

Climate Change Disclosure in the Indonesian Banking Industry: a Case Study of Jtrust Bank, Shinhan Bank, and Ok Bank (2020–2024)

Nurkhasanah, Carmel Meiden

Institut Bisnis dan Informatika Kwik Kian Gie, Indonesia
Email: nkhasanah20@gmail.com, carmel.meiden@kwikkiangie.ac.id

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ABSTRACT

Climate change has become a significant global issue and is increasingly gaining attention in the financial sector, including the banking industry. This study analyzes the level of climate change disclosure by three foreign banks in Indonesia JTrust Bank, Shinhan Bank, and OK Bank with a focus on the implementation of the Task Force on Climate-related Financial Disclosures (TCFD) framework, which covers four pillars: Governance, Strategy, Risk Management, and Metrics and Targets. Using a content analysis method of the Adequacy and Accuracy of Reporting indexes for the 2020–2024 period, both quantitative and qualitative assessments were conducted to evaluate the consistency and depth of disclosures. The results show that JTrust Bank has the highest level of disclosure, followed by Shinhan Bank and OK Bank. These differences are influenced by internal preparedness, strategic commitment to sustainability, and the regulatory policies of their home countries. This study emphasizes the importance of integrating climate issues into banks' governance and business strategies, and it is expected to provide both academic and practical contributions to encourage climate disclosure transparency in line with international standards.

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Introduction

Currently, climate change and environmental issues are the most common global environmental problems, and no solution can be achieved without international cooperation. One such effort is the Paris Agreement, which is the third generation of international agreements designed to address the challenges of climate change (Delbeke et al., 2019). According to data collected by the Emission Database for Global Atmospheric Research (Edgar, 2022) in 2022 Indonesia ranked as the world's 8th-largest carbon emitter. The Government of the Republic of Indonesia, through the Paris Agreement (2015), has committed to addressing the impacts of climate change globally by targeting Indonesia's net zero emissions by 2050.

The global literature on climate disclosure has established a strong foundation for understanding sustainability reporting practices across different sectors and regions. At the international level, several studies have demonstrated the critical role of climate

disclosure in enhancing corporate transparency and financial performance. Adu et al. (2024) provide evidence from global banking sectors showing that climate change initiatives can positively impact banks' financial performance when supported by robust governance structures. Ameli et al. (2020) emphasize the importance of transparency through climate risk disclosure aligned with TCFD recommendations for guiding the financial sector toward low-carbon investments, though this requires comprehensive structural reforms and appropriate policy frameworks.

Regional studies in Southeast Asia and emerging markets have revealed varying levels of climate disclosure adoption and quality. Research has shown that regulatory frameworks and institutional pressures significantly influence disclosure practices, with countries having stronger environmental regulations typically demonstrating higher quality climate reporting. However, there remains a notable gap in the systematic analysis of foreign banks operating in Indonesia, particularly those from different regulatory environments such as Japan and South Korea.

Indonesian research on climate disclosure has primarily focused on domestic corporations, with limited banking sector analysis. Ovina & Meiden (2023) highlight the quality and consistency of carbon emission disclosure in Indonesia based on CDP standards, demonstrating that climate issues are crucial determinants of sustainability report quality. However, the literature lacks comprehensive analysis of how foreign banks adapt their home country disclosure practices to Indonesian regulatory requirements, creating a significant research gap that this study addresses.

The environment has now become a crucial aspect of sustainability, with issues of pollution and environmental degradation receiving increasing attention. This has encouraged many companies to begin recognizing the importance of preparing sustainability reports. The materiality research conducted by Feliyanti (2022) shows that multifinance companies tend to emphasize social and economic issues such as employment, training, customer privacy, and economic performance, while environmental issues receive less attention as their impacts are perceived to be indirect. This condition indicates a gap in sustainability disclosure, where environmental aspects are often neglected.

Several other studies highlight global developments and technical aspects of sustainability disclosure. Fasan (2024) emphasizes the latest regulations in the European Union through the CSRD and ESRS, which expand reporting obligations for up to 49,000 entities, covering business models, governance, and key risks. Daromes et al. (2023), Fahira & Sebrina (2024), and Lu et al. (2024) confirm that materiality topics in sustainability reports are published with varying levels of completeness, influenced by board and company experience as well as stakeholder engagement. Meanwhile, Harindahyani & Agustia (2023) and Kühle & Quick (2024) stress the role of assurance statements, which have been proven to enhance credibility and influence financial decision-making. These developments show that beyond materiality issues, the quality of assurance is also a key element in strengthening trust and accountability in sustainability reporting.

Several studies affirm that climate disclosure plays an important role in improving transparency and performance in the financial sector. Adu et al. (2024) show that climate change initiatives can have a positive impact on banks' financial performance when supported by good governance, including the presence of a sustainability reporting framework (BSRF) and a board sustainability committee (BSCOM), which promote increased disclosure and sustainable investment. Ameli et al. (2020) emphasize that

transparency through climate risk disclosure in line with TCFD recommendations can guide the financial sector towards low-carbon investment, although this requires structural reforms, long-term policies, and appropriate financial instruments. Meanwhile, Ovina & Meiden (2023) highlight the quality and consistency of carbon emission disclosure in Indonesia based on CDP standards, which show that climate issues are a determining factor in the quality of sustainability reports. Thus, the theme of climate disclosure is becoming increasingly relevant, both as a tool for information disclosure and as a reflection of corporate environmental governance practices.

This research contributes novel insights by providing the first comparative analysis of climate disclosure practices among foreign banks from different regulatory backgrounds (Japan and South Korea) operating in Indonesia. The study fills a critical gap in understanding how international banking institutions navigate the intersection of home country sustainability standards and host country regulatory requirements, particularly under Indonesia's *OJK* Regulation No. 51/*POJK*.03/2017.

On the other hand, the environmental impacts of industrial activities and rising global emissions underscore the urgency of climate change issues. Aryantie et al. (2023) highlight environmental damage caused by limestone mining in karst areas, which results in water pollution, land degradation, and air pollution. This aligns with UN data (2022), which show a significant increase in greenhouse gas emissions, especially from fossil fuel combustion, deforestation, and agricultural activities. The accumulation of these emissions triggers the fastest global warming in history, alters weather patterns, and threatens life on Earth. While the energy and industrial sectors are the main contributors, attention is also shifting to the banking sector, given its role as a provider of financing that influences the sustainability of environmentally risky economic activities.

As a form of support for global commitments to tackling climate change, the Government of Indonesia through the Financial Services Authority (*OJK*) issued *OJK* Regulation No. 51/*POJK*.03/2017 on the Implementation of Sustainable Finance, which requires financial service institutions, issuers, and public companies to prepare and publish sustainability reports (Financial Services Authority, 2017). Therefore, analyzing climate information disclosure in the banking sector is highly important to assess the extent to which environmental governance practices and climate responsibility have been implemented transparently and accountably in accordance with applicable policies.

From a theoretical perspective, this research contributes to legitimacy theory and stakeholder theory by demonstrating how foreign banks use climate disclosure as a mechanism to gain social license to operate in host countries while meeting diverse stakeholder expectations. The practical benefits include providing investors and regulators with insights into comparative disclosure practices, enabling better assessment of climate-related financial risks and opportunities. Policy implications suggest that Indonesian regulators may need to harmonize international reporting standards to ensure consistent and comprehensive climate disclosure across all banking institutions operating in the country.

Many financial institutions still neglect environmental, social, and governance (ESG) factors in financing decisions, making them vulnerable to negative impacts such as increased credit risk, disaster vulnerability, shifting consumer demand, and new regulations. This also creates long-term business sustainability risks. To mitigate these risks, the banking sector is expected to play an active role in promoting ESG practices through various instruments, particularly in supporting the transition toward net zero emissions. The case of HSBC serves as an important example, where the bank announced

a halt to financing new oil and gas projects as part of its global climate strategy, while at the same time continuing to provide substantial funding to other oil and gas companies. This case illustrates policy contradictions and serves as a warning that similar issues may occur in Indonesia, making banking transparency and consistency in disclosure crucial.

Carbon emission disclosure has now become one of the key aspects of corporate sustainability practices due to increasing pressure from regulators, investors, and the public. Various reporting frameworks such as Carbon Emission Disclosure (CED), GHG Protocol, GRI Standards, and CDSB provide systematic guidelines for companies to measure and report emissions transparently, covering direct emissions (Scope 1), indirect emissions from energy (Scope 2), and value chain emissions (Scope 3). CED specifically emphasizes five main components: identification of climate risks and opportunities, calculation and verification of GHG emissions, energy consumption, emission reduction strategies and costs, and board accountability. However, major challenges remain, particularly related to data accuracy, consistency over time, and evolving regulations. Therefore, the integration of climate reports with financial statements, third-party verification, and ongoing evaluation are crucial so that emission disclosure not only fulfills compliance requirements but also genuinely reflects environmental performance and long-term business sustainability.

The Task Force on Climate-related Financial Disclosures (TCFD) is an international framework designed to integrate climate risks into financial decision-making. TCFD recommends that organizations report on governance, strategy, risk management, and metrics and targets related to climate change. In the banking sector, TCFD implementation is highly relevant given banks' role as financial intermediaries. Climate risks affecting loan and investment portfolios—such as stranded assets, reputational risks, and transition policies—require banks to disclose not only operational emissions but also climate exposures in their financing activities. This can be done through scenario analysis, stress testing, and aligning credit portfolios with the global 2°C temperature target. Thus, integrating TCFD principles not only meets regulatory and investor expectations but also strengthens market trust and helps banks play a role in the transition to a low-carbon economy.

The TCFD structure consists of four key elements. First, governance, which includes board oversight of climate risks and opportunities as well as management's role in designing sustainable financing strategies. Second, strategy, which covers the identification of short-, medium-, and long-term risks and opportunities; their impacts on business and finance; and the resilience of strategies under various climate scenarios, including the 2°C target. Third, risk management, which emphasizes the processes of identifying, managing, and integrating climate risks into risk management frameworks, particularly those related to credit, market, and operational risks. Fourth, metrics and targets, which involve the use of indicators to assess risks, disclosure of Scope 1, 2, and 3 carbon emissions, and the establishment of green financing targets. These four elements serve as a crucial foundation to ensure transparency, accountability, and banks' commitment in addressing the challenges of climate change.

Research methods

The subjects of this study are foreign private banks from Japan and South Korea operating in Indonesia. The research employs a quantitative approach with a descriptive method, where the data in the form of sustainability reports are reviewed based on the Task Force on Climate-related Financial Disclosures (TCFD) standards. The assessment

applies Raar's (2002) method to both quantitative and qualitative aspects to evaluate the quality of disclosure regarding climate change risks and impacts, particularly carbon emissions. The scores are calculated in total and on average, then ranked to determine the disclosure quality of each bank, which are subsequently described in a descriptive analysis and linked with Legitimacy Theory and Stakeholder Theory.

Table 1. List of Companies as Research Objects

No	Company Name	Stock Code
1	PT. Bank Jtrust Indonesia Tbk	BCIC
2	PT. Bank Shinhan Indonesia	SHBKIDJA
3	PT. Bank Oke Indonesia Tbk	DNAR

Source: Processed Data by Researcher (2025)

The research variable is the level of quality in carbon emission disclosure within sustainability reports, which refers to four categories and 11 sub-categories as modified from TCFD (2017), as outlined in the Information Sheet.

Table 2. TCFD Checklist

Category	Sub-Category
Governance	a. Explanation of the board's oversight of climate-related risks and opportunities.
	b. Explanation of management's role in assessing and managing climate-related risks and opportunities.
Strategy	a. Explanation of climate-related risks and opportunities identified by the organization over the short, medium, and long term
	b. Explanation of the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.
	c. Explanation of the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.
Risk Management	d. Explanation of the organization's processes for identifying and assessing climate-related risks.
	e. Explanation of the organization's processes for managing climate-related risks.
	f. Explanation of how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.
Metrics and Targets	g. Disclosure of the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.
	h. Disclosure of Scope 1, Scope 2, and, where appropriate, Scope 3 greenhouse gas (GHG) emissions, and related risks.
	i. Explanation of the targets used by the organization to manage climate-related risks and opportunities and performance against these targets.

Source: TCFD (2017)

Data collection was conducted through observation of the sustainability reports of three foreign banks in Indonesia: Bank JTrust Indonesia (Japan), Bank Shinhan Indonesia (South Korea), and Bank OK Indonesia (South Korea), for the period 2020–2024,

obtained from the official websites of each bank. The data reviewed focused on 11 sub-categories of climate information disclosure according to the TCFD framework, particularly carbon emissions. The selection of these three banks was based on the availability of sustainability reports as well as the diversity of home countries, in order to compare climate disclosure practices among foreign banks in Indonesia's banking sector.

To ensure data reliability and validity, several measures were implemented. Document triangulation was conducted by cross-referencing sustainability reports with annual reports and official press releases from each bank to verify consistency in reported information. Inter-rater reliability for content analysis was established through independent coding by two researchers, with disagreements resolved through discussion and consensus. A pilot test was conducted using reports from 2019 to validate the scoring framework before applying it to the full dataset. Additionally, coding guidelines were developed to ensure consistent interpretation of qualitative and quantitative disclosure elements across different report formats and languages.

Data analysis employed content analysis and comparative methods; content analysis emphasizes objectivity, systematization, and generalization of concepts (Sofwatillah et al., 2024), while the comparative method was used to compare variables across populations or periods (Sugiyono, 2017). The disclosure quality assessment applied Raar's (2002) scoring method to evaluate both quantitative and qualitative aspects in depth, using the following criteria:

Table 3. Content Analysis Scoring Index

Quantitative	Qualitative
0 = no information	1 = qualitative
1 = 1 sentence	2 = qualitative and monetary
2 = 1 paragraph	3 = qualitative and non-monetary
3 = 2-3 paragraphs	4 = qualitative and diagram (table)
4 = 4-5 paragraphs	5 = qualitative, monetary, and non-monetary
5 = > 5 paragraphs	6 = qualitative, monetary, and diagram
	7 = qualitative, non-monetary, and diagram
	8 = qualitative, monetary, non-monetary units, diagram

Source: J. Gunawan & Abadi (2017)

The assessment results for each sub-category were processed by calculating total and average scores, which were then categorized into high, medium, or low quality based on value intervals divided into three groups (Azwar, 2012). Furthermore, the categorization thresholds for each sub-category, element, and sector were derived from the difference between the highest and lowest scores, divided into three equal parts and ranked from highest to lowest.

$$\text{class intervals} = \frac{\text{highest scores} - \text{lowest scores}}{3}$$

To measure the percentage of compliance, the formula used was:

$$\text{percentage of compliance} = \frac{\text{average score}}{11}$$

The final results were then analyzed and compared to provide an interpretation of the research findings.

Results and Discussion

The quality level of climate-related disclosures was evaluated using both quantitative and qualitative indices. The assessment results were then classified into several categories and ranked accordingly. The following section presents the results and discussion of the study for three companies during the 2020–2024 period.

Table 4. Quantitative Assessment Score Interval

No.	Score Interval	Quality
1	0.43 – 0.51	Low
2	0.52 – 0.59	Medium
3	0.60 – 0.67	High

Source: Data processed by researchers (2025)

Table 5. Quality Level of *Climate Reporting Disclosure* in 3 Issuers with Quantitative Method

No.	Emitent	Year	Total TCFD Score	Max TCFD score per standard (5 Years)	5-Year Average Score	Percentage of Conformity	Quality Level
1	Jtrust Bank	2020	37	275	0.67	6.09 %	High
		2021	33				
		2022	37				
		2023	37				
		2024	39				
2	Shinhan Bank	2020	20	275	0.49	4.45 %	Low
		2021	28				
		2022	25				
		2023	31				
		2024	31				
3	Ok Bank	2020	15	275	0.43	3.90 %	Low
		2021	21				
		2022	23				
		2023	31				
		2024	29				

Source: Data processed by researchers (2025)

Table 6. Qualitative Assessment Score Interval

No.	Score Interval	Quality Level
1	0.35 – 0.39	Low
2	0.40 – 0.43	Medium
3	0.44 – 0.47	High

Source: Data processed by researchers (2025)

Table 7. Quality Level of Climate Reporting Disclosure in 3 Issuers with Qualitative Method

No.	Emitent	Year	Total TCFD Score	Max TCFD score per standard (5 Years)	5-Year Average Score	Percentage of Conformity	Quality Level
1	Jtrust Bank	2020	37	440	0.47	4.27 %	High
		2021	39				
		2022	40				
		2023	37				
		2024	54				
2	Shinhan Bank	2020	31	440	0.40	3.63 %	Medium
		2021	36				
		2022	36				
		2023	35				
		2024	38				
3	Ok Bank	2020	23	440	0.35	3.18 %	Low
		2021	29				
		2022	29				
		2023	32				
		2024	39				

Source: Data processed by researcher (2025)

Table 8. Contingency Table of Overall Climate Change Disclosure in 3 Issuers

		Qualitative		
		Low	Medium	High
Quantitative	High	Jtrust Bank		
	Medium			
	Low	Ok Bank	Shinhan Bank	

Source: Processed Data by Researcher (2025)

The analysis reveals significant differences in climate disclosure practices among the three banks, which can be explained through the lens of legitimacy theory and stakeholder theory. According to legitimacy theory, organizations seek to maintain social legitimacy by conforming to societal expectations and norms (Dowling & Pfeffer, 1975). JTrust Bank's superior disclosure performance reflects its strategic approach to gaining legitimacy in the Indonesian market by demonstrating strong environmental governance and commitment to global climate standards. This approach aligns with stakeholder theory, which suggests that organizations must address the diverse needs and expectations of multiple stakeholder groups, including regulators, investors, customers, and civil society (Freeman, 2010).

From a stakeholder theory perspective, the differences in disclosure quality reflect varying stakeholder pressures and expectations faced by each bank. JTrust Bank, as a subsidiary of a Japanese financial group, faces stronger stakeholder demands for environmental transparency, both from its parent company and Japanese investors who increasingly prioritize ESG factors. Shinhan Bank and OK Bank, while operating under South Korean regulatory frameworks that emphasize sustainability, demonstrate different levels of adaptation to local Indonesian stakeholder expectations, resulting in more limited disclosure practices.

Based on the contingency analysis, PT Bank JTrust Indonesia Tbk. achieved the highest position in both dimensions—quantitative and qualitative. This is demonstrated by its consistent issuance of standalone sustainability reports since 2020 and the explicit integration of TCFD pillars since 2022. The vision, mission, and objectives of JTrust Bank are aligned with ESG principles, focusing on digitalization, efficiency, and support for the achievement of the SDGs and Indonesia's Net Zero Emission agenda. The bank's sustainability strategy is reflected in its emission management: initially covering Scope 2 and Scope 3, and later expanded to include Scope 1 in 2024. According to JTrust Bank's President Director, Ritsuo Fukadai (jtrustbank.co.id), as of December 2024, 8.7% of the bank's total loan portfolio—or IDR 2.32 trillion—was allocated to environmentally friendly business activities (KUBL), in line with OJK Regulation No. 51/POJK.03/2017 on sustainable finance implementation for financial institutions, issuers, and public companies. In 2024, JTrust Bank also reinforced its sustainability commitment by launching two green savings programs—TORA Green Savings and TORA Blue Oceans Savings—that not only provided saving benefits but also enabled customers to contribute to environmental conservation, including waste plastic management and the planting of 1,000 mangrove seedlings on Pramuka Island, Thousand Islands. These initiatives represent JTrust Bank's efforts in climate change mitigation and coastal ecosystem preservation.

Meanwhile, PT Bank Shinhan Indonesia was positioned low in quantitative and medium in qualitative dimensions. In its sustainability reports, Shinhan Bank has made efforts to support government programs by providing financing for electric vehicles to reduce emissions from fossil-fuel-powered vehicles, as well as promoting eco-friendly transport products and sustainable business financing. As of December 31, 2023, Shinhan Bank had financed five electric vehicles totaling IDR 5.5 billion, two hybrid vehicles worth IDR 0.6 billion, and one waste management project worth IDR 0.3 billion. In 2024, its sustainable business credit portfolio reached IDR 1.039 trillion, equivalent to 8.95% of total loans. Despite strong support from its parent company in South Korea, Shinhan Bank's sustainability reporting in Indonesia remains part of its integrated annual report, limiting the scope of ESG and TCFD disclosure. Although there has been significant progress—for instance, including Scope 1 and Scope 2 emissions since 2021, and Scope 3 in 2023—the overall disclosure quality remains low due to unsystematic data presentation and relatively brief narratives. This reflects a gap between the group's ambitious global vision and its actual implementation in Indonesia, though gradually the bank has been adopting POJK 51 principles and strengthening its commitment to sustainable finance.

Similarly, PT Bank Oke Indonesia Tbk. (OK Bank) also fell into the low–low quadrant. While its sustainability vision and mission have developed positively since 2022, emphasizing integrity, innovation, and alignment with the SDGs, its TCFD-based disclosure remains limited. Implementation is mainly outlined in its long-term roadmap (2020–2027), focusing on green financing, governance strengthening, and regulatory compliance. OK Bank does not yet have a net-zero target but continues to commit to reducing environmental impacts through initiatives such as increased use of electric vehicles in operations and adopting eco-friendly office technologies. Although these initiatives demonstrate progress, the lack of quantitative emissions data and limited qualitative narrative have resulted in low climate disclosure quality. This position suggests that, despite a strategic direction toward TCFD adoption, actual disclosure efforts during 2020–2024 have yet to match JTrust's level.

Thus, the contingency analysis highlights significant variations among banks. JTrust Bank excels due to consistent and comprehensive disclosure, while Shinhan Bank and OK Bank need to enhance both quantitative data and qualitative narratives to align with international reporting practices and regulatory expectations.

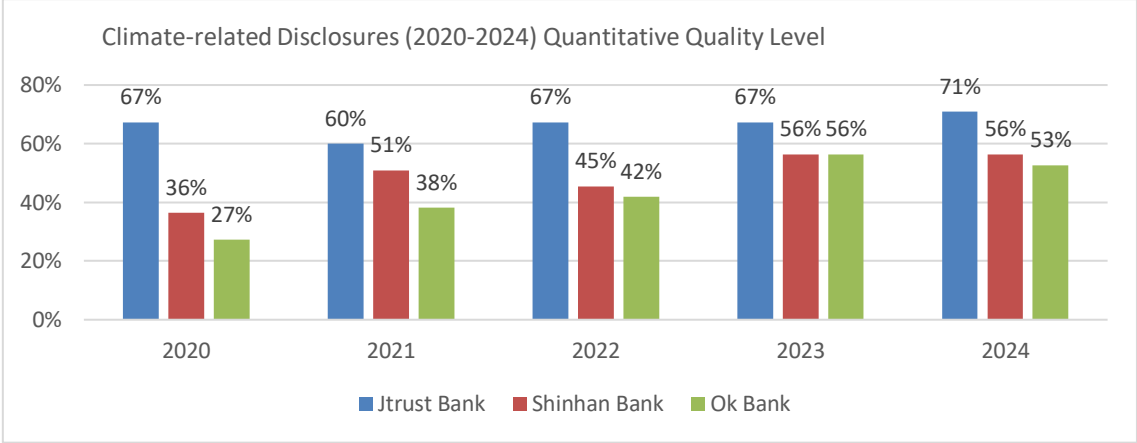


Figure 1. Quantitative Quality Level of Climate-related Disclosures (2020–2024)
Source: Processed Data by Researcher (2025)

The data show that Bank JTrust Indonesia consistently achieved higher quantitative disclosure quality compared to the other two banks, peaking at 71% in 2024. In contrast, Shinhan Bank and OK Bank displayed gradual increase in percentages, although OK Bank recorded a significant increase in 2023, reaching 56%.

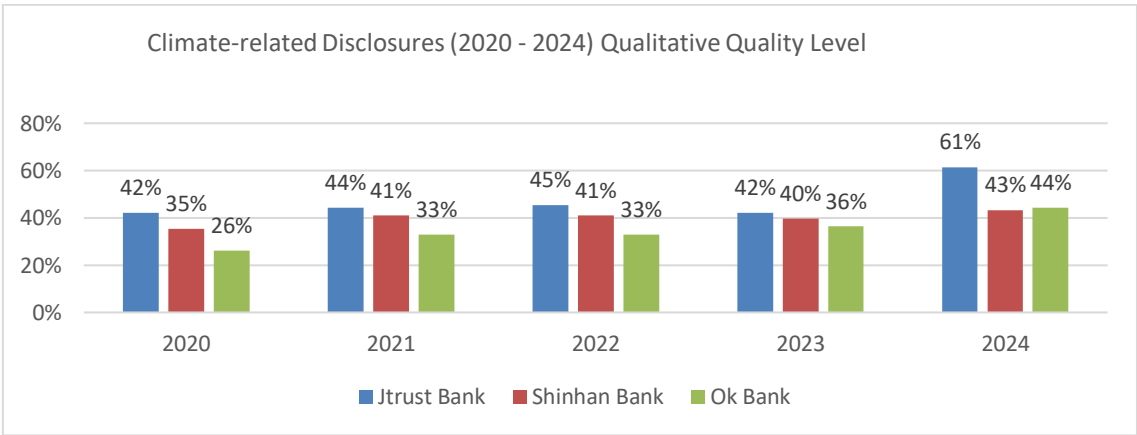


Figure 2. Qualitative Quality Level of Climate-related Disclosures (2020–2024)
Source: Processed Data by Researcher (2025)

On the qualitative side, Bank JTrust Indonesia consistently demonstrated higher disclosure levels, with an upward trend reaching 61% in 2024. Shinhan Bank briefly reached a peak of 43% in 2024, although its performance fluctuated in other years. Meanwhile, OK Bank started with low levels but showed a significant jump in 2024, achieving 44% qualitative disclosure.

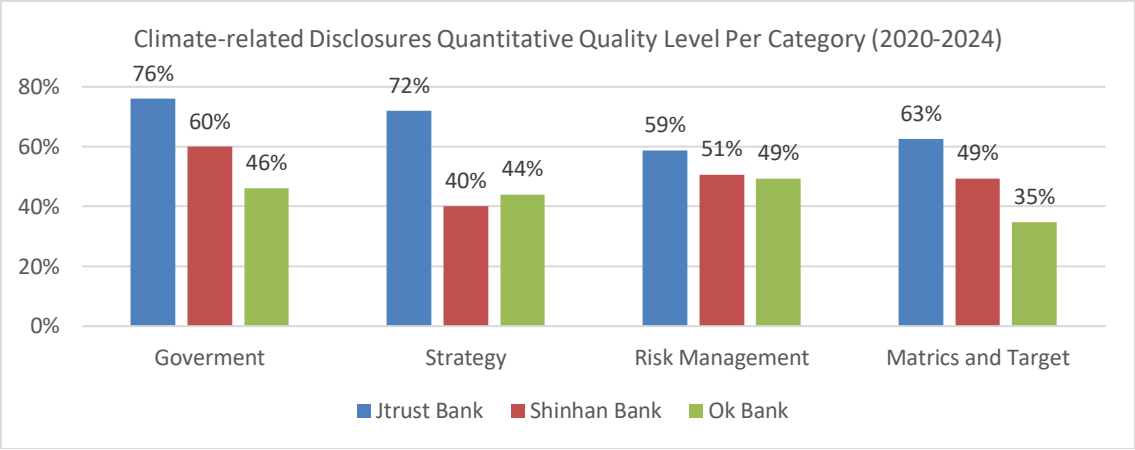


Figure 3. Quantitative Quality Level of Climate-related Disclosures by Category (2020–2024)

Source: Processed Data by Researcher (2025)

For the quantitative dimension, Bank JTrust Indonesia reported the highest levels across all aspects during 2020–2024, especially in Governance (76%) and Strategy (72%), followed by Metrics and Targets (63%) and Risk Management (59%). Shinhan Bank stood at an intermediate level, with the largest disclosures in Governance (60%) and Risk Management (51%), in Metrics and Targets (49%) and low in Strategy (40%). OK Bank contributed the least, with Governance (46%) and Risk Management (49%) while Strategy (44%) and Metrics and Targets (35%) remained minimal.

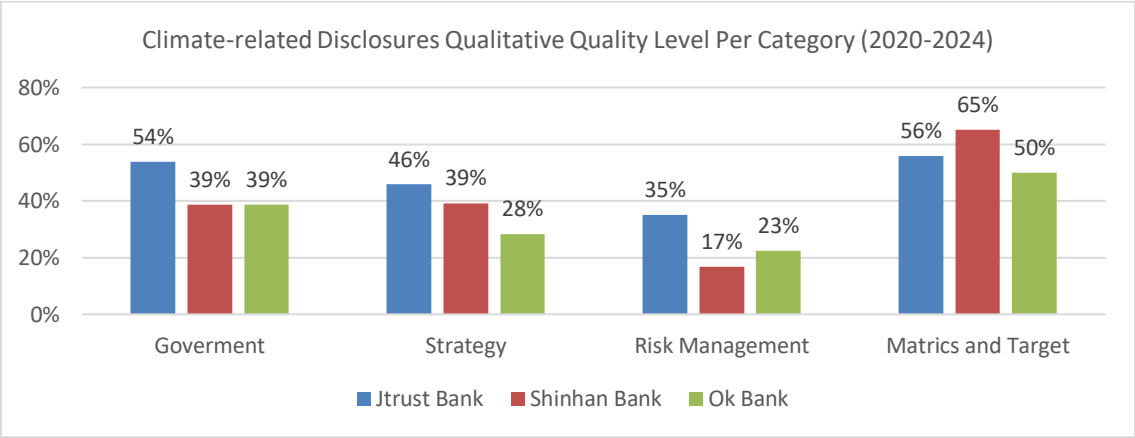


Figure 4. Qualitative Quality Level of Climate-related Disclosures by Category (2020–2024)

Source: Processed Data by Researcher (2025)

During this period, Bank JTrust Indonesia achieved the highest disclosure levels in nearly all aspects, especially Metrics and Targets (56%) and Governance (54%), although still limited in Risk Management (35%). Shinhan Bank showed higher performance to JTrust in Metrics and Targe (65%) and performed relatively well in Government (54%), but remained low in Risk Management (17%). Meanwhile, OK Bank showed comparable performance to Shinhan in Governance (39%) and Metrics and

Targets (50%) as its strongest areas, but very limited Strategy (28%) and Risk Management (23%).

Governance Analysis

The findings show that JTrust Bank consistently excelled in Governance between 2020–2024, supported by a clear sustainability governance structure and a dedicated committee reporting climate issues to the board of directors. This demonstrates the integration of climate governance into strategic decision-making. Shinhan Bank improved year by year, driven by regulatory pressures from its South Korean parent company emphasizing sustainability governance. OK Bank showed comparable performance to Shinhan in Governance due to the dedicated climate governance unit.

Accounting implications: sustainability governance requires improved quality of non-financial information integrated into traditional financial reporting, such as integrated reports containing climate risks. This integration necessitates the development of new accounting frameworks that can capture the financial materiality of climate governance decisions and their long-term impact on organizational value creation.

Strategy Analysis

In the Strategy category, JTrust Bank successfully integrated climate issues into its business strategy, launching green financial products and supporting renewable energy projects. Shinhan Bank Indonesia began setting long-term targets toward net-zero emissions by 2050 since 2022, although implementation remains limited. Meanwhile OK Bank presented only general strategies of a 2020–2027 roadmap targets.

Accounting implications: climate strategies require transition budget allocation, recording green investment costs, and disclosure of long-term financial impacts of climate policies in financial statement notes. These strategic commitments create contingent liabilities and future cash flow implications that must be appropriately recognized and measured under current accounting standards.

Risk Management Analysis

JTrust Bank embedded climate risks into its risk appetite framework, enabling readiness to anticipate potential credit losses in high-risk sectors. Shinhan Bank began integrating climate risks into credit and operational risk management from 2021. Meanwhile, OK Bank was in the middle qualitatively and slightly lower quantitatively, reflecting that its disclosure remains limited and suggesting that its disclosure remains limited compared with JTrust Bank.

Accounting implications: climate risk management affects the recognition of expected credit losses in vulnerable sectors and may result in asset impairments due to both transition and physical climate risks. Banks must develop sophisticated models to quantify climate-related credit losses and incorporate these into their financial reporting under IFRS 9 and other relevant standards.

Metrics Analysis

Trust Bank showed the most balanced performance, with relatively strong in Metrics Analysis disclosures, supported by the presentation of greenhouse gas (GHG) emissions and intensity data, although long-term quantitative targets were not yet clearly defined, Shinhan Bank led in qualitative disclosure with consistent disclosure of greenhouse gas (GHG) emissions and a net-zero target for 2050 but scored lower in

quantitative terms, indicating stronger narrative reporting but less consistent data presentation. OK Bank ranked moderately in qualitative disclosure but lowest in quantitative disclosure, reflecting that its reporting remains limited, and only provided basic information without specific targets.

Accounting implications: this highlights the need for standardized emission measurement (Scope 1, 2, and 3), recording environmental costs, and integrating non-financial performance indicators into financial reporting systems, which also affect asset valuation and the eligibility of high-emission projects for financing. The development of carbon accounting systems requires significant investment in data management and verification processes that have direct financial statement implications.

Conclusion

Climate-related disclosures in the foreign banking sector in Indonesia show a diverse pattern. JTrust Bank demonstrates the highest overall quality of disclosure, both quantitatively and qualitatively, particularly in risk management and sustainability metrics, reflecting strong integration of the TCFD framework. Shinhan Bank shows notable strengths in governance and strategy and has set long-term targets such as net-zero by 2050, but its quantitative disclosure remains relatively weaker and less consistent. OK Bank, while performing moderately in qualitative aspects such as strategy and governance, ranks lowest in quantitative disclosure, with reporting that remains limited and mostly descriptive.

Differences in disclosure quality among banks are influenced by internal factors such as governance structures, management commitment, and business strategies, as well as external factors including home-country regulations and compliance with *POJK 51*. From a theoretical perspective, these findings demonstrate that legitimacy theory and stakeholder theory provide complementary explanations for climate disclosure practices. Banks operating under stronger home-country sustainability frameworks and facing greater stakeholder pressure tend to adopt more comprehensive disclosure to maintain legitimacy across multiple institutional environments.

The findings of this study underscore the importance of integrating climate issues into accounting practices and financial reporting, whether through recognizing transition costs, including climate risk within risk management, or harmonizing international reporting standards. Thus, transparency in climate disclosure is not only regulatory compliance but also a strategic tool for banks to strengthen investor confidence, support green financing, and contribute to Indonesia's Net Zero Emissions 2050 target.

The accounting implications include the need to integrate climate issues into financial statements, such as transition cost recognition, climate risk provisions, and greenhouse gas measurement. This requires new accounting frameworks that capture the financial materiality of climate-related decisions and their impact on long-term value creation. Investment in data management systems and verification processes will be crucial to ensure accuracy and reliability. Furthermore, the convergence of international accounting standards for climate reporting will be essential to ensure comparability across jurisdictions.

This highlights that sustainability accounting is becoming increasingly important for the banking sector. Differences in disclosure levels are shaped by each bank's vision, sustainability strategy, and home-country regulations. Japanese and South Korean banks tend to demonstrate higher standards compared to Indonesian domestic banks, although

differences also exist among foreign banks themselves depending on their quantitative and qualitative emphasis.

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