Policy Brief

Facing Climate Hazards: Practical Risk Management for the Banking Sector

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Executive Summary

Indonesia is highly vulnerable to the impacts of climate change, including rising sea levels, floods, and droughts. Climate-related events in 2024 alone resulted in an estimated economic loss of IDR 4 trillion (International Monetary Fund (IMF), 2025; Global Climate Risk, 2025). The banking sector is no exception to this phenomenon, potentially triggering asset value depreciation, physical damage, and loss, as well as disruption to community livelihood, which reduces the debtor's repayment capacity. On the other hand, the conservative approach of risk-aversion within the banking sector could slow credit growth and weaken financial inclusion. In response to these issues, conducting analyses using future projections is imperative, particularly to enhance climate sensitivity within the banking sector. This policy brief proposes three practical steps to build institutional resilience, improve risk assessment, and align with evolving regulatory and global standards. These steps include strengthening internal strategies to address physical climate risks, collaborating with climate data providers to support informed decision-making, and ensuring alignment with climate-related disclosure requirements.

Climate Change Risks and the Indonesian Banking Sector

As an archipelagic nation, Indonesia's current mean sea-level rise is approximately 3.9 ± 0.4 mm per year. In comparison, land subsidence in cities like Jakarta reaches 75–100 mm per year, resulting in an effective relative sea-level rise of nearly 10 cm per year (IMF, 2025), posing systemic risks from sea-level rise and increasing temperatures, which are expected to intensify the frequency and severity of floods, droughts, storms, and wildfires. These hazards pose a threat to critical sectors, including housing, infrastructure, agriculture, and fisheries. In 2024 alone, climate-related disasters,

including floods and forest fires, were estimated to have caused economic losses of nearly IDR 4 trillion (~USD 250 million[1]), significantly affecting livelihoods across the country (Global Climate Risk, 2025).

One sector particularly exposed to these escalating risks is the banking sector. With the growing frequency and intensity of physical climate hazards, the banking sector faces disruptions to its daily operations and undermining of asset valuations. For example, damage to borrowers' properties, declining agricultural yields, and industrial shutdowns can affect loan repayments and reduce collateral value. Public budgets are also strained, further increasing systemic credit risks (IMF, 2025). Direct operational impacts are already evident: during the 2025 Bekasi flood, several banks were forced to halt operations due to flooding, with damage extending to electronic equipment and even stored cash.

While some progress has been made, sector-wide readiness remains uneven. In early 2024, seven major banks in Indonesia, including the Big Four (Bank Mandiri, Bank Rakyat Indonesia (BRI), Bank Negara Indonesia (BNI), and Bank Central Asia (BCA), announced net-zero commitments and supported newly issued regulatory guidance (OJK, 2024). However, implementation remains limited. A survey found that no Indonesian bank had yet fully integrated climate-related risks into core financial management, with regional and smaller banks particularly unprepared (Larasati & Mafira, 2022). Regulators require all banks to embed climate risk into their business and operational strategies by 2026. Nevertheless, limited institutional capacity and a lack of technical knowledge continue to pose significant challenges for compliance.

The Growing Threat of Climate Change to Indonesia's Financial Stability

In this context, it becomes imperative for the banking sector to thoroughly understand the risks it faces, particularly the exposure of its assets to climate-related hazards. This understanding must extend beyond analysing past events and encompass future projections, as building resilience requires anticipation and preparation for emerging risks. Consequently, there is an urgent need for accurate, forward-looking data and robust risk assessments to inform climate-related financial planning and decision-making.

Figure 1 presents a practical framework for financial institutions to assess how physical climate risks—both acute and chronic—translate into material financial impacts. These risks have the potential to disrupt borrower operations, damage collateral, and reduce asset values, ultimately affecting income statements, cash flows, and balance sheets. Despite the evident perils, the majority of Indonesian banking institutions have not yet incorporated physical climate risks into their fundamental financial and credit risk management procedures. The framework highlights the urgent need for financial institutions to incorporate climate risk considerations into their strategic planning and daily operations.

Disaster events, including floods, wildfires, and storms, have already had a significant impact on borrower incomes, resulting in property damage and an increase in loan defaults. These impacts have the potential to compromise financial stability, both at the individual institution level and within the broader financial system. At the macro level, climate shocks have measurable effects on firm performance and bank operations. Preliminary research suggests that, following a

[1] The average annual selling exchange rate of the US Dollar against the Indonesian Rupiah, as reported by Bank Indonesia was 1 USD = 15,866 IDR.

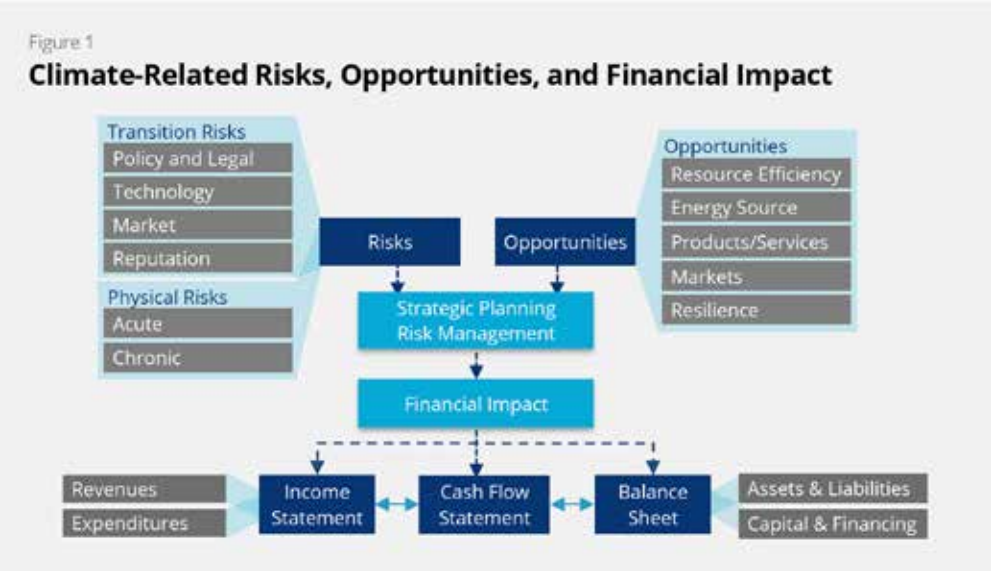

Figure 1. *Climate-Related Risks, Opportunities, and Financial Impact*
Source: TCFD, 2017

climate-related disaster, borrowers frequently face challenges in fulfilling their repayment obligations, resulting in an increase in non-performing loans. Concurrently, companies are compelled to allocate financial resources to recovery efforts, thereby diminishing their capacity to sustain normal operations and further constraining banks' lending capacity and profitability (Bayangos et al., 2020).

Despite mounting evidence of these risks, the capacity of banks to analyze and respond to them remains limited. The prevailing risk assessment tools and models are not designed to capture the full range of physical climate impacts, especially those that develop slowly over time. To facilitate more informed, climate-aware decision-making across the banking sector, there is a need for significant improvements in data modeling capabilities and regulatory alignment. This policy brief outlines the key challenges to integrating climate risk into banking and provides recommendations to address these challenges.

Why This Matters: Economic and Financial Impact Pathway

Resilience Development Initiative's post-field survey report on the force majeure that happened in March 2025 in Greater Jakarta. The RDI's Multi-Hazard Preparedness working group contributed to the policy recommendations through data analysis and literature reviews. The BNPB, BMKG, Bappenas, and local governments in the Greater Jakarta area could utilise these recommendations to coordinate better and implement informed measures for strengthening urban resilience against future flood risks.

Financial institutions often exhibit a tendency to restrict their lending activities in response to climate-induced financial stress, adopting a more risk-averse posture in the aftermath of disasters. This cautious stance has the effect of slowing credit growth and undermining financial inclusion, particularly in already vulnerable regions. For instance, during the 2021 flood in Indonesia's Bekasi region, urban and peri-urban communities were severely affected, resulting in damage to over 6,500 houses and the displacement of more than 25,000 residents. The estimated economic losses amounted to IDR 71.6 billion, with local financial institutions reporting delays in loan repayments and operational disruptions due to

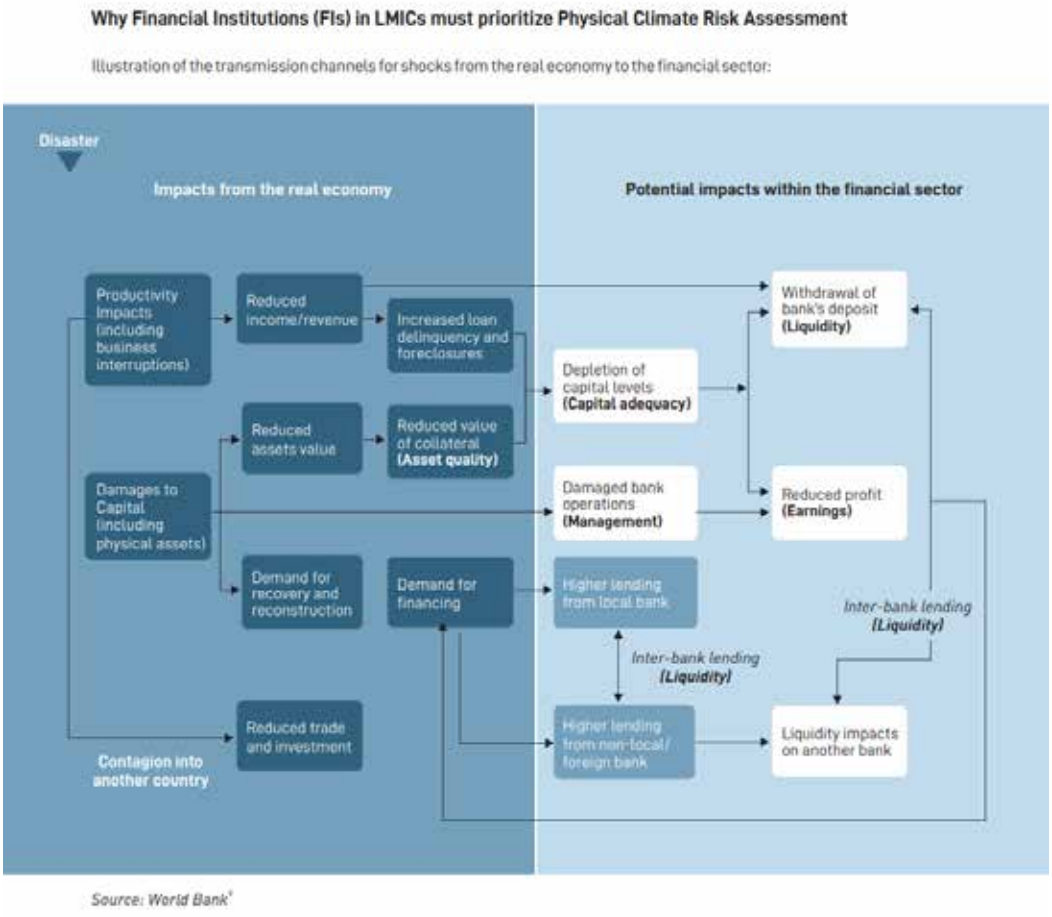

Figure 2. *Economic and Financial Sector Impact*
Source: CDRI, 2025

flooded branches and inaccessible infrastructure. A significant number of micro, small, and medium enterprises (MSMEs) were compelled to allocate a portion of their cash flow toward recovery costs, resulting in temporary business closures and diminished loan performance (Sagala et al., 2025).

A more severe case occurred during the 2011 Thailand floods, which caused catastrophic damage to the country's industrial heartland. The disaster resulted in economic losses amounting to over USD 46.5 billion, making it one of the most financially devastating natural disasters in Asia's history (The World Bank, 2011). The floods resulted in the submersion of seven major industrial estates, disrupted global supply chains, particularly in the electronics and automotive sectors, and led to the temporary cessation of production for hundreds of firms. Consequently, financial institutions experienced an increase in nonperforming loans, a reassessment of collateral in flood-prone regions, and a tightening of credit in affected sectors.

During periods of extreme climate events, firms frequently encounter financial setbacks, including profit losses, weakened cash flows, and deteriorating balance sheets, which can exacerbate their financial vulnerability (Chalabi-Jabado & Ydriss Ziane, 2024). Concomitant with these acute shocks, chronic climate trends—including prolonged flooding, sea-level rise, and heat stress—present a more gradual yet equally grave challenge. The long-term stressors previously mentioned have been shown to have a detrimental effect on the economy as a whole. They have been demonstrated to reduce the capacity of

individuals to repay loans and to decrease the value of assets. However, these risks are frequently inadequately addressed in traditional financial evaluations, leaving financial institutions susceptible to mispriced risk, overvalued collateral, and vulnerable supply chains.

Financial institutions themselves are not immune to these effects. Climate impacts have the potential to directly compromise the integrity of critical infrastructure, including but not limited to branches, automated teller machines (ATMs), and data centers. This, in turn, can lead to operational disruptions and the compromising of data integrity. Collateral assets, including property, plants, and equipment situated in high-risk areas, may experience a decline in valuation or become uninsurable. Moreover, climate-related disruptions to borrower supply chains can further increase credit risk exposure, underscoring the necessity for climate-informed lending strategies and enhanced resilience planning within the financial sector.

Practical Recommendations for Banks

In response to the growing threat of physical climate risks, Indonesian banks must adopt a forward-looking, risk-informed approach. While regulatory momentum has begun to take shape, significant implementation gaps remain, particularly among smaller and regional institutions. The following recommendations outline practical steps banks and policymakers can take to build institutional resilience, improve risk assessment, and align with evolving regulatory and global standards.

- **Internal Strategy**

  One of the strategies that can be considered is strengthening internal frameworks to address physical climate risks. This includes mapping loan exposures to high-risk areas using Geographic Information Systems (GIS) and national disaster data to identify branches and borrowers vulnerable to hazards such as floods or wildfires. Spatial risk profiling allows banks to anticipate credit losses and adjust lending strategies accordingly (Larasati et al., 2022). Climate risks should also be embedded into credit risk assessment and due diligence. Banks need to revise their scoring models to account for asset vulnerability, especially in sectors such as agriculture, infrastructure, and coastal development (Ciscar et al., 2014). Capacity building is also critical; credit analysts and risk teams must be trained to understand climate data, assess exposure, and integrate physical risks into portfolio evaluation. The Indonesian Financial Services Authority (Otoritas Jasa Keuangan/OJK) 2024 Climate Risk Management and Scenario Analysis (CRMS) guidelines make this shift essential for regulatory compliance by 2026 (OJK, 2024).

- **Collaboration & Technology**

  Collaboration with climate data providers is also crucial for ensuring that accurate and timely information flows into decision-making processes. Banks should partner with agencies such as the Indonesian Agency for Meteorology, Climatology, and Geophysics, as well as academic institutions, to access localized climate projections, hazard maps, and vulnerability data (Garschagen et al., 2018). Leveraging spatial analytics and simulation tools will enable banks to visualise asset-level exposures and test portfolio resilience under multiple climate scenarios. Scenario-based stress testing, as recommended by the Network for Greening the Financial System (NGFS) and the Intergovernmental Panel on Climate Change (IPCC), is crucial for evaluating the potential impact of extreme events or long-term climate

shifts on loan performance, liquidity, and capital adequacy. These tools allow for proactive risk management and informed capital planning.

- **Business Continuity Planning**

  Beyond credit and portfolio risk management, banks must also strengthen their Business Continuity Planning (BCP) to address operational disruptions triggered by climate-related hazards. Floods, prolonged droughts, and extreme weather events can impair branch operations, disrupt payment systems, and reduce staff accessibility, ultimately affecting service delivery. Banks should conduct climate-sensitive BCP exercises, including contingency planning for critical functions such as data management, IT infrastructure, and branch operations in high-risk areas. This entails diversifying data centers, adopting remote and digital banking capabilities, and developing emergency protocols for affected clients. Regular scenario testing, aligned with the CRMS framework, ensures that banks can sustain essential services and maintain customer trust during climate-induced crises. Embedding physical climate risks into BCP not only safeguards operational resilience but also demonstrates prudent risk management to regulators, investors, and customers alike.

- **Transparency & Reporting**

  Ultimately, greater transparency is necessary to align with market expectations and regulatory trends. Banks are encouraged to adopt voluntary climate-related disclosures in line with the Task Force on Climate-related Financial Disclosures (TCFD). Reporting should cover governance, risk assessment methods, exposure levels, and scenario test results. Although the Indonesian Financial Services Authority Regulation No. 51 has mandated sustainability reporting since 2017, alignment with international frameworks like the Task Force on Climate-related Financial Disclosures (TCFD) and International Financial Reporting Standards (IFRS) S2 will improve global credibility and stakeholder confidence (CPI, 2023). Regulators can support this by offering technical guidance and phased physical climate risk disclosure requirements. A transparent and standardised approach will position banks as proactive actors in Indonesia's broader climate resilience agenda.

Acknowledgement

This policy brief was developed in response to the increasing frequency and severity of climate-induced disasters in Indonesia, which have begun to affect the performance and stability of the financial sector significantly. Drawing on analyses by the Resilience Development Initiative's Cluster of Disaster and Climate Resilience (DCR), this brief integrates climate risk data and literature to inform practical strategies for the banking sector. The recommendations presented here are intended to guide financial authorities—particularly the Ministry of Finance, OJK, and Bank Indonesia—in mainstreaming climate risk management to strengthen systemic resilience in the face of growing physical climate threats.

Further Readings

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