets akin to their climate commitments. The ambiguous intersectionality between stakeholders' interests and legitimacy pressures under nonfinancial disclosure practices (Liu et al., 2017; Lodhia & Jacobs, 2013; Zollo et al., 2023) creates a

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nexus of accountabilities, a point we elaborate further on in Section 4 (Moses et al., 2024). The intersection of stakeholder and legitimacy theories provides a more nuanced insight into climate reporting practices of hybrid entities and contributes to theoretical frameworks for explaining accountability behavior in hybrid organizations with multiple stewardship responsibilities from diverse (and sometimes competing) stakeholder interests and influences of external regulatory or social norms.

Second, the NZ government is committed to achieving SDG13 and has introduced mandatory regulation[4] effective from 2023 fiscal year. This regulation requires large financial services organizations, including equity and debt issuers, to disclose their climate-related information akin to TCFD's recommendations (Shaw, 2020). The climate-related disclosures are, in the first instance, intended for private sector reporting, but the expectation is that hybrid enterprises and public sector entities would follow what is to become the best practice. Thus, given this pending mandatory regime, we examine the level of and motivation for climate-related disclosures of seaports within the prevailing voluntary disclosure regime. Third, in a recent report, the NZ Auditor-General (Office of the Auditor-General [OAG]) spotlighted seaports as a subset of public sector entities and, based on their 2019/20 audit reports, noted that although they had made strides in disclosures on environmental impacts, including some aspects of climate change, concerns remained about non-standardized and non-systemized disclosure practices. The OAG suggests that, given the vulnerability of seaports to the effects of climate change, additional disclosures on climate risks are needed (OAG, 2021).

Considering the above, this study examines the climate-related practices of NZ container seaports and addresses the following research questions:

(I) What is the nature and quantum of climate-related disclosures made by NZ container seaports in a voluntary disclosure environment?
(II) What are the factors influencing NZ container seaports' climate-related disclosures as perceived by each entity's management?
(III) How have NZ container seaports' climate-related disclosure practices evolved, and what constraints remain?

To address these questions, a combination of quantitative and qualitative techniques is employed,[5] within a conceptual framework of stakeholder and legitimacy theories in relation to hybrid entities (Argento et al., 2019; Grossi & Thomasson, 2015; Grossi et al., 2015; Peña & Jorge, 2019). To answer the first research question, we construct a Climate Change Disclosure Index (CCDI) based on the TCFD-recommended disclosures made by the six NZ container seaports using data collected from their annual reports from 2017 to 2021. The CCDI was constructed in order to assess the extent of these entities' climate action through voluntary information provided with respect to climate-related disclosures. To address research questions (II) and (III), we supplemented the quantitative insights with in-depth interviews with six key senior managers from the seaports, including a chief executive, a chief financial officer, and infrastructure and communication officers tasked with managing and reporting climate, sustainability, and environmental issues in the seaports.

The CCDI findings reveal that NZ's local government–owned seaports provide more substantial disclosures in governance and strategy compared to risk management, metrics, and emission reduction targets. There is a notable lack of information on greenhouse gas (GHG) emission reduction targets and performance indicators to measure progress. However, when compared to disclosures for 2017–2018, the periods between 2019 and 2021 witnessed an increase, reflecting the growing awareness of climate-related issues among these entities.

Interview insights suggest that these entities are aware of their climate commitments and their impact on operations but face challenges related to technology and expertise to achieve SDG13. This suggests that achieving positive outcomes on climate action requires not just policy mandates and reporting but also adaptable and integrated approaches to climate change and policies.

This study makes further contributions to the field of sustainability in the public sector and hybrid entities' literature. Theoretically, the study provides incremental insights into the complexities associated with hybrid entities fulfilling their stewardship and accountability obligations. We provide incremental insights to understanding phenom-

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ena in the presence of hybridity within an entity's operations under multiple stewardship responsibilities from diverse (and sometimes competing) stakeholder interests and influences of external regulatory or social norms. In this light, it surfaces the complex maneuvering essential for value creation by hybrid public sector entities to satisfy stakeholders and (re)gain their social license. Additionally, the study responds to the call by Grossi et al. (2022) for incremental insights into the nature of accounting, performance, and accountability in hybrid organizations. It demonstrates that for hybrid seaports, their climate-related accounting and accountability practices are important performance mechanisms for legitimizing their value creation efforts in the bid to satisfy the interests of stakeholders. Furthermore, the CCDI developed for the study provides unique data for assessing climate-related disclosures and broader climate action discussions in NZ and globally. Additionally, the study's results shed light on the impact of TCFD disclosure in public sector entities, decision-making processes for voluntary climate-related disclosures, and constraints to climate action in the maritime industry. Collectively, these findings have important implications for regulation, the achievement of SDG13, and the development of climate-related accounting standards.

The remainder of the paper is structured as follows. The next section provides the background of NZ seaports, whereas Section 3 provides the literature review, and Section 4 discusses the theoretical framework. Section 5 outlines the research methodology, and Section 6 presents the findings. Section 7 concludes the study and outlines its implications.

2 | NEW ZEALAND SEAPORTS

Seaports in NZ are strategic infrastructural assets that are significant to the NZ economy. There are 12 seaports in NZ with only 6 able to handle containers.[6] They represent international freight gateways for NZ imports and exports. They reflect significant investment, which generates $NZ1402.1 million in revenues and holds more than $NZ6427.9 million in total assets and $NZ4324.6 million in total equity (OAG, 2021). The two largest container seaports, Port of Tauranga and the Ports of Auckland, operate as companies, own 51% of all the seaport assets (by value), and generate 38% of the entire seaports' revenue. The Port of Tauranga is NZ's largest *export* container seaport (i.e., 48% of total exports by value in 2020 went through that port), whereas the Ports of Auckland is the largest NZ container import port (i.e., receiving 51% of total imports by value). Between them, the five smallest seaports own 11% of assets, generate 13% of revenue, and process less than 15% of the exports and imports that go through all NZ seaports (OAG, 2021).

NZ seaports are primarily owned by regional councils on behalf of the public,[7] with some exceptions where seaport companies have shares traded on the New Zealand Exchange (NZX). These listed companies are still majority-owned by their regional authorities, controlling 51% of their shares. Seaport companies operate under the Port Companies Act (1988), which regulates their commercial aspects to promote efficiency, economy, and performance. Section 19 of the Act classifies all port companies as "public entities," subjecting them to audits by the NZ Auditor-General. As for financial reporting, they comply with the NZ equivalents to International Financial Reporting Standards (NZIFRS). Although the Act mandates port companies to operate as successful businesses, it does not provide a specific definition of success. Instead, port companies collaborate with their owners (regional councils) to define what success means for them. This results in variations in objectives, with some port companies focusing on maximizing returns for shareholders and others having broader goals beyond financial gains, such as supporting regional prosperity and sustainable trade facilitation.

3 | LITERATURE REVIEW

The literature on climate-related actions is still emerging (Borghei, 2021; Smith et al., 2008), and there is very limited research on public sector climate-related actions in line with SDG13 (Kaur & Lodhia, 2019; Liu et al., 2017; Manes-

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Rossi et al., 2020). In most jurisdictions, disclosures regarding climate actions remain a voluntary activity with limited standardization[8] (David & Giordano-Spring, 2022; Griffin & Jaffe, 2022), bar NZ, which has mandated climate-related disclosures.[9] The issue of standardization and appropriate frameworks for environmental reporting practices within the seaports sector has been challenging and subject to significant debates. These debates surface the tensions for seaports to deliver on both their business strategy as corporate patrons and their responsibilities to their communities regarding environmental sustainability (Acciaro, 2015; Dinwoodie et al., 2012; Grewal & Darlow, 2007). Rodrigues et al. (2021) found the lack of common methodology for the quantification of environmental performance indicators and the non-specificity of universal guidelines like the Global Reporting Initiative (GRI) standards for the seaport sector to be challenges around benchmarking practices for sustainability reporting practices among seaports. Moreover, de Vicente-Lama et al. (2023) noted the need for more stakeholder engagement and dialog in seaport sustainability reporting processes to facilitate improvements in their reporting quality.

Prior studies around climate actions have focused on the determinants (Ben-Amar et al., 2017; Dawkins & Fraas, 2011; Faisal et al., 2018; Kouloukoui et al., 2019) and volume (Giannarakis, Zafeiriou, et al., 2017; Giannarakis, Konteos, et al., 2017; Kouloukoui et al., 2018, 2019) of climate-related information and their importance to investors, market participants, and other stakeholders for information on companies' climate actions (Ashrafi et al., 2019; CIPFA, 2022; Edwards et al., 2020; Thistlethwaite, 2015). The consensus of these studies is that climate risk disclosures are important for stakeholders, and they are determined by various factors like corporate governance mechanisms, country of operation, firm size, and company environmental consciousness and performance. However, the level and type of these disclosures are relatively low. Specifically for seaports, Ashrafi et al. (2019) found key motivations for sustainability actions by seaports, to be risk management, return on investment, and corporate citizenship. In a study of Polish seaports, Wagner (2017) found the most important sustainability priorities for these seaports were providing employment and managing emissions, whereas Wang and Zhao (2016) highlighted sustainable port infrastructure conditions as a critical feature for seaports sustainable development.

Regarding the implications for SDG13 based on TCFD's framework, few studies have assessed climate-related disclosures using its recommendations. Demaria and Rigot (2021) evaluated the reporting compliance of French CAC 40 firms with TCFD recommendations from 2015 to 2018 and found a gradual increase in the level of disclosures, particularly for companies in polluting sectors. They also found better disclosures in the areas of risk management and metrics compared to governance and strategy. Similarly, David and Giordano-Spring (2022) investigated the disclosures of 24 international airlines from 2015 to 2018 and found that although climate risk reporting increased from 2015 to 2018 (before and after the issuance of the TCFD recommendations), airline companies' compliance with TCFD recommendations was poor, specifically concerning the core element of strategy. Bingler et al. (2022) used ClimateBERT, a context-based algorithm, to identify climate-related financial information from TCFD supporting companies' annual reports from 2014 to 2019. They found that supporting the TCFD seems to be "cheap talk" by companies and is associated with cherry-picking disclosures on those TCFD categories containing the least materially relevant information.

4 | THEORETICAL FRAMEWORK

4.1 | Stakeholder theory

Studies in relation to hybrid entities suggest that the disclosure of nonfinancial information by SOEs may be linked to demands of different stakeholders (Argento et al., 2019; Garde-Sánchez et al., 2017). The broad conceptualization of stakeholders as actors who can affect or be affected by the achievement of an organization's objectives (Freeman, 1984, p. 46) creates interdependence between organizations and their stakeholders (Thomasson, 2009) that is built on the symbiotic relation of satisfying the interests of each party. In this instance, an organization's need for resources to accomplish operational targets is met by stakeholders who, in turn, expect the organization to create

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value for them (Post et al., 2002). Stakeholder theory follows the notion that an organization can influence and be influenced by different actors/entities, such as customers, employees, suppliers, shareholders, community, and environment, based on different expectations (Bui, Moses, et al., 2020; Elijido-Ten et al., 2010; Farneti et al., 2019). Here, the qualifying attribute of a stakeholder might suggest an actor with a stake (i.e., financial interest) in the organization. However, Donaldson and Preston (1995) argued that actors with significant influence on an organization's operations and practice—even if they do not have a direct (i.e., financial) stake—also fit the classification of stakeholders, which broadens the obligation expectations on such organizations.

By their nature, NZ seaports typify hybrid organizations with combined ownership and operational characteristics across private, public, and not-for-profit sectors (Zollo et al., 2023), with a likely ambiguous stakeholders' interest to be delivered upon. As such, these seaports do not necessarily belong to any one of the three traditional sectors exclusively and thus require trade-offs across conflicting interests of market-based performance while adhering to climate action commitments (Zollo et al., 2023).[10] Moses et al. (2024), in advancing the nexus of accountabilities (due to multiple stewardship obligations), highlighted the challenges organizations with multiple stakeholders' interests face in fulfilling their stewardship requirements. An explanation for this stems from different demands imposed on these organizations by influential actors in their operational environment (Thomasson, 2009, p. 354). Practically, in the case of NZ seaports, the councils as their major stakeholders could expect a strong focus on climate actions that align with strategic interests, but this may itself create tensions in terms of accomplishing the overall market-based interests of their other stakeholders. Indeed, it might as well be that the council, while hoping the seaports create value through climate actions, may demand value creation through wealth maximization simultaneously. Hence, the mixed interests these hybrid organizations contend with mean they have more competing stakeholders' interests to satisfy (Jansson, 2005; Thomasson, 2009; Zollo et al., 2023). Balancing these interests requires maneuvering that delivers improved performance across several competing interests.[11] If these organizations fail to find this balance, they may risk losing the support of displeased stakeholders, and that may come with severe consequences (Clarkson, 1995; Thomasson, 2009; Zollo et al., 2023).

4.2 | Legitimacy theory

Legitimacy theory infers a contractual relation between organizations and the society in which they operate, based on culture, belief systems, and values (Deegan & Rankin, 1996; Kouloukoui et al., 2019). Scholars contend that organizations exist for perceived societal expectations, and only through such social license can they operate effectively (Bui, Moses, et al., 2020; Liu et al., 2017; Zollo et al., 2023). Liu et al. (2017) argued that the "right to obtain resources and thus to exist is conferred upon organisations by society with the condition that they conform to societal expectations—forming a 'social contract'" (p. 268). Inevitably, a breach of this social contract leading to a failure to fulfill societal expectations will ultimately result in the withdrawal of the right to continue operations and, thus, an incentive to act in congruence with society's expectations (Dias Filho, 2012). Relatedly, Zollo et al. (2023) noted that legitimacy involves testing and redefining of the acceptability of an organization's practices via continuous social interactions with actors and its surrounding environment.

Arguably, organizations may seek legitimacy as an operational resource (Kuruppu et al., 2019) and draw on environmental reporting strategies to respond to legitimacy threats, thereby gaining the support of their key audience (Chelli et al., 2014, p. 283). An approach predicated on seeking societal support for survival rather than a genuine desire to effect real change. More akin to symbolism or rhetoric (Bui, Moses, et al., 2022), organizations in this case will focus on impression management by positively communicating their environmental agenda rather than achieving tangible results with a concrete positive sustainability impact (Chelli et al., 2014; Kuruppu et al., 2019). We contend that NZ seaports, in contrast, adopt an institutional legitimacy approach to honor their social contract and ensure that stakeholders validate their actions as legitimate, thereby granting them the social license to operate. Institutional legitimacy emphasizes the power of external, cultural, and contextual factors in shaping organizations and the standards by which they are judged (Kuruppu et al., 2019, p. 2065). As suggested by DiMaggio and Powell (1983), coercive, mimetic,

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and normative processes influence organizations to adopt practices that conform to recognized institutional patterns. These practices may be driven by legislation (coercive), industry standards (mimetic), or societal norms (normative).

Hence, our argument focuses on the institutional legitimacy that NZ seaports align with to legitimize their social license to operate and gain the acceptance of influential players. With these expectations at the center of the relationship between seaports in NZ and actors in their environment, an intuition around their climate actions would suggest that it is determined considering the interest of stakeholders and their influence per the social contract with the seaports. In terms of community awareness and concern for climate change—which has peaked in recent times—seaports in NZ are likely to be penalized by stakeholders with vested interest in their climate actions via the withdrawal of their social license to operate if they breach their contract with them.

4.3 | Theoretical intersection: stakeholder and legitimacy theories within hybrid structures

The ensuing debate in light of the multiple complex organizational structures of seaports in NZ justifies the use of a dual lens to gain empirical insights into the state of play of NZ seaports' climate actions. The legitimacy theory seems aptly suited for our empirical exercise, but it is still apparently limited in providing us with detailed insight. One reason for this is the other stakeholders' interests that these entities have accountability obligations for, outside the remit of legitimacy theorization. Moses et al. (2024) explained that organizations that find themselves amid multiple stewardship obligations (i.e., nexus of accountability) find it operationally challenging to satisfy multiple interests. Fundamentally, understanding the climate practices of NZ seaports given their hybrid operational characteristics requires more than a single perspective due to their complex structure and multiple stewardship obligations.

The postulation here builds on the complex ownership characteristics of NZ seaports and the ensuing caveats in blending stakeholder and legitimacy theories as our theoretical framework. One line of reasoning considered pertinent for NZ seaports' climate actions emanates from the need to meet key stakeholders' expectations (Bui, Moses, et al., 2020; Thomasson, 2009; Zollo et al., 2023), especially if doing so results in direct operational benefits. However, the combination of hybrid ownership interests and operational multi-complex nature of stakeholders suggests that a simple one-size-fits-all perspective to understand this phenomenon hampers deeper empirical insights. For example, stakeholders outside of the traditional narrow organizational boundaries (Freeman, 1984; Liu et al., 2017), but with significant influence on the operations of the seaports (Dias Filho, 2012; Donaldson & Preston, 1995; Zollo et al., 2023), will find their interest not directly addressed. The influence of such stakeholders may lead to a withdrawal of the social license of such a seaport, causing significant legitimacy damage. Hence, our combined use of stakeholder and legitimacy theoretical lenses will avert this problem of limited insights.

Legitimacy theory affords us the opportunity to glean insight beyond the remit of stakeholder theory. A complimentary argument for the joint theoretical lens might suffice on the possible overlap of interest of certain stakeholders—who have vested interest for NZ seaports' climate actions as conditions for providing them resources and complementary influence of legitimacy that may result in the withdrawal of social license if their interests are not met. Our postulation, therefore, is that seaports in NZ in meeting the needs of direct stakeholders' face legitimacy pressures from influential actors (i.e., advocates for climate change) to operate in a manner that provides proof of their commitment to climate actions (Liu et al., 2017; Lodhia & Jacobs, 2013; Zollo et al., 2023). Theoretically, these pressures could ensure that NZ seaports disclose their climate information and practices as symbolic evidence to these stakeholders in their quest to gain their approval. Moreover, the interest of councils in NZ to drive positive climate actions and their majority stake in several seaports in NZ might suggest their expectations as key stakeholders could combine the need for stewardship and climate actions as conditions for renewing ports social license to operate (Zollo et al., 2023). Collectively, NZ container seaports extent of voluntary disclosure of their climate-related information based on the TCFD recommendations could be theoretically understood via a complementary framework that accounts for both stakeholders' interests and their need for legitimacy.

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TABLE 1 New Zealand (NZ) seaport features and environmental reporting frameworks.

Container seaport	Total assets in 2021 $NZ000	Council ownership (%)	Environmental reporting framework				
			2017	2018	2019	2020	2021
Ports of Auckland	1591,160	100	IR	IR	IR	IR	IR
Port Tauranga	2081,270	54	N	IR	IR	IR	IR
Port of Napier	479,997	55	N	N	N	UNSDG	TCFD
Port of Otago (Dunedin)	746,569	100	N	N	N	IR	IR
Port of Lyttleton (Christchurch)	590,870	100	N	N	N	IR	IR
Port of Wellington	432,674	100	N	N	N	N	N

Abbreviations: IR, integrated reporting; N, none; TCFD, Task Force on Climate-related Financial Disclosure; UNSDG, United Nations Sustainability Development Goals.

5 | METHODOLOGY

The study employs a comprehensive methodology, integrating both quantitative and qualitative techniques. The focus on six container seaport is due to their substantial size and pivotal role in NZ's economy. Table 1 describes the unique features and environmental reporting frameworks in use by the seaports. All seaport companies are wholly owned by local councils, bar two: Port of Tauranga and Port of Napier, which are listed on the NZX, with controlling interests by local councils. There is a sparse engagement with the climate-related reporting framework across the seaports for the period understudy. Albeit, we note some level of engagement with integrated reporting (IR) in most respects and very limited use of UN Sustainability Development Goals (UNSDG) and TCFD reporting frameworks. Intuitively, this limited engagement may, in principle, account for some early learning experiences with certain categories of TCFD requirements.

5.1 | Quantitative data and the Climate Change Disclosure Index (CCDI)

In addressing research question (I) (*RQ1*), we hand-collected data from the seaports' annual reports, including standalone sustainability reports where available, from 2017 to 2021. The selection of this 5-year timeframe provides a longitudinal perspective on the evolution of the entities' sustainability practices in alignment with TCFD requirements. The decision to initiate our sampling period in 2017 corresponds with the release of the TCFD recommendations (TCFD, 2017). From the data collected, we developed a CCDI based on the TCFD recommendations to assess entities' climate-related disclosure practices. Our CCDI follows prior studies' approach to corporate environmental information (David & Giordano-Spring, 2022; Demaria & Rigot, 2021; Tauringana & Chithambo, 2015). The CCDI is based on content analysis through a systematic approach that enables us to make inferences about the climate-related disclosures of these seaports.

The TCFD requires disclosures of climate-related information under four themes: *governance (GOV)*, *strategy (STR)*, *risk management (RM)*, and *metrics and targets (MT)* (TCFD, 2017). The disclosures enable stakeholders to understand and evaluate preparers' climate-related risks and opportunities. The themes and their recommended disclosures are further supplemented with reporting guidance. Consequently, for each theme, there are specific recommended disclosures and guidance used to construct the CCDI in our study (see Table 2).

In developing the CCDI, we build on prior recommendations to ensure the reliability and accuracy of data used (Bouten et al., 2011; Demaria & Rigot, 2021). The procedure involved constructing a coding grid based on the four TCFD themes and 11 recommended disclosures. Following the emergence of a well-developed template, one of

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TABLE 2 The Task Force on Climate-related Financial Disclosures (TCFD)-recommended disclosures.

Governance	Strategy	Risk management	Metrics and targets
Disclose the organization's governance around climate-related risks and opportunities	Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material	Disclose how the organization identifies, assesses, and manages climate-related risks	Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material
Recommended disclosures	**Recommended disclosures**	**Recommended disclosures**	**Recommended disclosures**
(a) Describe the board's oversight of climate-related risks and opportunities	(a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long terms	(a) Describe the organization's processes for identifying and assessing climate-related risks	(a) Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process
(b) Describe management's role in assessing and managing climate-related risks and opportunities	(b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning	(b) Describe the organization's processes for managing climate-related risks	(b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions and the related risks
	(c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario	(c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management	(c) Describe the targets used by the organization to manage climate-related risks, opportunities, and performance against targets

Source: TCFD Recommendations and Supporting Recommended Disclosures (TCFD, 2021, p. 15).

the researchers encoded the reports of the sampled organizations using a peer-checking[12] method, which involved detailed discussion of decision-making parameters with all members of the research team to ensure consistency and reliability of the index data.

5.2 | Interviews

To address research questions (II) (*RQ2*) and (III) (*RQ3*), we employed a qualitative approach through interviews. The six seaports were invited to nominate participants who were responsible for managing climate action and broader sustainability matters to participate in the interview. Six participants confirmed their availability, and subsequently, and two team members conducted the interviews. After numerous follow-up emails to individuals who did not respond, and considering the emergent insights suggesting data saturation, we only focused on individuals who responded to the invitation for interviews. The six interviewees represented the three largest seaports in NZ (Ports of Auckland, Port of Tauranga, and Port of Napier). Despite the relatively limited number of interviews, it is worth noting that we approached a state of saturation following conversation with our fifth participant. Bui (2021) noted that data saturation is reached at a point where obtaining additional new information becomes challenging or further coding is no longer feasible, and sufficient information exists to replicate the study (Fusch & Ness, 2015; O'Reilly & Parker, 2013). The interviews with the six participants took place between May and September 2022. All participants held high-

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TABLE 3 Participants' interview details.

Interview participant	Gender	Position	Interview duration (min:s)
Interviewee A	Male	CEO	42:00
Interviewee B	Male	General manager—Infrastructure	41:52
Interviewee C	Female	Communications Manager	35:04
Interviewee D	Male	CFO	35:20
Interviewee E	Male	Property and Infrastructure Manager	35:07
Interviewee F	Male	General Manager, Assets and Infrastructure	33:59

level positions within their respective management teams with extensive knowledge of their entity's climate-reporting practices. A summary of the participants' information is provided in Table 3.

The interviews were conducted using semi-structured interview questions that broadly elaborate on RQ2 and RQ3. Each interviewee was asked to reflect on their experience and perceived future expectations in line with the climate actions of their entities (Bui, 2021; Moses et al., 2024; Qu & Dumay, 2011). Generally, participants were allowed to freely discuss at length. To elicit more insights, we probed further into unanswered questions of issues not fully addressed, consistent with each interviewee's line of thought.

We employ an interpretive procedure (Baudot et al., 2022; Moses et al., 2024) to understand the evolution of climate disclosure practices coupled with factors and constraints influencing climate-related disclosures in NZ container seaports as perceived by entity management. We approach our data analysis in this regard through an inductive technique that aligns with our research inquiry, allowing us to synthesize emergent themes from the interview data (Moses et al., 2024). Initially, we established codes based on insights drawn from the data. Subsequently, these codes are synthesized into emergent themes (see Table 4). The data coding and analysis were carried out by two team members. The first member coded the transcribed interview data according to the research questions. This coding was then reviewed for appropriateness and classification by the second team member.

6 | RESULTS AND DISCUSSION

6.1 | Determining the nature and quantum of NZ container seaport climate disclosure (RQ1)

We address RQ1 using our constructed CCDI for the analysis. Based on seaports reported climate-related information, our analysis here sought to understand how these disclosures aligned with TCFD recommendations. Figure 1 provides a trend summary of the aggregate index. We find an increasing trend in the quantum of TCFD-aligned disclosures by seaports. Specifically, the volume soared from 7% in 2017 to 42% in 2021, consistent with prior findings (Bui, Moses, et al., 2020; David & Giordano-Spring, 2022). Theoretically, this increase could arguably be in response to the demand from seaport stakeholders (Thomasson, 2009). David and Giordano-Spring (2022) noted that the uptake of climate-related disclosure seems to predate TCFD recommendations, thus emanating from periods immediately after the 2015 Paris Agreement. We ascribe this situation to the growing stakeholders' pressure for climate actions (Bui, Moses, et al., 2020; Moses et al., 2018; Thomasson, 2009; Zollo et al., 2023) and, more recently, the emerging regulatory requirements in sight. Nevertheless, the 42% threshold of reporting only goes to affirm the fact that climate-related disclosures are still emerging. Furthermore, considering the hybrid nature of these entities and the diverse interests of multiple stakeholders they must satisfy (Moses et al., 2024; Zollo et al., 2023), it is plausible that resources and attention are directed toward meeting other pressing stakeholder interests, particularly in the absence of mandatory requirements for this information. From a theoretical perspective, managers may find strategic

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TABLE 4 Interviews thematic template.

Research question	Themes	Codes
RQ2: What are the factors influencing NZ container seaports' climate-related disclosures as perceived by each entity's management?	Prioritization of climate-related information reporting	(i) Climate action awareness (ii) Climate reporting as Board's priority (iii) Carbon emissions (iv) Seaport-specific industry concerns
	Factors driving climate information disclosure practices	(i) Stakeholder interests (ii) Community expectations (iii) Regulations and standards (iv) Industry guidance (v) Legitimacy (vi) Financing considerations
RQ3: How have NZ container seaports' climate-related disclosure practices evolved and what constraints remain?	Changing dynamics in NZ container seaports' climate reporting practices	(i) Environmental reporting framework (ii) Application of TCFD framework (iii) Sustainability performance targets and incentives (iv) Assurance and climate risk management
	NZ container seaports' climate reporting constraints	(i) Complexity of requirements (ii) Ambiguity/Opaqueness of regulations (iii) Inconsistency in industry reporting practices (iv) Emissions targets (v) Technology (vi) Investment horizons

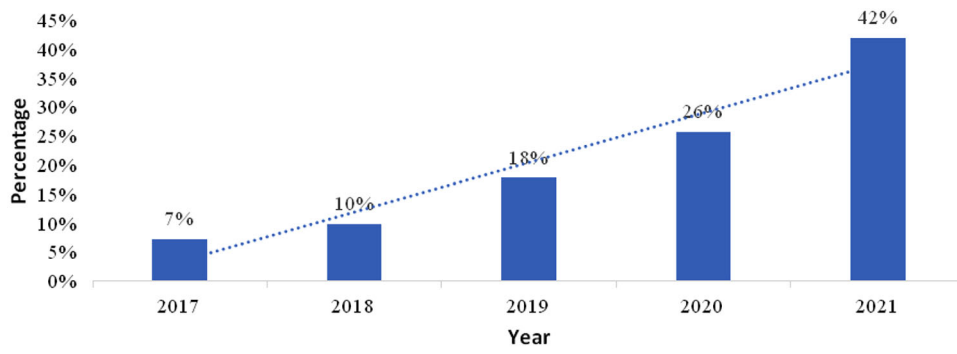

FIGURE 1 Climate Change Disclosure Index (CCDI) yearly aggregate reporting by the six New Zealand (NZ) container seaports. [Colour figure can be viewed at wileyonlinelibrary.com]

maneuvering necessary to balance the various competing interests required to enhance performance in these entities (Clarkson, 1995; Moses et al., 2024; Thomasson, 2009; Zollo et al., 2023), thus prioritizing the allocation of resources to address other interests ahead of providing comprehensive climate-related information.

Table 5 reports the aggregate level of disclosure threshold across all thematic areas. It shows that, on average, these seaports disclose about 20% of climate-related information (i.e., mean CCDI). As can be gleaned from the median

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TABLE 5 Climate Change Disclosure Index (CCDI) for the container seaports for 2017–2021.

	Themes				
	Governance	Strategy	Risk management	Metrics and targets	Overall CCDI
Mean	0.36	0.16	0.15	0.15	0.20
Median	0.34	0.10	0.10	0.09	0.17
Standard Deviation	0.28	0.21	0.18	0.18	0.19
Range	1.00	0.79	0.60	0.82	0.80
Minimum	0.00	0.00	0.00	0.00	0.00
Maximum	1.00	0.79	0.60	0.82	0.80
Observation	30	30	30	30	30

CCDI score, half of the seaports have only managed to disclose 17% of TCFD aligned information across the sampling period. Furthermore, the standard deviation of 0.19 suggests a huge disparity between seaports that reported and seaports that did not. This becomes apparent upon cross-examination of the distance between the minimum and maximum CCDI values (i.e., 0.80). Suggesting instances of no disclosures on climate-related information across entity and time. The implication of the 20% threshold is clearly a reaffirmation that the climate-related reporting threshold is low within seaports. These findings concur with prior results in most respects (e.g., David & Giordano-Spring, 2022; Demaria & Rigot, 2021); however, we note a much lower reporting threshold from the container seaports, akin perhaps to our theoretical postulation (Bui, Moses, et al., 2020; Thomasson, 2009; Zollo et al., 2023), especially if doing so results in direct operational benefits. Notwithstanding the limited reporting threshold among these seaports, we consider their sparse yet emerging efforts as preparatory for the forthcoming mandatory reporting regime in NZ.

6.1.1 | TCFD theme alignment

Governance, with a mean (median) CCDI of 36% (34%), leads the pack as the most aligned theme (Table 5). Half of the sampled seaports disclose 34% of TCFD-aligned governance information. The GOV minimum score of 1 indicates the instance of near-100% TCFD-aligned governance disclosure by some entities. A possible explanation could be the extensive corporate governance requirements that corporations have had to deal with in the last two decades (Ben-Amar & McIlkenny, 2015; Bui, Houqe, et al., 2020). This may have developed entities' capabilities to incorporate climate-related issues in their governance processes. In theory, this trajectory of reporting serves as a foundation for seeking and reaffirming legitimacy in the operations of the seaports (Deegan & Rankin, 1996; Kouloukoui et al., 2019; Liu et al., 2017). Nevertheless, the impressive governance score of 36% compared with other thematic areas still tracks at a low threshold given the forthcoming mandatory disclosure regime in NZ.

With respect to strategy (STR), the result reveals a poor threshold of 16%, which is slightly higher than the two lowest thematic areas: risk management (RM) and metric and targets (MT). The duo of RM and MT indicate a particularly low level of alignment of 15% (Figure 2). Suggesting seaports may have difficulties disclosing climate-related information for other thematic areas, aside from governance under mandatory regime. Several factors could be responsible for this. First, given the relatively new nature of these reporting requirements, entities may still be at an early stage of understanding how to collect and report this specialized type of information (Swart et al., 2004).

Another plausible reason could be the cost associated with providing this incremental information in the absence of a mandatory requirement. This may theoretically align with managers possible maneuvering in balancing cost-benefit needed to achieve their performance targets, considering the hybrid nature of seaports and multiple stakeholders' interests at stake (Moses et al., 2024; Zollo et al., 2023). Studies provide evidence of the cost associated with reporting

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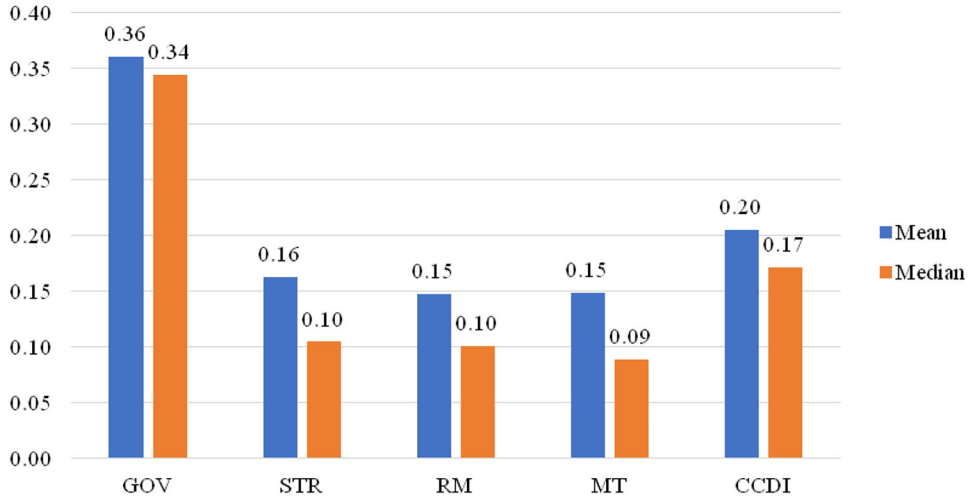

FIGURE 2 Climate Change Disclosure Index (CCDI) summary index for the period 2017–2021. [Colour figure can be viewed at wileyonlinelibrary.com]

(Bui, Moses, et al., 2020; Moses et al., 2018). Hence, in the absence of mandatory requirements, it is unlikely that entities would provide information beyond what is necessary. It has also been argued that although entities may favor the provision of additional information to stakeholders, they are constrained by the technical requirements of providing such specialist information (Swart et al., 2004). We explore these issues further in Sections 6.2 and 6.3.

6.1.2 | TCFD-recommended disclosure alignment

We conducted further granular analysis, narrowing our focus to the 11 recommended TCFD disclosure areas as noted in Table 2. Untabulated results reveal three recommended areas with comparable better scores: (i) board's oversight of climate-related risks and opportunities (57%); (ii) organization's processes for identifying and assessing climate-related risks (24%); and (iii) targets used by the organization to manage climate-related risks and opportunities and performance (24%). In contrast, the three most challenging areas for the seaports are (i) organization's processes for managing climate-related risks (5%); (ii) metrics such as GHG emissions targets, used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process (5%); and (iii) impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning (8%). Essentially, these aspects of the TCFD recommendations have a combination of technical and specialist skills requiring third-party intervention to achieve (Swart et al., 2004).

6.2 | Factors influencing New Zealand container seaports' climate-related disclosures (RQ2)

We address RQ2 using the interview data, based on discussion with management staff of NZ container seaports, to comprehend factors driving their voluntary climate-related disclosures ahead of mandatory regulations in NZ. Our data analysis is reported under two broad findings, namely, (i) prioritization of climate-related information reporting among these seaports and (ii) factors driving their climate information disclosure practices.

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6.2.1 | Climate change prioritization and awareness of climate action

Unsurprisingly, the level of perceived prioritization accorded to climate issues varies across the container seaports. A general trend indicates an increasing awareness of climate issues (Moses & Hopper, 2022) by top management, but with significant differences in their approach and governance (David & Giordano-Spring, 2022; Griffin & Jaffe, 2022), albeit the seaports' strategic decisions are not necessarily permeated with climate change awareness and only given selective attention if required:

> I mean that's been the case (i.e., non-consideration of climate change in strategic decision-making) here for quite some time […] That just gets dealt with when it need be, really, rather than being the top priority.—**Interviewee B**

> We've just done a strategy session; the answer is no [we don't consider climate change in strategic decisions]. They (the board) don't. It's on our risk register. It is acknowledged. Is it a specific subject when we discuss a strategic decision? […] It's never discussed.—**Interviewee A**

> I think it's still emerging, so we do have a board subcommittee for sustainability and climate change is included in that.—**Interviewee F**

Triangulating intuitions from the CCDI analysis with these responses provide insights into the limited seaports' climate-related disclosures (David & Giordano-Spring, 2022; Demaria & Rigot, 2021). The recognition of climate issues has not translated into the decision-making processes of these seaports. Clearly, climate risk has not been made the focal point of their strategic decision-making. Notably, from the CCDI, these seaports made additional disclosures in recent years (i.e., 2019–2021), compared to the early years 2017–2018; a strong indicator of their developing awareness of the climate-related issues (Demaria & Rigot, 2021). In this context, the hybrid nature of NZ seaports creates complex and competing interests among stakeholders (Moses et al., 2024; Zollo et al., 2023), necessitating trade-offs between market-based performance and environmental commitments. Hence, as noted by the interviewees, although management does take notice of climate-related issues, there appears to be a focus on priorities of actors with significant influence on the seaports' accomplishments (Bui, Moses, et al., 2020; Freeman, 1984; Thomasson, 2009), especially given the symbiotic relationship of satisfying those needs and creating value (Post et al., 2002) as a necessary precursor for accessing future resources.

One might argue that the nature and industry of these seaports have informed their current climate reporting practices, as there is some evidence to suggest they consider broader environmental concerns given their hybrid structure with multiple stakeholder information needs and trade-off to balance these interests (Grossi & Thomasson, 2015; Grossi et al., 2015; Peña & Jorge, 2019):

> I wouldn't say it's a top priority, as in carbon emissions, we're quite holistic in our environmental management, so you know we spend a lot of time looking at air and water quality and noise. You know, it's just part of the environmental concerns that we look at […] Definitely, the environmental aspect of the business is front and centre as one of our board's concerns.—**Interviewee D**

> In terms of climate change, I think we've sort of got our head around you know, in terms of what it's sort of looking like for us, obviously we're in quite a unique environment being on the waterfront. That we've also got a reasonable understanding in terms of the supply chains.—**Interviewee B**

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> In terms of reporting, I have a dashboard where we're just looking at a number of environmental issues, so it's air quality, there's a number of different metrics we have for that. Storm water quality, there's a number of different metrics we have for that. Noise compliance. Yes, and also our carbon footprint. The biggest environmental issues we focus on here are air quality and storm water quality. We operate on side of a harbour and that's really important to us as it's an important issue for our stakeholders.—**Interviewee E**

Here, we see seaports attempting to navigate the complexities of climate change and environmental concerns in different ways. Some are focusing on understanding the specific impacts on their operations and supply chains, whereas others are adopting a holistic approach to environmental management. In theory, this recognition and subsequent actions hinge on a tension arising from the interplay among several competing factors and the ambiguous stakeholders' interests to be addressed (Moses et al., 2024; Zollo et al., 2023).

6.2.2 | Factors driving climate-related reporting

Broadly, our discussion with interviewees revealed the key factors driving voluntary climate reporting in seaports to include (i) financing considerations, (ii) stakeholders and change in community expectations, (iii) stakeholders' interests and the license to operate (legitimacy), and (iv) emerging regulations and industry guidance.

Financing considerations

Interviewees allude to the fact that investors' expectations are a compelling factor for the growing attention accorded to climate change in their entities' reporting practices:

> I think they (i.e., our city council) are trying to also get their head around what it means. It's off the back of the green bonds and I think it's 2024 from memory that they need to start reporting. But it's largely driven by the green bonds and where they will be getting their financing from. […] Obviously, there are other drivers around insurance and finances.—**Interviewee B**

> I think there's definitely a general trend with investors looking for sustainability in their investments.—**Interviewee F**

Interviewees draw on the information needs of stakeholders (i.e., council and investors) as reason for climate-related disclosures. The main driver here seems to be the need to access capital from the market and minimize financing costs. The mention of green bonds by Interviewee B indicates that market factors and financial instruments to raise capital are strong considerations for entities' commitment to climate action (Bui, Moses, et al., 2020; Dhaliwal et al., 2011; Zhou, 2022). Stakeholders who can affect the achievement of an organization's objectives (Freeman, 1984), create interdependence between them and the organization (Bui, Moses, et al., 2020; Thomasson, 2009) based on their symbiotic relation of satisfying each other's interests. Clearly and within the remit of our theoretical postulation, NZ seaports, bound by the interests of key resource providers, tend to act in line with goals aimed at accomplishing their operational targets to meet the expectations of this specific group of stakeholders (Bui, Moses, et al., 2020; Farneti et al., 2019; Zollo et al., 2023).

Stakeholders and change in community expectations

> I think [reporting practices] have changed with general communities' change of what is acceptable business and we've moved and tried to front-lead and improve. We've just embedded environmental improvement into the business.—**Interviewee D**.

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> I'd say that you know, right from the beginning it's always been about responding to our stakeholder needs and expectations.—**Interviewee C**

Ultimately, the changing trend in community interests is certainly among the core influences propelling NZ seaports' climate reporting (Dhaliwal et al., 2011; Tsang et al., 2023; Zhou, 2022). Again, this stems from the need to meet the demands of key stakeholders. Donaldson and Preston (1995) noted that actors with significant influence on an organization's operations and practices—even if they do not have a direct stake—appropriately fit within the classification of its stakeholders, thus broadening expectation requirements from such organizations. In this sense, one might theoretically anticipate that the scrutiny from the Auditor-General for NZ seaports to step up their climate actions and climate disclosure level (OAG, 2021) will effectively drive their reporting practices in this regard.

Stakeholders' interests and the license to operate (legitimacy)

The interest of broader stakeholders as a driving force for reporting climate information is indeed commonplace among these seaports (Tsang et al., 2023; Zhou, 2022):

> I think, for us, it's the license to operate in the community, you know, that drives us more than any regulation in any way, shape, or form. We want to be here for the long term, and to be seen by the community as a valuable member and contributor.—**Interviewee D**

> […] It's not about compliance with reporting requirements for us, it's much more about responding to our stakeholders' needs. We've done two rounds of consultation with our stakeholders to ensure that the things that we're reporting on are the material issues for them, and so we will continue to be driven more by their needs, than a regulatory requirement.—**Interviewee C**

> We know that they [regulation] are coming, but we chose to be ahead of the field. We're NZX listed now. We know that investors, in particular the sophisticated investors, are more and more demanding so we decided that we will be ahead of the game—**Interviewee F**

The interviewees seem to attribute their climate reporting practices not just to regulatory compliance, but more so to satisfying the interests of their stakeholders and gaining their acceptance and license to operate (Deegan & Rankin, 1996; Kouloukoui et al., 2019; Liu et al., 2017). This concessional approach is akin to the legitimacy theoretical perspective, given the seaports' dependence on the social and political support of actors in their operating environments (Bui, Moses, et al., 2020; Liu et al., 2017; Zollo et al., 2023). Thus, reflecting the hybridity of ownership and operations of these entities (Zollo et al., 2023), their complex characteristics create the ensuing perceptions, which emanates from the multiple interests they need to satisfy (Moses et al., 2024). Furthermore, this aligns with the level of voluntary disclosure and sustainable practices documented with respect to the seaport industry (Geerts & Dooms, 2020), which tends to go beyond compliance.

Regulation

The place of regulation in incentivizing the behavior of managers in reporting practices remains an important driver of corporate reporting (Tsang et al., 2023):

> I think if they outline what they want and tell us what they want us to report against we are happy to report against it, there's no doubt about that […]—**Interviewee A**

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> It just seems to me that you know it [regulation] needs some maturity, it needs some clear direction—**Interviewee B**

Evidently, NZ seaports recognize their obligation with respect to mandatory reporting and seem ready to comply with the appropriate guidance once they understand what is needed of them. Again, here we observe the intentional effort to make concession (i.e., compliance with regulations) as part of their social contract (legitimacy obligation) to avoid sanctions (i.e., withdrawal of their social license) leading to financial or reputational consequences.

In terms of ensuring a level playing field is achieved in the reporting practice within the industry, participants did not mind having a stringent rule (standards):

> Some of it [regulation] is. Some of it isn't. I think for the port to be able to tell our investors what the impact on our business will be under certain climate change scenarios is really good.—**Interviewee D**

> Yes, certainly. It's made us think about things in a more holistic way. Not to say that, you know, we haven't paid attention to all of those things in the past, but having to present them in a comprehensive fashion probably has helped sharpen our focus.—**Interviewee C**

This denotes a willingness to comply (i.e., via concessions and trade-offs) but also a need to trust the codified rules, possibly to create validity among the subjectivities inherent in broader sustainability practices, and specifically, climate-related reporting. The participants' perspective on standardization underscores the paramount significance of uniformity and comparability in reporting practices, while also expressing the yearning for data that is transparent and verifiable. This viewpoint resonates with ongoing discourse within the realm of sustainability reporting (de Villiers & Dimes, 2023; Moses & Hopper, 2022; Tsang et al., 2023), where a continuous debate revolves around the necessity of standardized reporting frameworks. However, interviewees' perspectives shed light on the delicate balance between the pursuit of standardized rules and the acknowledgement that each organization's circumstances can be distinct. This recognition necessitates a pragmatic approach and a degree of flexibility in reporting. This tension is emblematic of the current climate reporting landscape in NZ seaports, where entities strive for equilibrium between transparency and standardization, guided by a spectrum of organizational expectations (Bui, Moses, et al., 2020; Farneti et al., 2019).

6.3 | Evolution of climate-related disclosure practices and reporting constraints (RQ3)

6.3.1 | Changing dynamics in NZ container seaports' climate reporting practices

The climate reporting practices of NZ seaports are evolving. What remains consistent is that each seaport is striving to refine its approach, yet there are noticeable differences in the adopted reporting practices (Tsang et al., 2023; Zhou, 2022). In the absence of regulatory mandates, the selection of reporting frameworks or approaches is determined by the contextual hybrid nature and the unique trade-offs across interests that apply to each seaport's business model and internal capabilities (Bui, Moses, et al., 2020; Farneti et al., 2019; Moses, et al., 2024; Zollo et al., 2023). In relation to climate reporting framework, **Interviewee B** highlights:

> Not yet, that's kind of work in progress and that's where we're just trying to align the expectations around shareholder reporting with our statutory requirements and we've got a series of workshops coming up to look at that and what it looks like but we're still not there yet.

For a different seaport, **Interviewee C** notes:

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> We've chosen to follow the integrated reporting guidelines. When we first looked at going on the integrated reporting guidelines journey back in probably 2017 or 2018, we felt that that framework was the one that resonated with us and the way that we already thought about sustainability. […] Certainly, ahead of the changes to disclosure requirements, we have for the last two years, I think, incorporated TCFD disclosures into our reporting albeit in a limited way, but we certainly have been heading in that direction, so we feel quite comfortable with incorporating that into our reporting.

Interviewee F, in relation to climate-related reporting at their seaport, remarked:

> Yes, we're using the TCFD framework.

Some seaports have adopted the ⟨IR⟩ framework, which offers a comprehensive perspective on sustainability and some inclusion of climate considerations within the reported capitals (de Villiers & Dimes, 2023; Doni & Fortuna, 2018; Tweedie & Martinov-Bennie, 2015). In contrast, certain seaports have chosen to adopt the TCFD framework. Unlike the more generalist ⟨IR⟩, TCFD specifically focuses on climate reporting and takes a forward-looking approach, considering the evolving dynamics of climate reporting in NZ. This could be explained by the ownership and operational characteristics of seaports (Zollo et al., 2023), especially given their ambiguous stakeholders' boundaries. Here, entities with more pressing stakeholders' interests to satisfy or legitimacy demands are forced to make inroads in adopting certain frameworks (Dragomir et al., 2022; Grossi et al., 2015; Manes-Rossi et al., 2021; Zollo et al., 2023). Notably, one seaport has even integrated TCFD principles into its ⟨IR⟩ reporting, opting for a multi-framework approach in its disclosure strategy (Tsang et al., 2023; Zollo et al., 2023), perhaps in line with its multiple stewardship obligations (Moses et al., 2024).

In the ever-evolving landscape, a noteworthy yet sparingly adopted change is the *incorporation of incentive-based climate-related performance targets for management*. Although explicit evidence of incentive-based performance mechanisms at the senior management level has yet to materialize, indications of motivational strategies are evident, especially in roles tied to environmental or sustainability responsibilities:

> We've established an environmental team within my division, and their core objective revolves around carbon emissions reduction. Initially, we embarked on understanding our carbon inventory, subsequently formulating management and reduction plans. This constitutes a pivotal focus area for them.—**Interviewee E**

Moreover, incentive-based measures for climate performance could conceivably vary based on roles. **Interviewee C** points out:

> Our senior management team operates with Key Performance Indicators (KPIs) that include sustainability measures tailored to specific roles.

Documented evidence substantiates the potential efficacy of such practices in enhancing sustainability reporting (Al-Shaer & Zaman, 2019; Tsang et al., 2023). Additionally, a diffusion of incentive-based sustainability criteria is discernible within the overarching staff incentive framework of some NZ seaports:

> Our staff incentives program encompasses a potential bonus throughout the year. This year, an interesting dimension has been introduced, where sustainability is integrated as one of the criteria for this incentive. Although this year's integration isn't extensively targeted, it constitutes a foundational step. Each staff member is required to engage in at least one sustainability initiative to fulfil the criterion for

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> the year-end incentive. While this inaugural year doesn't involve specific emissions reduction targets, the primary aim is to educate the workforce about our strategic approach.—**Interviewee F**

Although the adoption of an incentive-based approach remains selective or in its infancy, it reflects a possible trajectory toward driving greater sustainability commitment within NZ seaports' management hierarchies. This emerging trend is underscored by a commitment to linking individual performance to broader sustainability goals that align with organizational stakeholders' values (Liu et al., 2017; Tsang et al., 2023; Zollo et al., 2023). Thus, offering empirical insights into how stakeholders' interests and accountability demands (Moses et al., 2024) can incentivize climate-related reporting practices across various levels of seaport hierarchies.

In relation to the validation and assurance of climate disclosure information, NZ seaports exhibit limited assurance, as indicated by recent research (Zhou, 2022). However, certain seaports have sought external validation for their disclosures, indicating a commitment to legitimacy via independent verification from third parties (Liu et al., 2017; Zollo et al., 2023):

> Several years ago, we engaged a professional firm, for an independent carbon audit. They have not only conducted the audit but have also provided invaluable guidance in establishing and developing our carbon management and reduction plan.—**Interviewee E**

Although limited assurance levels have been observed across the sector, these entities are increasingly embracing external verification processes. This shift signifies a proactive stance in boosting their legitimacy based on the credibility and reliability of their climate-related information (Zollo et al., 2023). In this regard, NZ seaports are continuously evolving to (re)define the acceptability of their operations through appropriate environmental practices in cognizance of their social contract with stakeholders (Bui, Moses, et al., 2020; Liu et al., 2017; Zollo et al., 2023). The engagement with a professional firm, the transition from basic emissions reporting to formal emissions inventory guided by ISO standards, and the decision to conduct six-monthly audits while seeking formal assurance at the end of the financial year all point toward the need for legitimacy (Deegan & Rankin, 1996; Kouloukoui et al., 2019).

Lastly, there is an evolving practice pertaining to the pursuit of standardized reporting expectations:

> I believe that in this emergent space, it's crucial to establish a coherent approach amidst the array of competing standards. The aspiration is to simplify reporting practices, given the uncertainty that still exists. With our reporting last year, based on TCFD, we ponder whether it fulfils the criteria of New Zealand XRB or similar entities. The bottom line is that, with uniformity, the answer is affirmative.—**Interviewee F**

This yearning for uniformity echoes the insights noted earlier, revealing a willingness to make concessions and conform to regulations while desiring these regulations to be reinforced with suitable guidance, thereby fostering uniformity (de Villiers & Dimes, 2023; Moses & Hopper, 2022; Tsang et al., 2023). The presence of standards is manifested in the diverse climate reporting methodologies embraced by the seaports. This discrepancy highlights the absence of consistency, exacerbated by the multitude of standards and frameworks in play (Tsang et al., 2023).

6.3.2 | NZ container seaports' climate reporting constraints

A notable challenge that participants associate with emerging climate reporting regulations is the lack of clarity and practical applicability of the reporting standards in general:

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> I'm noticing a similar trend among other ports in New Zealand; those joining the effort later seem to be developing slightly different understandings. This disparity is beginning to manifest as a notable discrepancy across different ports. It's becoming evident that there's a lack of clarity on certain definitions and terms. The complex issues surrounding climate change, sea level rise, and their effects on supply chains further accentuate this subjectivity. As we grapple with different scenarios, it's unclear which path we're truly embarking upon.—**Interviewee B**

This lack of clarity seems to stem from two primary sources: first, the comprehensibility of the regulatory documentation itself and how regulators communicate the standards and guidance. Second, confusion and varying interpretations of the regulatory framework could be driving the discrepancies in operationalized definitions among the seaports. This ambiguity might not only result in unintentional variations in the application of regulations but also intentional ones as entities seek ways to navigate challenging or subjective areas. Consequently, this lack of consistency leads to a lack of uniformity within the group of NZ seaports in terms of practical climate-related reporting:

> For me, it would be beneficial to observe consistency not just within our peer group of infrastructure providers but also among NZX-listed companies. While I don't imply that we're engaging in this. I do sense a degree of opaqueness in the reporting practices of many peers. Greater transparency would be a welcome change.—**Interviewee C**

In essence, multifaceted challenges posed by the lack of clarity and consistency in emerging climate reporting regulations highlight the importance of clear and accessible reporting standards and the need for uniformity to ensure meaningful and accurate climate-related reporting across diverse entities (Bui, Moses, et al., 2020; Farneti et al., 2019). More specifically, a constraining factor pertaining to the practical application of regulation seems to be the **complexity of reporting Scope 3**[13] **requirements** and the internal capability for implementation:

> We have well-meaning people who sit in organisations, including our shareholders who without understanding the business, say well within five years, you are to reduce scope 3 emissions by 50%. Well, I have absolutely no ability to achieve that, and what then happens is you end up with, in my view just narratives that have no practical deliverable outcomes.—**Interviewee A**

> The problem with us is that they want us to know how it's going to impact our customers. So, for us, you know, we're a major forestry port, we're a kiwifruit port. So, for the port to ascertain how it's going to impact forestry and kiwifruit is way outside of our competencies—**Interviewee C**

The ability to appropriately report and capture entities' Scope 3 emissions appears to be one of their most constraining factors. There is concern around the complexity of the definition of Scope 3 and the internal capacity of entities to effectively implement it.

Another constraint observed was a diminished locus of control by the seaports about meeting arbitrarily defined emissions targets, which they felt were unrealistic and unachievable (O'Dwyer & Unerman, 2020). Some entities are overcoming this constraint by instead trying to take evolutionary or incremental steps toward disclosure, to ensure the practical application of targets is achievable and realistic:

> […] we've chosen not to put targets in place that are arbitrary, we are choosing to put a target in place that we know we can achieve financially, technically, and all those other factors so and that might be still a year or so away.—**Interviewee F**.

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Ioannou et al. (2016) provided evidence that this may, however, not be the best approach, as firms pursuing more ambitious or challenging climate-related targets may be more successful in their ability to meet a higher proportion of targets. Further, the requirement to take a value chain approach to consider impacts on customers and stakeholders outside of the internal business model itself is perceived as beyond the capability and influence of the entities (O'Dwyer & Unerman, 2020). This itself may be a perception bias. Eccles and Krzus (2019) evaluated the difficulty for firms in complying with TCFD recommendations and determined that it is feasible for entities to implement TCFD if they are motivated to.

This diminished locus of control to disclose to and for external stakeholders has seaports in this study, questioning the concentricity of stakeholders in the process and whether this lens provides the value it intends to deliver:

> I don't necessarily think that our stakeholders in particular, necessarily want a whole lot more detailed information. I think there is a risk that we are overwhelming with detail that is not relevant to their needs. So, while I think it's good to have that rigour, I think that there's a danger that we could over report […] I guess the question that we have in our mind is the level of detail that will be required in the future. […] I think it's really important to ensure that no matter how we report in the future, it's information that our stakeholders actually need and that it's not a whole lot of extra reporting that doesn't add value to their experience of the port.—**Interviewee C**

Unsurprisingly, Interviewee C's views suggest a potential schism between these entities and their stakeholders. Again, this, in most respects, results from the hybrid nature of these entities and multistakeholder demand, which may entail conflicting interests leading to an increased quantum of information (Grossi & Thomasson, 2015; Grossi et al., 2015; Moses et al., 2024; Peña & Jorge, 2019). A countervailing view, interestingly at play here, is the conclusion that stakeholders value and demand incremental climate disclosures from entities (Bui, Moses, et al., 2020; CIPFA, 2022; Edwards et al., 2020; Thistlethwaite, 2015). In any case, entities may need to balance these differing interests via engagements with communities and stakeholders to understand their value proposition in maintaining their social license to operate (Bui, Moses, et al., 2020; Liu et al., 2017; Zollo et al., 2023).

Lastly, technological infrastructure and availability are additional constraints to the practical application of climate practices and reporting:

> 60% of our emissions come from the straddles which are the wheel cranes that pick a container up and move it around. There is no technology currently in the world that has those at zero emissions. […] We will replace that fleet with diesel electric, which will reduce the emissions from the current straddles because they have more modern and efficient engines, but the reality is those pieces of equipment will be in operation for the next 20 years and the time that we look to make a major carbon reduction decision is at the end of a piece of capital equipment's life.—**Interviewee A**

> This year we are looking at an emissions reduction strategy so we're looking at what technology is available, what's the likely development of technology, what's the electrical infrastructure we need.—**Interviewee F**

This is exacerbated by investment horizons and transitional timelines:

> … Why are you going to invest in something that's only in place for five or 10 years when you've got another end state that you're aiming for. I'll give you an example, our transition plan was based on biodiesel. Now, no one is seriously investing in it and there's limited supply and the price for it has just gone through the roof. It's $5 or $6 a litre now. And you go well, why would we go down that

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path, when we should wait 10, 20 years for a final solution and we just invest in that, and we skip the transition.—**Interviewee B**

It is documented that there is little operationalization of innovation by entities linked to sustainability (Gallego-Álvarez et al., 2011). The responses from the seaports in this study provide insights suggesting that technological unavailability or a lack of revolutionary innovation to meet needs defer such innovative investments. Further, this provides evidence that there is a laggard effect between innovation implementation and climate risk management practices. This aligns with findings in the literature, which show a laggard effect in the relationship between investment in sustainability innovations and the subsequent value realized in sustainability practices (Gallego-Álvarez et al., 2011). Moreover, these constraints can be linked to the noted areas of limited disclosures based on these seaports' CCDI on organizations' processes for managing climate-related risks, metrics for assessing climate-related risks and opportunities in line with strategy and risk management processes, and the impact of climate-related risks and opportunities on their businesses, strategies, and financial planning.

7 | CONCLUSION, IMPLICATIONS, AND LIMITATIONS

We provide evidence of voluntary climate-related disclosure practices among NZ container seaports based on their alignment with the TCFD recommended framework. Our assessment of the quantitative data suggests that NZ container seaports are still at an emerging stage with respect to climate-related disclosures. The results show an improvement in overall climate-related disclosure over the study period (2017–2021), with *governance* as the highest scoring theme. Furthermore, the outcome of the analyses reveals the themes of *strategy*, *risk management*, and *metrics and targets* as underdeveloped.

We note specific areas in which these seaports need urgent attention, including processes for managing climate-related risks, metrics used to assess climate-related risks and opportunities based on strategy and risk management processes, and the impact of climate-related risks and opportunities on strategy, and financial planning. These areas require a combination of technical and specialist skills, sometimes through third-party intervention, to enable the entities to achieve full disclosures in this space (Demaria & Rigot, 2021).

The insights from the interviews highlight climate action prioritization and factors influencing extant reporting practices. The level of prioritization varies among seaports and shows an increasing trend of awareness consequent on the combination of their hybrid ownership interests and the multi-complex nature of stakeholders (Bui, Moses, et al., 2020; Moses et al., 2024; Thomasson, 2009; Zollo et al., 2023). Strategic decisions in these seaports are often not deeply integrated with climate action considerations. In practice, although some seaports have well-established committees on sustainability and climate-related actions, the recognition of climate issues does not seem to be fundamental to their decision-making processes. We theoretically ascribe this practice to their complex and sometimes contentious mixed interests from competing stakeholders to satisfy (Jansson, 2005; Thomasson, 2009; Zollo et al., 2023), to which strategic maneuvering is required to deliver expected outcomes (Dragomir et al., 2022; Manes-Rossi et al., 2021; Thomasson, 2009; Zollo et al., 2023).

We discovered factors perceived to be driving climate reporting in NZ seaports to include financial considerations, stakeholders' and community expectations, legitimacy, and incoming regulation. Access to capital from the market, particularly through green bonds, drives entities to commit to climate action. The evolving standards of what communities consider acceptable business conduct have an overarching influence on climate reporting practice, in tandem with our theoretical postulation (Bui, Moses, et al., 2020; Liu et al., 2017; Zollo et al., 2023). In this regard, NZ seaports are indeed aware that only through the fulfillment of their social contract in meeting perceived societal expectations can their social license to operate be guaranteed (Deegan & Rankin, 1996; Kouloukoui et al., 2019). As community perspectives on environmental matters change, reporting practices evolve to align with these expectations. Gaining stakeholders' acceptance and legitimacy to operate becomes even more crucial and fundamentally drives their cli-

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mate reporting practices. These entities seek to be valuable contributors to their communities, and climate reporting plays a role in achieving this social license, even if this entails mixing, compromising, and legitimizing values (Grossi et al., 2022; Moses et al., 2024; Zollo et al., 2023). Grossi et al. (2022) argued that compromising values is necessary in hybrid organizations to reconcile competing value-creation logics and interests. Although most seaports do not have direct climate reporting regulations at the time of the interviews, participants acknowledge regulatory requirements as also a driver for climate reporting. However, their concession to meeting such regulatory regimes hinges on clear guidance and understanding of what is essentially expected for compliance.

Interviewees expressed a desire for standardized rules in reporting, emphasizing the need for uniformity, comparability, transparency, and verifiability in climate-related disclosures. However, there is a recognition of the unique hybridity of each organization, necessitating a balance between standardized frameworks and flexibility in reporting. We ascribe this tension to a reflection of the current climate reporting landscape in NZ's seaports, where entities aim to strike a balance between transparency and standardization based on their individual expectations and circumstances. The hybrid nature of seaports, characterized by complex accountabilities and the contending interests of various stakeholders, exacerbates this situation, necessitating a multifaceted approach and layered evidence to comprehend the intricacies and operability of hybrid entities' stewardship obligations, particularly when nested within complex stewardship settings (Moses et al., 2024).

Beyond this study's setting, our theoretical postulation, which intersects stakeholder and legitimacy theories, provides a framework for understanding scenarios with complex hybridity at play within multiple accountabilities. Unwieldy structured entities' pursuit of institutional legitimacy (Chelli et al., 2014; Kuruppu et al., 2019) can blindside interests of certain stakeholders, exacerbating tensions within a nexus of accountability setting (Moses et al., 2024). To dissect these competing values, recognizing and acting upon the dynamic interaction between stakeholders' interests and entities' assertion for institutional legitimacy is where the intersectionality of our theoretical framing aptly applies. Under multiple-interest, hybrid entities' actions are driven by stakeholders' wishes, but even more so in tandem with accountability expectations and the need for legitimacy to gain acceptance for current or future operations (Kuruppu et al., 2019). For settings or entities with hybrid characteristics, there is a valid opportunity for the application of our theorization to understand how such systems and settings reflect amphibian characteristics in operations, ownership, and accountability expectations. For example, the complexities often encountered by entities at the nexus of multiple accountabilities may lend themselves to our theoretical framework by explaining the interoperability of stakeholder and legitimacy theories within an accountability obligation. To this end, rather than applying a separate cascading theoretical perspective, a more nuanced, interconnected, synchronous approach that appropriately addresses stakeholders' desires within the context of institutional legitimacy practices to help preserve their social license to operate is warranted.

Taken together, the empirical insights from the study suggest that NZ seaports confront impediments to successfully accomplish SDG13-climate action, although they are aware of their climate obligations and the consequential impact from their operations. As such, in order to achieve SDG13, integrated consideration of climate change as well as intentional policies are required.

The study makes several contributions. First, the use of a unique CCDI provides an avenue to empirically determine the extant level of climate-related disclosure practices among NZ seaports. The unique CCDI's template also provides a timely opportunity for measuring such disclosures in other jurisdictions. Specifically, the collected data hold unique value for climate-related disclosures and broader climate action discourse in NZ and globally. Second, the results shed light on the motivation for climate-related disclosure in public sector entities, especially hybrid entities with mixed ownership. In this regard, significant constraints to advancing climate actions and the achievement of SDG13 are illuminated. We respond to the call by Grossi et al. (2022) for incremental insights into the nature of accounting, performance, and accountability in hybrid organizations, as we empirically demonstrate that for hybrid seaports, their climate-related accounting and accountability practices are important performance mechanism for legitimizing their value creation efforts in the bid to satisfy the interests of different stakeholders. Finally, and fundamentally, we provide incremental theoretical insights into the complexities associated with hybrid entities in fulfilling their stewardship

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obligations (Moses et al., 2024) and satisfying the broad spectrum of stakeholders they share symbiotic and competing interests with (Farneti et al., 2019; Freeman, 1984; Greiling & Grüb, 2014; Zollo et al., 2023). Here, our theoretical contributions shed light on the complex maneuvering essential for value creation by hybrid public sector entities to satisfy stakeholders and (re)gain their social license (Liu et al., 2017; Zollo et al., 2023). Moreover, our use of the intersection of stakeholder and legitimacy theories provides a theoretical framework for explaining accountability behavior in hybrid organizations with multiple stewardship responsibilities from diverse (and sometimes competing) stakeholder interests and influences of external regulatory or social norms.

In terms of practical implications, we believe the study provides important knowledge of current strengths and weaknesses of NZ seaports that is aptly beneficial for standard setters and regulators in determining the level of guidance needed to help seaport management deliver on the targets of SDG13. In addition, managers of seaports and stakeholders keen to advance best practices in sustainability reporting are better equipped with the findings of the study to proactively pursue such strategies. Notwithstanding our reported insights, the relatively small sample size of the study is a limitation within a global context. As such, caution should be exercised in generalizing these findings, as they might be idiosyncratic to the NZ setting.

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from interviewees in the study. Restrictions apply to the availability of these data, which were used under license for this study. Data are available from the author(s) with the permission of interviewees in the study.

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ENDNOTES

[1] The three dimensions include *environmental* (climate action, life below water, life on land, etc.), *social* (zero hunger, no poverty, gender equality, peace and justice, and strong institutions), and *economic development* (reduced inequalities, decent work, and economic growth).

[2] The hybrid profile of these organizations, which have significant government interests but act as market-like private enterprises, is similar to the profile of state-owned enterprises (SOEs).

[3] Liu et al. (2017) utilized only legitimacy theory as a framework for understanding the impact of regulation on voluntary climate change–related reporting by Australian government-owned corporations, whereas Argento et al. (2019) used the theory of institutional logics to explain sustainability disclosure practices of hybrid Swedish state-owned enterprises.

[4] Financial Sector (Climate-related Disclosures and Other Matters) Amendment Act 2021 https://www.legislation.govt.nz/act/public/2021/0039/latest/LMS479633.html.

[5] A mix-methodological approach was appropriate for this study, considering the research questions to be addressed. Although the quantitative index was adequate for objectively analyzing the level of voluntary disclosures of the seaports studied in compliance with TCFD requirements, it was not adequate to surface the motivations and constraints for such

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voluntary disclosure behavior. Thus, the qualitative method of interviews was deployed to investigate the motivation and evolution of these seaports' voluntary climate-related disclosures, as well as significant constraints relating to their climate-related disclosure practices.

[6] The 12 seaports include container seaports of (i) Port of Tauranga Limited, (ii) Ports of Auckland Limited, (iii) Lyttleton Port Company, Christchurch, (iv) CentrePort Wellington, (v) Port Otago, and (vi) Napier Port. Other non-container seaports are (i) Marsden Maritime Holdings Limited, (ii) Port of Taranaki Limited, (iii) Port Nelson Limited, (iv) Port Marlborough (Picton) New Zealand Limited, (v) Primeport Timaru Limited, and (vi) Southport (Bluff) New Zealand Limited.

[7] We use the terms regional councils, local authorities, and local governments interchangeably throughout this paper.

[8] There are several frameworks that address different aspects of climate risk reporting. The five prominent frameworks are the Carbon Disclosure Project (CDP), the Global Reporting Initiative (GRI) Standards, the Climate Disclosure Standards Board (CDSB), the Sustainability Accounting Standards Board (SASB), and the TCFD recommendations framework (Adams & Abhayawansa, 2022). Although the concern with standardization is being addressed with the releases of IFRS S1 and S2 in June 2023, this is yet to be fully adopted on a global scale. However, NZ has specific climate reporting standards—Climate-related Disclosures (NZ CS 1), Adoption of Aotearoa New Zealand Climate Standards (NZ CS 2), and General Requirements for Climate-related Disclosures (NZ CS 3).

[9] Other jurisdictions are in the process of mandating climate-related disclosures, for example, Australia, the United Kingdom, and the EU.

[10] NZ seaports are subject to scrutiny from NZ's Auditor-General, who reports directly to parliament. The seaports run a business operation and facilitate the transport of cargo and goods in an industry that inherently faces the challenges of climate change risks and impacts. Thus, these seaports are in a multiple stakeholder situation, as they balance the information needs of these stakeholders with various interests (Grossi & Thomasson, 2015; Grossi et al., 2015; Peña & Jorge, 2019).

[11] As in part publicly owned, NZ seaports face legitimacy pressure from society as they receive public resources and are expected to deliver on both commercial objectives and public policy objectives (Dragomir et al., 2022; Manes-Rossi et al., 2021; Radon & Thaler, 2005). For example, the media spotlight on them could be concerned with the appointment and remuneration of executives and other public officials on the boards of SOEs (Lock & Seele, 2016; Shirley, 1999), whereas the involvement of politicians in their operations could lead to public scandals (Dragomir et al., 2021).

[12] After completing the coding of a report, the encoder discussed it with the team for rechecking to ensure consistency. Where gray areas requiring additional judgment emerged in the process, the team members debated the issues carefully to reach an agreement on the correct and uniform approach to be used. This technique helped to minimize criteria confusion.

[13] Company's greenhouse gas (GHG) emissions are classified into three "scopes" (https://ghgprotocol.org/sites/default/files/standards_supporting/FAQ.pdf). Scope 1 emissions are direct emissions from company's owned or controlled sources. Scope 2 emissions are indirect emissions from the generation of purchased energy, whereas Scope 3 emissions are all indirect emissions (not included in scope 2) found within the value chain of but not owned by the reporting company, including both up- and downstream emissions (Ellram et al., 2022).

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