

Climate Change Reporting Aligned with the TCFD Framework: A Bibliometric Mapping

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ABSTRACT

Climate change reporting (CCR) has emerged as a medium of communication in the corporate reporting landscape, focusing on information related to the transition to a low-carbon economy or net-zero carbon emissions. The provision of climate information has evolved beyond narrative and qualitative forms, and the provision of quantitative data has made the CCR a valuable source for stakeholders' environmental evaluations. Meanwhile, the influential role of the Task Force on Climate-related Financial Disclosure (TCFD) framework in shaping the climate disclosure regulatory landscape globally has prompted the current study to analyse the development of CCRs aligned with TCFD. The bibliometric analysis was conducted in the Scopus database, and the results show that publications on CCR aligned with TCFD began in 2009, with the most prominent authors and leading institutions coming from developed countries. Other developing countries contributing to the publications include India and Malaysia. Findings also reveal the most-used keyword in the research area related to the climate regulatory landscape, corporate climate transparency, and accountability. The shift of the keyword used in current documents to the ISSB reflects the ongoing development of the monitoring role of climate reporting under the purview of the International Sustainability Standards Board (ISSB), as the TCFD has been disbanded. Future research may focus on science mapping of bibliometric analysis to gain insight and comparison into the past, present and future direction of research on the development of climate-related information disclosures.

Keywords: Bibliometric, Climate change reporting, Disclosure, ISSB, and TCFD

INTRODUCTION

Climate change reporting (CCR) has emerged as a form of communication within the corporate landscape to enhance business climate accountability and transparency amidst the heightened concerns over climate risks (Ahmad, 2017). According to the Global Risks Report 2026 released by the World Economic Forum, environmental risks, specifically extreme weather, biodiversity loss and critical changes to the Earth systems, have topped the long-term risks ranked by their severity (Zahidi, 2026). The report shows that environmental risks have consistently been identified as humanity's main concern since 2020 (Franco, 2020). In addressing climate issues, the information disclosed generally centres on the transition to a low-carbon economy or net-zero carbon emissions, a critical mechanism for mitigating the climate crisis. Nevertheless, the focus of the information disclosed is not only on the narrative or qualitative data, that quantitative environmental performance data are commonly used to substantiate their climate initiatives (Liu & Wu, 2023). With that, CCR may project the firm's climate-strategic performance, serving as a valuable source of information for stakeholders' environmental evaluations.

In discharging their climate responsibilities, few frameworks are available to provide high-quality information

to their stakeholders, including the Global Reporting Initiative (GRI), the Carbon Disclosure Project (CDP), the Sustainability Accounting Standards Board (SASB), and the Task Force on Climate-Related Financial Disclosure (TCFD). Despite the TCFD framework being released only in 2017, a number of developed countries have adopted it within their local regulatory frameworks (Dey, 2024), with other developing countries, such as Malaysia, following suit. Bursa Malaysia, the stock regulator for publicly listed companies in Malaysia, has adopted the TCFD, marking a departure from GRI in navigating their climate-related information disclosure (BM, 2015, 2022). The move is exerting TCFD's influence on the CCR realm globally. It is worth noting that although the TCFD disbanded in October 2023, the monitoring role of overseeing climate-related information disclosure has been taken over by the International Financial Reporting Standards (IFRS). Despite having their own sustainability standards, IFRS S1 and IFRS S2, those were significantly influenced by the TCFD framework. As IFRS is a well-known and reputable standard setter globally, with more than 85 per cent of the world's jurisdictions adopting its framework, it strengthens TCFD's influence in shaping the global CCR landscape.

Therefore, the main objective of the study is to comprehensively map the global development of CCR aligned with the TCFD framework. Specifically, the following research questions are investigated:

1. What are the research trends in CCR aligned with the TCFD framework?
2. Who are the most prominent authors in CCR aligned with the TCFD framework?
3. Which institutions are mostly contributing to the research on CCR aligned with the TCFD framework?
4. Which countries are mostly contributing to the research on CCR aligned with the TCFD framework?
5. What are the keywords that are mostly used in the CCR aligned with the TCFD framework?
6. What are the keyword trends in the CCR aligned with the TCFD framework?

METHODOLOGY

Research Design

The study employed a bibliometric approach to address the proposed research questions. It is a quantitative, rigorous method for analysing large volumes of bibliographic data (Donthu et al., 2021). VOSviewer was employed to conduct the analysis due to its ability to construct and visualize the analysis proposed by the current study.

In collecting the data, the Scopus database was selected for its access to global peer-reviewed journals, indicating its reliability across multidisciplinary fields. In addition, the Scopus database has produced analyses of the search results as part of the performance metrics used to address the research questions proposed by the current study. The search was conducted on 31 May 2026 with the use of Boolean queries that was conducted on 30 May 2026 using the following keywords:

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TITLE-ABS-KEY ( ( "climate change" OR "climate" OR "global warming" OR "greenhouse gas*" OR "GHG" OR "carbon emission*" OR "carbon" OR "climate risk*" OR "climate opportunit*" ) AND ( "report*" OR "disclos*" OR "account*" OR "audit*" OR "assur*" ) AND ( "TCFD" OR "Task Force on Climate-related Financial Disclosures" OR "CDSB" OR "Climate Disclosure Standards Board" OR "ISSB" OR "International Sustainability Standards Board" ) ) AND ( LIMIT-TO ( DOCTYPE , "ar" ) )
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The current study has filtered the search to focus only on journal publications, given their higher quality and the rigorous peer-review process (Fauzi, 2025), excluding other publications such as book chapters and conference papers. Meanwhile, the time span and language were not restricted, allowing the inclusion of comprehensive documents within the investigated area (Fauzi, 2025).

FINDINGS AND DISCUSSION

The initial search returned 264 documents. After filtering journal publications only, the search returned 181 journal publications. Figure 1 illustrates the research trend for these 181 publications. In presenting the findings, the current study discusses from two perspectives of performance analysis and science mapping analysis. The performance analysis is mainly derived from the Scopus database, and the science mapping findings are mainly derived from the VOSviewer software.

Performance Analysis

The earliest publications indexed by Scopus began in 2009, with only 1 document, and publication numbers remained low and stagnant until 2021, with fewer than 10 publications published. Publications reported an exponential surge from 2022 to 2025, with 21 and 49 documents published in 2022 and 2025, respectively. The TCFD released its final recommendations to the public only in June 2017, with the final changes released in October 2021 (TCFD, 2017, 2021) which may explain its prominence in research starting from 2021 that focuses on corporate readiness (Chiu et al., 2023; Ding et al., 2023), disclosure quality (Braasch & Velte, 2023), and their financial consequences (Maji et al., 2025; Maji & Kalita, 2022). In addition, the trend is consistent with regulatory moves by major economies such as the European Union, New Zealand, and Japan, which have mandated TCFD for their publicly listed companies and financial institutions to disclose climate-related information (Dey, 2024).

Figure 1: Number of publications on CCR aligned with TCFD

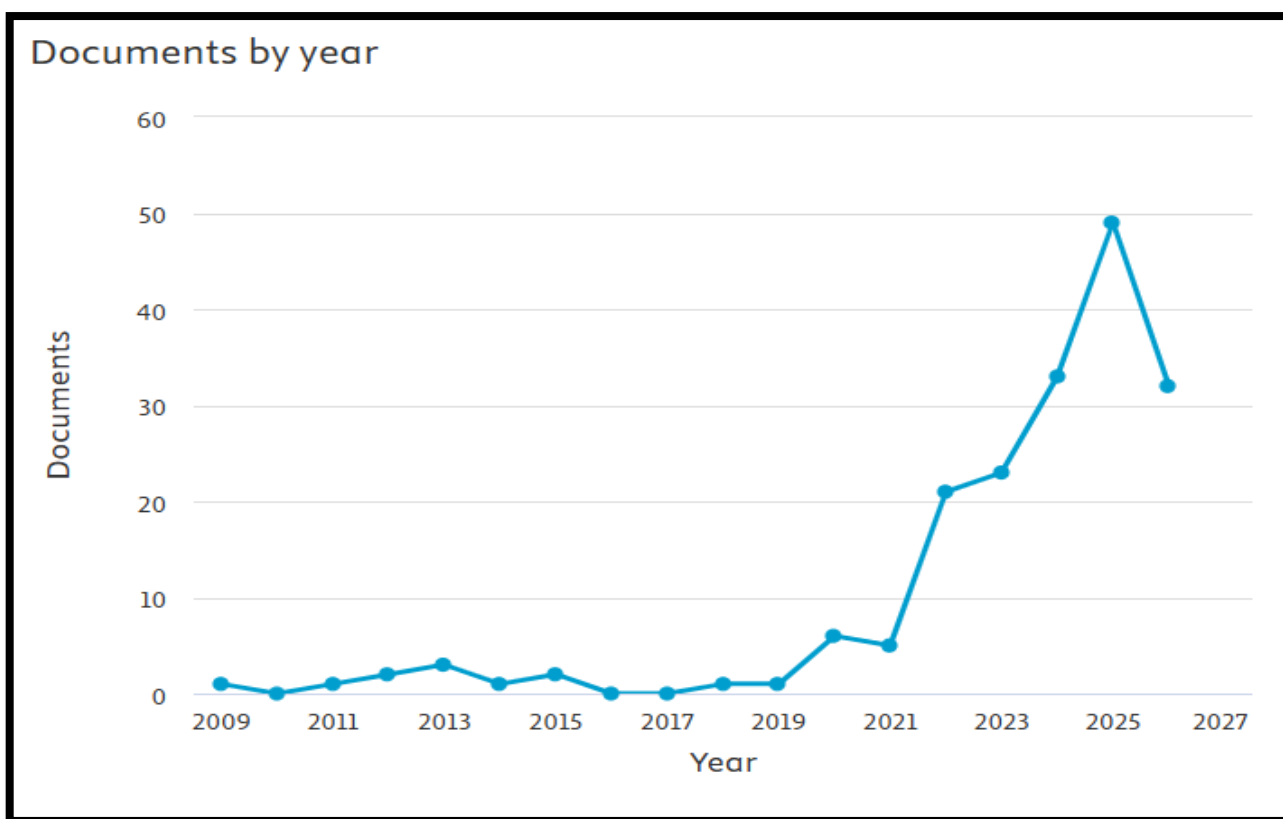


Figure 2 illustrates the top researchers producing CCR aligned with TCFD, with nine researchers having similar publication counts (Susanne Arvidsson, Samira Demaria, Huang Hsiung Hsu, Christine A. Jubb, Jayanthi Kumarasiri, Shihyun Kuo, Chiachi Lee, Santi Gopal Maji, Sandra Rigot). These prominent authors mainly come from developed countries such as Sweden, France, Taiwan, and Australia, as the TCFD has been part of regulatory requirements in these countries since the framework was released to the public. The results show that there is no significant number of publications by a single author in the field of CCR aligned with the TCFD framework.

Figure 2: Top researchers producing publications on CCR aligned with TCFD

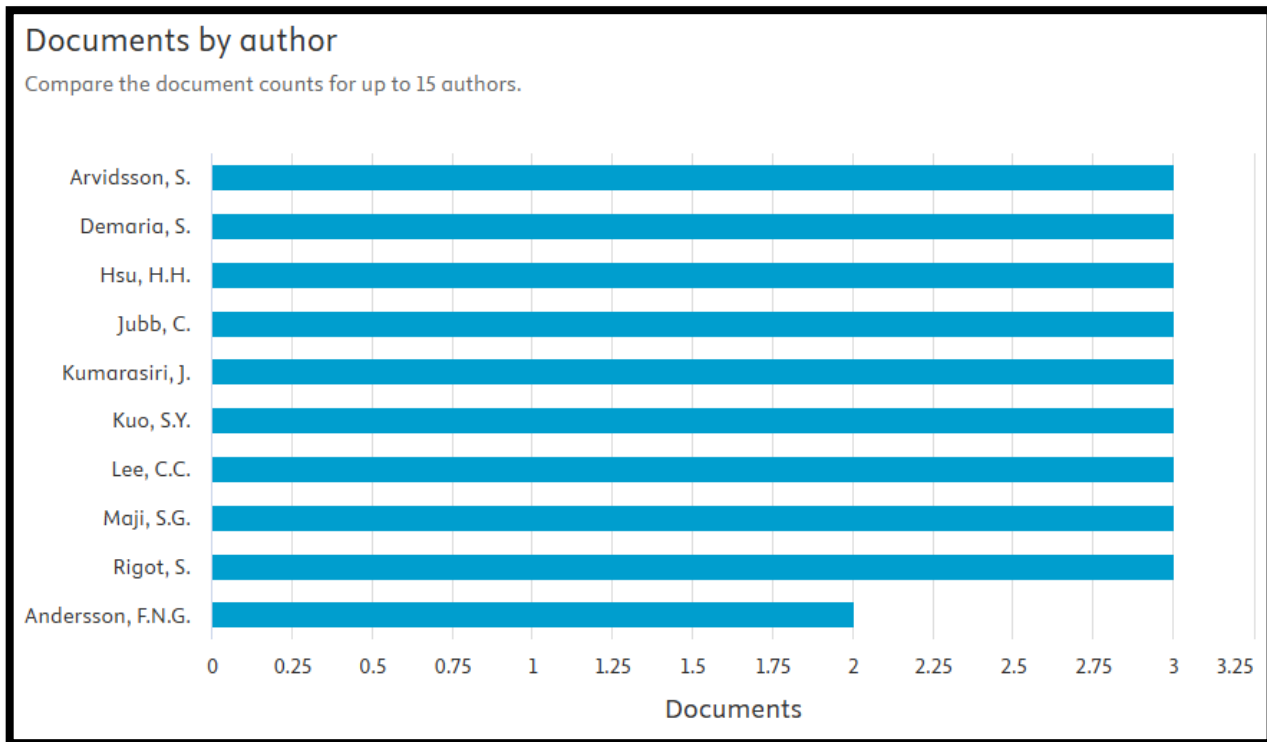


Figure 3 presents the leading academic institutions contributing to the publication of CCR aligned with the TCFD framework. Surprisingly, one of the top global institutions contributing to the research area is Tezpur University in India and sharing the same spot is the University of Sydney in Australia. Both reported 5 documents, with the University of Sydney reporting a higher number of citations of 112, and Tezpur University reporting 90 citations.

Figure 3: Top institutions producing publications on CCR aligned with TCFD

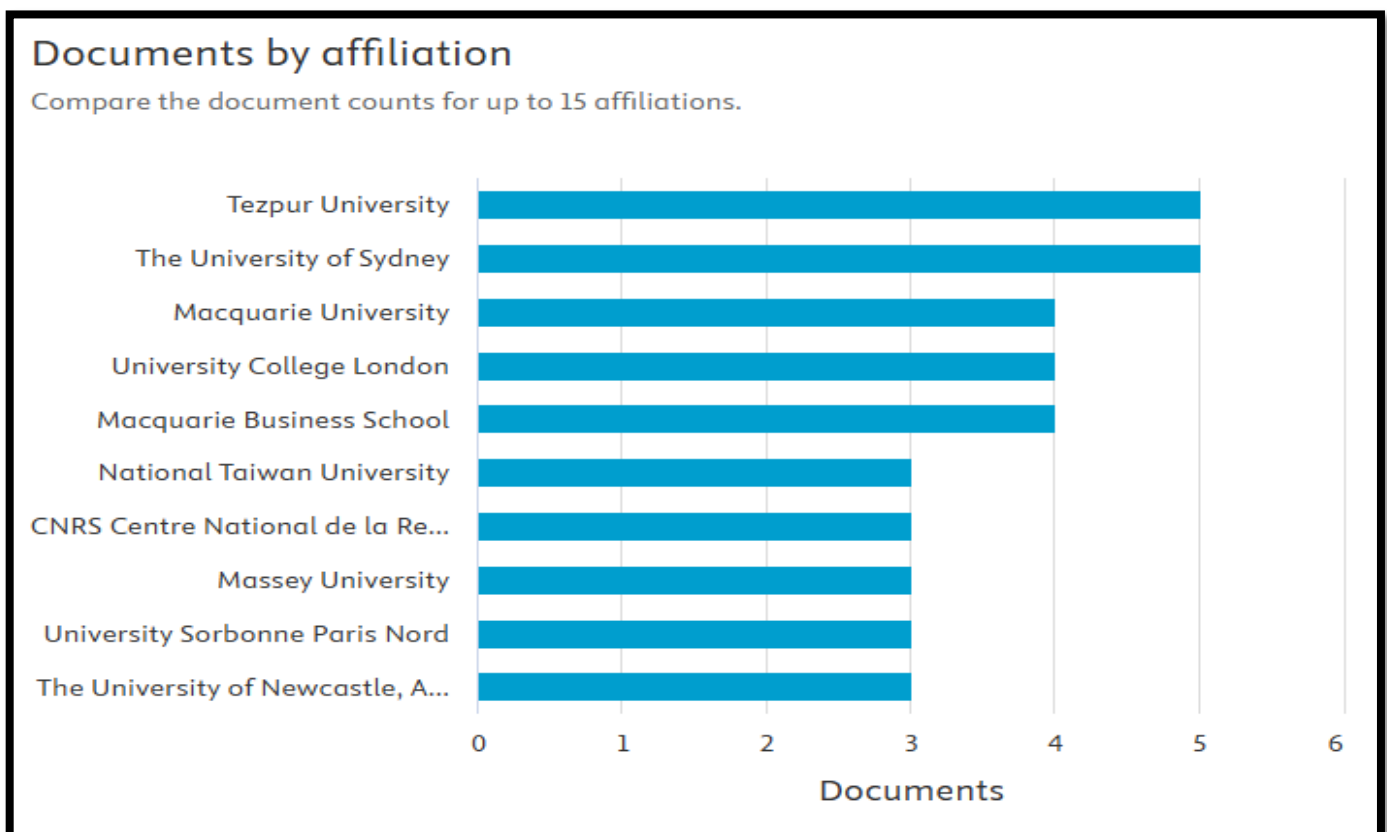
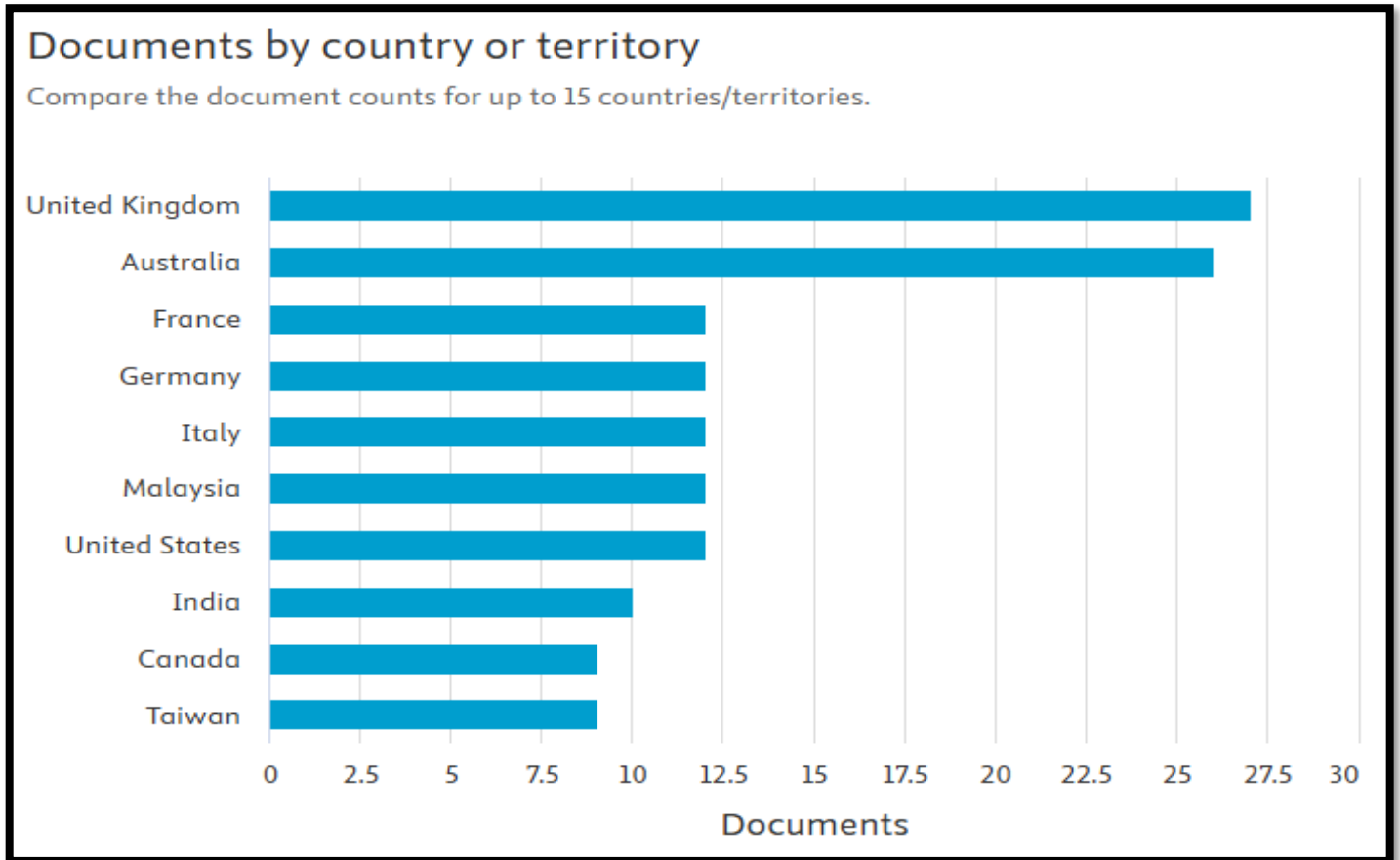


Figure 4 illustrates the top countries producing publications related to CCR aligned with TCFD, with a significant number of publications reported for the United Kingdom (27 documents) and Australia (26 documents). While most of the list comes from developed countries, Malaysia and India are two developing countries that contribute to CCR-aligned TCFD documents. Malaysia has embraced the TCFD framework via its listing requirements released by the regulator, the stock exchange, on September 22, 2022 (BM, 2022).

Figure 4: Top countries producing publications on CCR aligned with TCFD



Science Mapping

Using the same database, the authors determined that 45 of 960 keywords met the 5-keyword threshold, yielding 6 clusters, as depicted in Figure 5. The significance of the co-occurrence analysis reveals the words' relevance in the field based on their frequencies. The top three keywords are climate change (61 occurrences), TCFD (40 occurrences) and sustainability (30 occurrences). As the TCFD framework primarily focuses on climate-related disclosures, the findings show that these keywords are interrelated and generally fall within the niche of environmental sustainability.

Figure 5 presents the network structure of the keyword analysis. The clusters were thematically analysed according to the author's qualitative and inductive interpretation. The first cluster (red) has 8 keywords, including environmental economics, standards (regulation), corporate strategy and environmental policy. At this juncture, Callen and Thomas (2010) highlighted that, from the perspective of economics, environmental quality is a public good. However, individuals and businesses may choose not to contribute anything to get the benefit but expect others to bear the cost. It leads to underinvestment in environmental protection, where government intervention is crucial to promote environmental accountability and transparency. In support of the assertions, the current study shows that the cluster focuses discussion on the regulatory landscape towards climate-related initiatives. In addition, the term corporate governance is one of the keywords in the red cluster, reflecting the importance of internal corporate functions in monitoring and implementing climate regulation within the business operations system.

Meanwhile, based on the keyword clusters most commonly used by researchers, it can be concluded that, when aligning the CCR with the TCFD framework, firms' preparation for climate resilience is pursued from multiple perspectives, including climate governance, climate strategy, and climate performance. This information is among the 4 core elements recommended by the TCFD framework, which comprises 11 recommended disclosures, as depicted in Figure 7. Therefore, the framework offers a structured approach to climate strategy that is inherently linked to uncertainty, while its repercussions extend beyond national boundaries. Moreover, with the movement towards compulsory climate-related information disclosure, aligning with the TCFD framework not only meets national-level regulatory requirements but also provides adopters with a competitive edge in enhancing the comparability and value relevance of climate information across global operations.

Figure 7: TCFD's Core Elements and Recommended Disclosures

Recommendations and Supporting 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 term.	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 and opportunities and performance against targets.

Source: TCFD (2017)

Thirdly, as part of sustainability reporting, the CCR is focusing on managing carbon and greenhouse gas emissions, which are the main causes of climate change (Zarzycki, 2025). Therefore, providing such information may yield key strategic climate performance data that is useful at the firm and national levels, while advancing climate transparency and accountability. While firms may utilise the information as an effective tool to assess their climate risks and performance metrics, it is also useful for the country to fulfil its responsibility to submit Nationally Determined Contributions (NDCs) every five years to the United Nations under the Paris Agreement (Falkner, 2016). It reflects a pivotal role of CCR in bridging the firm's level climate management with national commitments under international climate objectives.

The study limits the search to the Scopus database and to journal articles only. Other publications such as conference papers or chapters in books may consist of valuable information and insights that the current study may have missed (Donthu et al., 2021). In addition, the current research included minimal findings on science

mapping in the bibliometric analysis, which could be a focus of future research. Science mapping through bibliometric analysis can compare and report the past, present, and future research directions and provide qualitative analysis of keyword clusters. The inclusion of qualitative analysis in the science mapping provides a value-added element to the findings reported for the research area.

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