

Climate Change as a Business Risk: An Indonesian Banking Industry Perspective

Indah Puspitasari¹⁾, Taufiq Faturohman²⁾

^{1,2)}Master of Business Administration Program, Institut Teknologi Bandung, Indonesia

*Corresponding Author

Email: itaoke81@gmail.com

Abstract

Climate change has emerged as a new business risk that must be carefully evaluated, forecasted, mitigated and managed by all corporate organizations, including banks. Climate change has a profound effect on finance and business continuity, so all sectors, including the financial industry, must plan for it. In June 2022, the Basel Committee on Banking Supervision (BAS) announced general principles for banks around the world to manage and supervise climate change risks, entitled “Principles for the Effective Management and Supervision of Climate-Related Financial Risks”. Managing Climate-Related Financial Risks requires an acceptable management structure and information tools that can be used by banks to monitor, measure and manage asset portfolios affected by Climate-Related Financial Risks. In addition, this research also aims to assess the readiness of Indonesian banks in implementing an effective BCBS management framework for climate change-related financial risks. This research utilizes a qualitative research type. The research methodology used in this study is to use in-depth and semi-structured interviews to obtain narratives and subjective reflections from the participants. The main purpose of the interviews was to uncover significant meanings and structures inherent in their professional experiences. By using a sample method involving regulators and selecting banking executives who specialize in risk management. The results of this study provide an explanation of the perspective of Indonesian banks in dealing with business risks due to climate change, OJK's policies related to banking risk management due to climate change, OJK's response to the possibility of adopting an effective management framework for financial risks related to climate change developed by the BCBS in terms of, Bank Indonesia's Perspective on the Integration of Climate Risk into Macro Prudential Supervision, Impact on Financial Stability and Economic Resilience, and Policy Recommendations, and Banks' readiness to implement an effective financial risk management framework for financial risks related to climate change based on the risk management framework developed by the Basel Committee on Banking Supervision (BCBS).

Keywords: *Climate Change, Business Risk, Bank of Indonesia, OJK, Basel Committee on Banking Supervision.*

INTRODUCTION

Climate change is an issue that in recent years continues to be one of the main topics discussed in various global meetings. The realization of many countries that climate change is not just an environmental issue but will have a further and significant impact on economic structure, GDP, finance, and investment, has made many countries begin to focus their attention on anticipating and mitigating the risks of climate change (Wozniak, Antal, 2021).

One source of risk that has recently attracted attention is the risk associated with weather risk. Weather risk can be defined as the uncertainty of a company's future cash flows caused by non-catastrophic changes in weather such as air temperature, air humidity, precipitation, snowfall, and/or wind speed (Alzard et al., 2017). As such, weather risk is fundamentally different from risks caused by extreme disasters such as hurricanes, floods, tsunamis, and others. For this type of risk, the instrument that has been widely used is insurance (e.g. fire insurance, flood insurance, earthquake insurance). Whereas for risks due to weather changes that cause a

decrease in sales volume or an increase in costs (not natural disasters), a more suitable instrument is to use weather derivative contracts.

In recent years, many parties have realized that climate change is not only an environmental issue, but also covers much broader aspects that have a direct impact on the economy and the business world. As global warming continues to increase, climate change has become one of the main risks that must be faced not only by governments but also by many companies around the world including banking sector companies. Climate change has become a new risk in business that must be measured, anticipated, mitigated and managed seriously by all business entities in various sectors including the banking sector. Its significant impact on finance and business continuity makes climate change must be anticipated by all sectors including the banking sector (Sussman, Frances G., 2008).

In June 2022 the Basel Committee on Banking Supervision (BIS) has issued general guidelines for banks in the world related to the management and supervision of climate change risk with the title “Principles for the Effective Management and Supervision of Climate Related Financial Risk”. In the guidelines, the Basel Committee states that banks are potentially exposed to climate-related financial risks regardless of their size, complexity or business model.

The Basel Committee on Banking Supervision (BCBS) highlights that climate change and efforts to transition to an environmentally friendly economy are triggering significant financial risks for the banking sector. These risks, known as Climate-Related Financial Risks, fall into two main categories. First, Physical Risks include the direct impact of natural disasters or environmental changes due to climate change. Second, Transition Risks arise from the economic and policy challenges associated with transitioning to a low-carbon economy. Both types of risks can affect a bank's financial stability and require attention in risk management.

Physical Risk and Transition Risk are two types of risks that arise from climate change and related policies. Physical Risks include potential economic and financial losses caused by environmental impacts, such as floods, storms, extreme temperatures, fires and sea level rise, which can damage physical and non-physical assets and alter environmental conditions. Meanwhile, Transition Risks arise from policies and regulations designed to accelerate the transition to a low-carbon economy, such as the implementation of carbon taxes and emissions trading systems (ETS), to support the reduction of greenhouse gas emissions as committed in the Paris Agreement.

Physical Risk and Transition Risk can affect a bank's financial risks, including : Credit risk, Market risk, Operational risk, and Liquidity risk. For example, debtors affected by natural disasters may experience difficulties in loan repayment. In addition, corporate securities whose business activities are concentrated in goods or sectors that are considered carbon-intensive, their ratings may decline as a result of the policy towards net zero carbon.

Meanwhile, banking in Indonesia is regulated by Law Number 7 of 1992 on Banking as amended by Law Number 10 of 1998 and Law Number 21 of 2008 on Sharia Banking. Based on these laws, the banking structure in Indonesia consists of commercial banks and rural banks, both those that carry out business activities conventionally and those that carry out business activities based on sharia principles.

In accordance with the mandate of Law No. 21/2011 on the Financial Services Authority (OJK) and Law No. 4/2003 on the Financial Sector Omnibus Law, the banking sector in Indonesia is supervised by the Indonesia Financial Services Authority (OJK). OJK has the main function to organize an integrated system of regulation and supervision of the banking sector. In regulating and supervising banking in Indonesia, OJK issues Financial Services Authority Regulations and Financial Services Authority Circulars. In carrying out the banking regulatory function, OJK as a member of the BCBS (Basel Committee for Banking Supervision) is obliged

to adopt the banking regulatory standards set by the BCBS in the banking sector in Indonesia as well as other BCBS members.

OJK has issued the Indonesian Financial Services Sector Master Plan (MPSJKI) which is a plan that will serve as a reference in the development of the national Financial Services Sector (FSS), including banking. The implementation of MPSJKI for the banking sector is contained in the Indonesian Banking Development Roadmap (RP2I) which is based on the principles of FSS development, namely Contributive, Stable and Inclusive and is complemented by supporting factors or enablers, namely Human Resources (HR) and Information Technology. RP2I is a reference in determining strategies, program initiatives and directed action plans so as to be able to answer the opportunities and challenges faced in the development of Indonesian banking.

Based on the banking supervision report from OJK, in July 2024 banking resilience was relatively well maintained, as shown in the figure below:

PERBANKAN									
	INTERMEDIASI				PROFITABILITAS				
	Jul-23	Des-23	Jun-24	Jul-24	Jul-23	Des-23	Jun-24	Jul-24	
Kredit (Rp T)	6.686	7.090	7.478	7.515	NIM (%)	4,84	4,81	4,57	4,59
% Yoy	8,54	10,38	12,36	12,40	ROA (%)	2,75	2,74	2,66	2,69
% Ytd	4,08	10,38	5,47	5,99	PROFIL RISIKO				
% Mtm	0,44	1,79	1,39	0,48	Jul-23	Des-23	Jun-24	Jul-24	
% Growth YoY					Risiko Kredit				
Kredit Modal Kerja (KMK)	6,64	10,05	11,68	11,60	NPL Gross (%)	2,51	2,19	2,26	2,27
Kredit Investasi (KI)	11,15	12,26	15,09	15,20	NPL Net (%)	0,80	0,71	0,78	0,79
Kredit Konsumsi (KK)	9,25	9,10	10,80	10,98	LaR (%)	12,59	10,94	10,51	10,27
DPK (Rp T)	8.064	8.458	8.722	8.687	Risiko Pasar				
% Yoy	6,62	3,73	8,45	7,72	PDN (%)	1,75	1,44	1,52	1,36
% Ytd	-1,09	3,73	3,12	2,71	Risiko Likuiditas				
% Mtm	0,28	2,94	0,27	-0,40	Alat likuid (Rp T)	2.143	2.430	2.212	2.125
LDR	82,90	83,83	85,74	86,51	AL/NCD (%)	118,37	127,07	112,33	109,20
PERMODALAN									
	Jul-23	Des-23	Jun-24	Jul-24	AL/DPK (%)	26,57	28,73	25,37	24,57
CAR (%)	27,43	27,65	26,09	26,61	LCR	227,10	220,18	212,22	216,46
					NSFR*		134,04	129,93	

*data kuartal

Source: OJK Report

The performance of the banking intermediation function continued its upward trend. In July 2024 (mtm) credit increased by IDR36.21 trillion, or grew 0.48%. Meanwhile, on an annual basis, the growth of lending continued with a record double-digit growth of 12.40% (yoy) to Rp7,514.6 trillion, driven by corporate loans which grew 18.06% (yoy).

By type of use, investment loans grew the highest at 15.20% (yoy), followed by working capital loans at 11.60% (yoy), and consumer loans at 10.98% (yoy). In line with credit, third-party funds (DPK) also experienced positive growth. In July 2024, third party funds grew by 7.72% (yoy) to IDR8,686.7 trillion, with current accounts contributing the largest growth of 10.73% (yoy).

The banking industry's liquidity in July 2024 remained sufficient, as indicated by the Liquid Assets to Non-Core Deposits (LA/NCD) ratio at 109.20% and the Liquid Assets to Third-Party Funds (LA/TPF) ratio at 24.57%, both exceeding the respective thresholds of 50% and 10%. In addition, credit quality was maintained with a relatively stable gross NPL ratio at 2.27% and net NPL at 0.79%. Loan at Risk (LaR) also showed a downward trend to 10.27%. The LaR ratio is also close to the pre-pandemic level, which was 9.93% in December 2019. In general, the level of banking profitability (ROA) remains high at 2.69%, which indicates that the performance of the banking industry remains resilient and stable.

Banking resilience also remains strong as reflected by capitalization (CAR) which is at a high level and has increased by 26.61% and provides a solid risk mitigation cushion amidst global uncertainty. In Indonesia, regulations related to the obligation of risk measurement by banks are regulated in OJK Regulation (POJK) No. 18/POJK.03/2016 dated March 16, 2016 and OJK Circular Letter No. 34/2016 dated September 1, 2016 on the Implementation of Risk Management for Commercial Banks, respectively. These provisions regulate several important matters related to the implementation of risk management by banks, namely :

1. Banks are required to implement risk management effectively, both for banks individually and banks on a consolidated basis with subsidiaries.
2. The implementation of risk management covers 8 risks, namely credit risk, market risk, liquidity risk, operational risk, legal risk, reputation risk, strategic risk, and compliance risk.

On the other hand, BCBS has developed an effective management framework for Climate-Related Financial Risks which consists of the stages of risk identification, risk exposure mapping and measurement, risk monitoring, and risk control. The BCBS is one of the standard-setting bodies that is also a member of the Financial Stability Board in the FSB - Plenary. OJK is also currently a member of the FSB, specifically the FSB - Supervisory and Regulatory Cooperation (SRC) and FSB - Regional Consultative Groups (RCG). In addition, the BCBS also cooperates with the Executives' Meeting of East Asia-Pacific Central Banks (EMEAP) - Working Group on Banking Supervision (WGBS) of which OJK is also a member.

Managing Climate-Related Financial Risks requires adequate management frameworks and information systems that can be used by banks to monitor, measure and manage asset portfolios affected by Climate-Related Financial Risks. Under the framework proposed by the BCBS, banks are required to, among others :

1. Understand the conditions that can be a source of physical risk and transition risk. Such sources include natural disasters that affect macroeconomic conditions such as labor productivity, economic growth, and commodity prices.
2. Identify bank exposures that will be affected by physical risk and transition risk. Following this process, the bcbs recommends banks to determine the methodology and data requirements to measure the impact of physical risk and transition risk.
3. Use complex economic models that require expertise and strong computing power to measure climate-related financial risk. In addition, the time horizon used to conduct stress tests or scenario analysis is quite long, which is 30 to 50 years. Banks are also advised to use data with a high level of granularity, subject to the availability of relevant data to perform the assessment and the extent to which such data is required to assist in the effective management of climate-related financial Risks.

The BCBS breaks down the physical risk and transition risk data required to map climate drivers into climate-adjusted economic risk factors. Sectoral categories can be derived from the type of economic sector or sectoral classification used. The available classification will make it easier for banks to assess Climate-Related Financial Risks.

Previous research by Nelly et al., (2022) stated that banks face various risks such as credit, liquidity, operational, legal, withdrawal, benchmark, and fiduciary risks that are exacerbated by immature money markets, limited access to lender of last resort facilities from the central bank, and lack of adequate market infrastructure. These conditions represent significant challenges for banks, especially in managing the risks inherent in their operations while also dealing with other unique risks. Unfortunately, many banks have not been able to develop effective risk management strategies to address such risks, thereby increasing vulnerability to financial and operational instability.

From this description, it can be seen that there is still a gap between OJK regulations related to climate change risk management and the risk management framework for financial

risks that will have an impact on climate change. The risk management framework developed by the BCBS systematically lays out the tactical steps that banks must take to achieve effectiveness in climate change-related financial risk management. Based on this, it is necessary to conduct research on the perspective and readiness of Indonesian banks if the OJK adopts an effective Climate-Related Financial Risk management framework consisting of the stages of risk identification, risk exposure mapping and measurement, risk monitoring, and risk control based on the results of the BCBS preparation.

RESEARCH METHODS

This study is a qualitative research that aims to comprehensively understand Bank in Indonesia perspective in assessing climate change as a business risk, especially their readiness to apply this factor in business risk assessment. Qualitative is a research approach that aims to understand social or human phenomena in depth and holistically, through the collection and analysis of non-numerical data such as interviews, observations, documents, or field notes (Maxwell, 2021). Qualitative research focuses on exploring theories based on real-world facts rather than testing pre-existing theories or hypotheses. This approach is chosen because it allows for the collection of more comprehensive and in-depth data, enabling the achievement of research objectives through a case study method (Gerring, 2017).

In this study, the authors used primary data and secondary data. Primary data was obtained from in-depth interviews, semi-structured interviews, and focus group discussions with regulators and executive-level employees in the Indonesian banking industry. Meanwhile, secondary data is obtained through document analysis such as annual reports, good corporate governance reports, or sustainability reports from the sampled banks, as well as relevant studies from other researchers.

This research will use Indonesia Financial Services Authority (OJK), Central Bank of Indonesia, and several Banks in Indonesia as the main respondent. Interviews will be conducted with Bank Executive Officer in Risk Management and Compliance Division, , Department of Banking Regulation and Development of OJK, and Climate Change Specialist in Department of Macroprudential Policy from Central Bank of Indonesia.

In qualitative research, data analysis is carried out both during and after the data collection process over a specific period. The analysis in this study employs a descriptive approach, specifically utilizing an interactive model. Bogdan (Sugiyono, 2017), data analysis involves systematically searching, organizing, and compiling data gathered from interviews, field notes, and other sources to make it comprehensible and presentable to others.

Interactive model according to (Miles, Matthew B., A. Michael Huberman, 2014) in the interactive model, data analysis involves three key activities: data reduction, data presentation, and drawing conclusions. Data collection itself is a cyclical and interactive process. After analyzing the data, a data validity test is conducted. Triangulation is used as a technique for checking data validity in qualitative research. It involves comparing interview results with data from other sources to verify consistency. In this research process, all perspectives are considered within the interconnected stages of the study, ensuring a strong relationship with the primary data, leading to a coherent justification. Therefore, this qualitative research will employ a triangulation model to ensure the validity and coherence of the research findings.

RESULT AND DISCUSSION

OJK policy related to banking risk management due to climate change

The following OJK responses regarding policies related to banking risk management due to climate change are as follows:

In the interview, OJK explained OJK's current policies and regulations on banking risk management in the context of climate change. OJK published Climate Risk Management and Scenario Analysis (CRMS) in March 2024 to guide Banks in integrating climate risk into the Bank's Risk Framework. CRMS is a comprehensive framework that integrates governance, strategy, risk management, and disclosure to evaluate the resilience of banks' business models and strategies in addressing climate change over the short, medium, and long terms.

OJK held various capacity-building events to raise the Bank's knowledge of climate change, including Introduction to Climate Risk Management, GHG Calculation Scope 1, 2, and 3, Climate Risk Management and Scenario Analysis Workshop, and Sustainable Finance Event Forum. More capacity-building activities will be held in the future, including a Sustainable Finance Taxonomy Seminar, ESG Data Reporting and Disclosure, Climate Risk Integration in the Banking Risk Framework, Maturity Assessment, Climate Target Setting, and Transition Plan Scenario.

OJK also explained that it has collaborated with banks and other stakeholders to ensure compliance with climate risk management policies and regulations, among others:

1. OJK continues to coordinate with banking authorities in other countries to share knowledge related to CRMS development.
2. OJK conducts periodic discussions with banks regarding the methodology of CRMS implementation.

In implementing climate risk management policies in the banking industry, OJK faces challenges or obstacles, including:

1. Limited Availability of Supporting Data

The limited availability of supporting data can obscure information useful in preparing scientific research to help regulators develop strong and well implemented sustainable finance policies.

2. Data Standardization

For regulators/supervisors to accurately assess and compare environmental, social and governance (ESG) practices, a common understanding/ language must be needed.

3. Policy Coherence and Consistency

Regulators and stakeholders, such as pertinent ministries and government bodies, need to collaborate and create unified policies. Policy inconsistency can be confusing and hamper investment.

OJK respond to the possibility of adopting the effective management framework for financial risks related to climate change developed by the BCBS from the side

The indicators on the likelihood of adopting an effective management framework for climate change-related financial risks developed by the BCBS will be discussed in relation to the following points :

1. OJK's perspective on the implementation of climate risk as one of the business risks that must be identified, measured and managed by the Bank as stipulated in the 'Principles for the Management and Supervision of Climate Risk Related to Financial Risks' issued by BASEL.
2. OJK's explanation on climate risk as a business risk that will be the concern of OJK in drafting further regulations on risk management for banks.
3. OJK's explanation on how important climate risk is to be immediately adopted by Indonesian banks according to OJK.

4. What preparations have been made by OJK and BI to start implementing this 4.
5. Explanation of the most appropriate type of regulation to integrate climate risk management into banking operations. Will a new regulation be issued or is it sufficient to make changes to existing regulations.
6. How regulators can integrate climate risk management into their supervisory practices.
7. OJK's assessment of the readiness of Indonesian banks to implement this in terms of human resources, IT, and systems and procedures.

OJK's response to the possibility of adopting an effective management framework for climate change-related financial risks developed by the BCBS is as follows:

OJK explains that *Climate action failure* is the top global long-term threat and the risk with the most severe potential impact in the next decade. The effects of global warming are becoming evident. The warmest temperature was recorded in July 2023, at around 17.01 Celcius. It was 1.5o Celcius warmer than the pre-industrial temperature (1850-1900). Several countries worldwide have initiated the implementation of climate risk management in their financial sectors. Aligned with global policy directions, OJK, as the financial regulator in Indonesia, initiated the development of guidance on climate risk management in 2023 with the issuance of initial guidance, which has been developed into a more comprehensive document known as the Climate Risk Management and Scenario Analysis (CRMS) Guidance 2024.

Climate risk as a business risk become a concern for the OJK in preparing further regulations regarding risk management for banks. Climate risk as a business risk is increasingly becoming a concern for regulatory bodies like the OJK (Otoritas Jasa Keuangan) in Indonesia. As climate change poses significant financial risks to businesses and financial institutions, OJK is beginning to incorporate climate-related factors into Banks' risk management frameworks. For the OJK, this means considering how climate risks could affect the stability of banks and the broader financial system. Key focus areas include risk assessment, regulatory guidelines, stress testing, sustainable finance, and disclosure requirements.

In addition, OJK explained that it is important to immediately address climate risk by Indonesian banks for several reasons :

1. **Financial Stability** : Climate risks can substantially threaten banks' financial stability. Banks must recognise, understand, and manage these risks to avoid potential losses from climate-related events.
2. **Regulatory Alignment** : As international standards and guidelines on climate risk evolve, Indonesian banks must align themselves with global best practices.
3. **Sustainability Goals** : Indonesia has commitments to sustainable development and reducing greenhouse gas emissions. By integrating climate risk into their operations, banks can support these national goals and contribute to a more sustainable economy.
4. **Investor and Stakeholder Pressure** : Investors, consumers, and stakeholders are increasingly pressing businesses, including banks, to address environmental and social governance (ESG) factors. Indonesian banks that adopt climate risk frameworks can enhance their reputation and competitive advantage.
5. **Long-term Viability** : Immediate adoption of climate risk management practices can help banks prepare for the future and ensure their long-term viability in a changing economic and environmental landscape.

OJK has made preparations to start adopting the regulation on climate change risk. OJK has started the adoption of climate-related financial risk by publishing a Consultative Paper "Principles for the Effective Management and Supervision of Climate-related Financial Risks (2022), Climate Risk Stress Testing Guidelines (2023), Climate Risk Management and Scenario Analysis (CRMS) Guidance (2024). Those guidances were followed by the initial climate risk stress testing phase 1 in May 2023 and phase 2 in July 2024. There will be a third phase in 2025.

The incorporation of climate risk management into banking operations can be adequately addressed by a number of policies. Banks must incorporate climate risk into their overall risk management frameworks in order to establish specific policies. The OJK Regulation on Sustainable Finance is currently being reviewed by OJK in order to better align it with the global disclosure policy.

In line with the upcoming global policy direction for risk management and climate disclosure, OJK intends to incorporate climate risk elements into the risk management framework and include them in supervisory actions for the banking sector. A program of capacity-building will also be implemented in tandem with the development to improve the bank's comprehension and ability to manage climate threats.

Banks' preparedness to apply climate risk management is being evaluated by OJK. However, businesses face challenges in integrating and mainstreaming sustainable practices into their operations due to a lack of technology, expertise, and knowledge in sustainable finance across industries. Furthermore, sustainable practices are frequently seen as an extra expense that the business must bear. Prioritizing sustainable company practices could result in a low profit margin over the long run.

Bank Indonesia's Perspective on Integration of Climate Risk into Macro Prudential Supervision, Impact on Financial Stability and Economic Resilience, and Policy Recommendations

The interviews describe how Bank Indonesia incorporates climate change considerations into the macro-prudential supervisory framework for the banking industry (related to BI Policy) and defines and assesses climate change-related financial risks in the macro-prudential supervisory framework for the banking industry in Indonesia (related to BI tools).

1. Bank Indonesia's Perspective on Integration of Climate Risk into Macro Prudential Supervision

In order to sustain sustainable growth, Bank Indonesia creates an integrated climate regulatory framework with the intention of maintaining the stability of the financial system. This framework is built upon two thought blocks. Firstly, the underlying assumption of this framework is that policies and activities pertaining to climate change are integrated components of a macroprudential policy framework. As a result, this approach ought to tackle financial system stability from a variety of policy angles, such as time-varying, countercyclical, and structural, as these viewpoints serve as the cornerstone for putting the central bank policy mix into practice. The central bank should assess not only the macroeconomic conditions and risk outlooks but also identify any macro-financial imbalances within the financial system, in line with the central bank's policy mix. In addition to macroprudential policies and capital flow management, monetary policy should continue to prioritize price stability while also considering potential future financial instability and risk outlooks.

The policy mix is expanded beyond the central bank by enhancing collaboration with the government and relevant agencies to guarantee the stability of the financial system and to promote the country's structural reforms and general macroeconomic stability. It is important to note that the goal of calibrating macroprudential policy is to protect the stability of the financial system. In the case of Indonesia, Bank Indonesia employs the following three macroprudential strategies :

- a. Maintaining financial resilience by mitigating risk propagation from interconnectedness and contagion.
- b. Managing balanced and sustainable intermediation to tackle procyclicality.
- c. Supporting financial inclusion and sustainable finance; which are considered more appropriate approach for emerging market economies.

The attainment of financial stability is the ultimate goal, thus the three solutions are complementary to one another and will not conflict. Second, given that climate-related risk drivers (transition and physical) have an influence on economies, there is a critical connection between the framework for the stability of the financial system and the support for climate policies and initiatives. Two primary strategies climate mitigation and adaptation are in the limelight in the rapidly changing field of climate change.

The framework delineates three essential strategies for addressing climate risks, namely:

- a. Data, tools, and research
- b. Regulation and supervision
- c. Climate transition policy.

The implementation of these tactics goes beyond the customary scope of central bank operations, requiring regulators and industry stakeholders to work together in a cooperative manner to steer the world economy in the direction of sustainability. Bank Indonesia implemented a number of macroprudential measures as part of its climate transition strategy to protect the country's financial stability from risks associated with climate change :

- a. In 2022, the Macroprudential Liquidity Incentives Policy is stipulated in offering liquidity incentives by reducing reserve requirements for banks that provide financing to priority sectors, including inclusive and green financing. The policy can approximately provide macroprudential liquidity incentives of up to Rp 35 trillion (through loosening reserverequirements up to 50 bps) for banks financing ecofriendly housing and EV ownership.
- b. Green financing green Loan-to-Value (LTV) Ratio requirements allow banks to offer green mortgages and loans for electric vehicle ownership with up to 0% down payment (or 100% Loan-to-Value), introduced in 2019 and strengthened in 2020.
- c. Macroprudential Inclusive Financing Ratio (RPIM) requirements enable banks to meet the Macroprudential Inclusive Financing Ratio requirements through investment in sustainable bonds and/or financing a blended finance platform with a focus on sustainable finances (initiated in 2021 and strengthened in 2022).

These are the results of the BI's analysis of the primary risk and mitigation strategies used by Bank Indonesia in integrating the risk of climate change into macroprudential decisions, as well as strategies for mitigating that risk. As required by FSOL, Bank Indonesia will consistently strengthen the advancement of sustainable finance in the areas of data & analysis, regulation & policy, and collaboration with pertinent authorities. Nonetheless, there are a few obstacles and difficulties :

- a. **Capacity Building** : There is a need for enhanced understanding and expertise within Bank Indonesia, other regulator, and also bankers regarding climate risks. Building capacity in this area is crucial for effective integration.
- b. **Data Gaps** : Incomplete data poses a significant challenge for conducting comprehensive stress tests. Reliable and detailed climate-related data is essential for accurate risk assessment and mitigation planning.
- c. **Public Awareness** : There is a general lack of awareness about climate change, even among regulators. This includes understanding its impacts and the urgency of addressing these issues within the financial sector.
- d. **Economic Conditions** : The current economic environment presents challenges for integrating climate risk. The transition to more climate-resilient practices could disrupt economic stability in the short term, such as potential declines in GDP, which needs to be carefully managed.

2. Impact on Financial Stability and Economic Resilience

BI explains in this interview the perceived impact of climate change as a business risk on Indonesia's overall financial stability and economic resilience, from Bank Indonesia's perspective. Bank Indonesia (BI) adopts a macroprudential approach in its policy framework, focusing on the stability of the financial system as a whole, rather than individual banks. In line with its statutory mandate to support sustainable economic growth, BI aims to ensure that Indonesia's economic resilience remains strong and durable. This includes mitigating potential disruptions, including those arising from climate risks, to maintain economic stability and promote sustainable long-term development (Indonesia, 2017).

While striking a balance with goals for financial stability, Bank Indonesia supports the development of a climate-resilient banking industry. In order to upgrade the current green taxonomy v1.0 to the sustainable taxonomy v2.0, BI works with the Financial Services Authority and the Ministry of Finance to form the Task Force on Indonesia's Sustainable Taxonomy. The goal of this taxonomy is to give industry guidelines on what constitutes sustainable activities. In order to prepare the Indonesia Sustainability Disclosure Standards based on the IFRS-ISSB global sustainability reporting standard, Bank Indonesia additionally joins the Sustainability Standards Board, which is comprised of the Institute of Indonesia Chartered Accountants, MoF, FSA, and other pertinent stakeholders. BI also actively participates in regional and global sustainable fora including but not limited to NGFS, G20 SFWG, BIS Asia Climate Network, EMEAP IGSF, and ASEAN SLC Task Force on Sustainable Finance in building cooperation towards common regulatory reporting standard in several regional fora. Indonesia is also a member of the BIS Investment Pool to accelerate green investment in the region.

3. Policy Recommendations

In this interview, BI also opined on Policy Recommendations in dealing with climate change risk. Policy recommendations proposed by Bank Indonesia to improve the preparedness and resilience of the banking sector to climate-related business risks in Indonesia, include :

- a. **Just Transition** : Emphasizing the importance of ensuring an equitable shift towards a low-carbon economy, supporting vulnerable communities and workers through retraining and social protection measures.
- b. **Standard metric** : Introducing a standard metric for banks to measure the greenness of banks' financing portfolios. A standard metric will help investors, banks, and other stakeholders to compare banks' performance, as well as to help banks calculate their financed emissions.
- c. **Enhanced Data Collection** : Developing more standardized and granular climate-related data reporting frameworks for improved comparability and reliability.

Additionally, BI suggested a projected course for Bank Indonesia's supervisory procedures and regulatory framework in relation to climate risk management. handling of climate risk in the financial sector. A framework for Green Macroprudential Policy will be continually developed by Bank Indonesia and can serve as a guide for future policy development. In order to protect financial stability from any systemic risks posed by climate change, Bank Indonesia also keeps researching other possible policies that would assist intermediation in the green sector. One such policy would be to investigate top down climate risk analysis studies. Aside from Bank Indonesia, the Financial Services Authority in Indonesia (OJK) has also released a number of recommendations on climate risk management and scenario analysis, as well as rules for banks conducting bottom-up stress testing.

Business Solution

Based on the research results, there are three main problems faced by banks in integrating climate change risk into bank risk management, namely related to availability and validity of data, particularly in relation to climate change events in Indonesia, lack of understanding

regarding the climate change risk in relation to bank business and financial performance, and lack of standardized tools or methodologies developed by regulators to assess the risks of climate change. Based on this, there are several recommendations or solutions that might be applied to banks, namely:

1. Banks can collaborate with climate data providers, NGOs, and the government (BNPB, BMKG, etc.) to obtain more comprehensive, granular and valid data to support bank climate risk measurement. This practice is commonly carried out by several overseas banks such as HSBC.
2. Bank should be design their own internal model, not only based on stress testing guidelines by the regulator (OJK), that is integrated with the bank's overall risk management system, to effectively identify, measure and manage climate change risks that affect the bank's credit portfolio, investments and operations. This model must be aligned with the bank's business strategy, including exposure to sectors vulnerable to climate change, as well as projections of its impact on financial performance.
3. Leveraging technologies such as machine learning and advanced data analytics, these models should be able to process climate data, assess physical and transition risks, and assist banks in making more informed decisions regarding asset management, capital allocation and sustainable financing strategies.
4. One of the challenges for banks in implementing climate change risk into their risk management system is the limited understanding of banks regarding this matter because it is a relatively new issue. Based on interviews, bank human resources, especially at the senior manager level, already have awareness regarding climate change risks, but understanding of how these risks can systematically affect bank business and performance is still relatively low. Based on that condition, banks should not only focus on build expertise in the ESG team , but also expand climate change risk training and capacity building to other relevant divisions. Furthermore, banks can conduct comparative studies or benchmarking with companies that have already implemented this policy, both nationally and internationally, to learn best practices and effective approaches for incorporating climate change risk into the bank's overall risk assessment system.

Implementation Plan

Integrating climate change risks into Indonesia's banking risk framework requires a strategic, multi-faceted approach that includes capacity building, data collaboration, regulatory compliance and continuous improvement. By implementing this strategy, banks will be able to increase their resilience to financial risks related to climate change, while OJK will be able to ensure a stable regulatory environment and encourage sound banking practices. Collaboration between banks, regulators and other stakeholders will be critical in achieving a high-quality and efficient climate risk management system that is aligned with best practices around the world and supports Indonesia's development goals (Chamdani, Muchammad Chanif, 2023). Based on the things above, the author recommends several implementation plans as follows:

1. For Banks

- a. Conducting a gap analysis to determine the bank's position and readiness to integrate the current risk management system with climate change risk. This gap analysis includes evaluations related to policies and procedures, human resources, existing risk management frameworks, and information technology infrastructure.
- b. Follow up on the results of the gap analysis carried out.
- c. Establishing collaboration with various parties, particularly climate data providers, NGOs, and the government (BNPB, BMKG, etc.), to obtain more comprehensive, granular, and valid data to support bank climate risk measurement.

d. Developing own internal model and climate change risk framework that has been adapted to the bank's business model, portfolio, and long-term business strategy so that the process of integrating it into the bank's risk management can run effectively. In this regard, banks can refer to the framework of the Task Force on Climate Related Financial Disclosures (TCFD).

2. For Regulator (OJK)

- a. Establish more stringent regulatory guidelines and frameworks to ensure that banks are provided with clear guidance on how to incorporate climate change risk into their current bank risk management framework and risk assessment.
- b. Provide standardized data that can be used by banks to measure climate change risk.
- c. Conducting, training, and benchmarking sharing to banks in order to enable them to learn from their peers on a national and international scale.

Foster collaborative research and development initiatives with other regulators in a worldwide.

CONCLUSION

In conclusion, both the Financial Services Authority (OJK) and Bank Indonesia have recognized the importance of integrating climate change risks into the risk management framework in the financial sector to maintain financial system and economic stability. OJK has issued various guidelines to help banks manage climate-related risks, such as stress testing, transparency, and sustainable finance. These measures are necessary to ensure the long-term resilience of the financial sector to the impacts of climate change and in line with pressure from investors and stakeholders. Meanwhile, Bank Indonesia emphasized the importance of macroprudential approaches to deal with climate risks. They focus on mitigating the spread of risks, supporting financial inclusion and sustainable finance, and adjusting policies to maintain financial resilience. The framework is based on a strategy involving research, regulation, and climate transition policies. Thus, this joint effort aims to create a more resilient and sustainable financial system amidst the challenges of climate change.

REFERENCES

- Alzarrad, M. A., Moynihan, G., & Vereen, S. (2017, May). Weather derivatives as a risk management tool for construction projects. In *Proceedings of the 6th CSCE/CRC International Construction Specialty Conference* (pp. 1-9).
- Bank Indonesia. (2017). FINANCIAL STABILITY REVIEW. https://www.bi.go.id/en/publikasi/kajian/Documents/FSR_28_0317.pdf. Diakses pada 15 Oktober 2024.
- Chamdani, M. C., & Santoso, B. S. (2023). THE CENTRAL BANK'S POLICY JUSTIFICATION IN MITIGATING CLIMATE CHANGE. *Journal of Central Banking Law and Institutions*, 2(1), 93-122.
- Gerring, J. (2017). Qualitative methods. *Annual review of political science*, 20(1), 15-36.
- Maxwell, J. A. (2021). Why qualitative methods are necessary for generalization. *Qualitative Psychology*, 8(1), 111–118. <https://doi.org/10.1037/qup0000173>
- Miles, M.B, Huberman, A.M, & Saldana, J. (2014). *Qualitative Data Analysis, A Methods Sourcebook*, Edition 3. USA: Sage Publications. Terjemahan Tjetjep Rohindi Rohidi, UI-Press.

- Nelly, R., Siregar, S., & Sugianto, S. (2022). Analisis manajemen risiko pada bank syariah: Tinjauan literatur. *Reslaj: Jurnal Sosial Pendidikan Agama Laa Roiba*, 4(4), 918–930. <https://doi.org/10.47467/reslaj.v4i4.1008>
- OJK Circular Letter Number 34 of 2016 concerning The Implementation of Risk Management for Commercial Banks, September 2016
- OJK Regulation Number 18/POJK.03/2016 , concerning the Implementation of Risk Management for Commercial Banks, March 2016
- Otoritas Jasa Keuangan. (2022). Consultative Paper: Prinsip Manajemen yang Efektif atas Risiko Keuangan Terkait Iklim.
- Otoritas Jasa Keuangan. (2023). Statistik Perbankan Indonesia. <https://www.ojk.go.id/id/kanal/perbankan/data-dan-statistik/statistik-perbankan-indonesia/Default.aspx>. Diakses pada 15 Oktober 2024.
- Otoritas Jasa Keuangan. (2024). Sejarah Standar Basel. <https://ojk.go.id/id/kanal/perbankan/implementasi-basel/Pages/Road-Map.aspx>. Diakses pada 15 Oktober 2024.
- Sugiyono, (2017). Metode Penelitian Kuantitatif, Kualitatif, dan R&D. Bandung: CV. Alfabeta.
- Sussman, F. G., & Freed, J. R. (2008). *Adapting to climate change: A business approach* (p. 41). Arlington, VA: Pew Center on Global Climate Change.
- Wozniak, A., Wessler, H., Chan, C. H., & Lück, J. (2021). The event-centered nature of global public spheres: The UN climate change conferences, Fridays for future, and the (limited) transnationalization of media debates. *International Journal of Communication: IJoC*, 15(Article 20210005), 688-714