

BANKING CLIMATE RISK MANAGEMENT AND SCENARIO ANALYSIS 2024

BOOK 1
GENERAL GUIDEBOOK

DEPARTMENT OF BANKING REGULATION AND DEVELOPMENT,
INDONESIA FINANCIAL SERVICE AUTHORITY



BANKING CLIMATE RISK MANAGEMENT AND SCENARIO ANALYSIS 2024

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BANKING CLIMATE RISK MANAGEMENT AND SCENARIO ANALYSIS GUIDE 2024

The OJK's Risk Management & Banking Scenario Analysis (CRMS) Guide was designed on the basis of a framework that studies the impact of climate change on the banking industry. This guide encompasses aspects that include (a) Governance, (b) Business Strategy and Risk Management Framework, (c) Design and Risk Analysis, (d) Disclosure, and (e) Implementation Planning.

In addition, this guide also represents a living document that will continue to have its contents modified and refined to keep up with the latest changes in market conditions, regulations and developments in best practices. This ensures that the guide will always remain relevant and effective as a tool to help banks as they carries out climate-related risk management and stress testing, as well as a way to aid banks throughout their processes of disclosing relevant and accurate information.

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GLOSSARY OF TERMS

Climate change adaptation	: This encompasses any efforts made to increase one's the ability to adapt to Climate Change, including climate diversity and extreme events. This is carried out as a way to ensure that the potential for damage due to Climate Change is reduced, that opportunities created by Climate Change can be exploited, and that allow consequences arising from Climate Change to be overcome.
Carbon Capture and Storage	: This refers to global warming mitigation technology that works to reduce CO ₂ emissions into the atmosphere. This technology consists of a series of interrelated processes that begin with separating and capturing CO ₂ from flue gas emission sources, transporting the captured CO ₂ to a storage place, and storing this CO ₂ in a safe place.
Carbon Dioxide Removal (CDR)	: The process of purifying gas of CO ₂ content.
Carbon footprint	: A method of measuring total greenhouse gas (GHG) emissions produced by individuals, events, organizations, services, or products. This measurement is expressed in carbon dioxide (CO ₂) equivalents.
Nationally Determined Contributions (NDC)	: These are national commitment to handling global climate change designed to assist countries in achieving the goals of the Paris Agreement on the United Nations Framework Convention on Climate Change.
Carbon Trading	: A market-based mechanism to reduce GHG emissions through the buying and selling of Carbon Units.
Climate risk	: This refers to the potential negative impacts that climate change can have on a company. These impacts encompass physical risks and transition-based risks.
Greenhouse Gases (GHG)	: These are gases contained in the atmosphere, both natural and anthropogenic, that absorb and re-emit infrared radiation.
Greenhouse Gases Scope 1 (GHG Scope 1)	: This scope refers to all direct GHG emissions.
Greenhouse Gases Scope 2 (GHG Scope 2)	: This scope refers to GHG emissions indirectly produced from the consumption of purchased electricity, heat, or steam.

GLOSSARY OF TERMS

Greenhouse Gases Scope 3 (GHG Scope 3)	: This scope encompasses other indirect emissions not covered by Scope 2 that occur within the reporting company's value chain. These include including upstream and downstream emissions, such as ones generated by transportation-related activities with vehicles that are not owned or controlled by the reporting company. These emissions also include ones produced through outsourced activities, investment/ financing, and through waste disposal efforts.
Climate Change Mitigation	: This encompasses efforts to reduce risks due to Climate Change done by way of activities that can reduce emissions, increase GHG absorption, and store/strengthen carbon reserves from various emission sources
Carbon Pricing	: The value of each unit of Greenhouse Gas Emissions resulting from human activities and economic activities.
Carbon Levy	: This refers to state levies, both central and regional, that are imposed on goods and/or services that have the potential and/or carbon content, and/or businesses and/or activities that have the potential for carbon emissions and/or emit carbon that can have a negative impact on the environment and /or on the performance of Climate Change Mitigation Actions
GHG Emission Level	: GHG emission conditions within a certain period of time that can be compared based on the results of GHG calculations that make use of consistent emission/absorption methods and factors so that they can show trending changes in emission levels from year to year.
Carbon Units	: These units are proof of carbon ownership in the form of a certificate or technical approval. They are expressed in units of 1 (one) ton of carbon dioxide recorded in the National Registry System for Climate Change Control.

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Mahendra Siregar

Chairman of the Board of
OJK Commissioners

Assalamu'alaikum Warahmatullahi Wabarakaatuh,

Peace be upon us all, Shalom, Om Swastyastu, Namo
Buddhaya,

Greetings and Blessings.

Let us praise the presence of Almighty God, for it was His grace that He has bestowed upon us all that allowed OJK to successfully publish its Climate Risk Management and Scenario Analysis (CRMS) Guidebook for the Banking Sector.

Climate change serves as an issue that highlights the importance of sustainable development and synergy in global economic development that works in harmony with climate change mitigation efforts. Managing the risks that climate change brings about has become especially important in the face of trends in high pollution and rising temperatures

over the course of the past year. Then there is also the context of Indonesia's commitment to the Paris Agreement, in which our nation and the global community have pledged unity in reducing greenhouse gas emissions and preventing global warming from exceeding 2 degrees Celsius.

OJK is always supportive of initiatives for promoting sustainable development policy directions and for mitigating climate change risks. It does this as part of its effort to support climate change-related global commitments and our nation's very own Net Zero Emissions (NZE) targets. Financial service institutions serve an important role in encouraging low-carbon financing in accordance with these policy directions while always maintaining good management of risks and opportunities. These institutions are, after all, agents of development. Synergy and collaboration across sectors and a coordinated approach will be the keys to achieving resilience and sustainability in facing climate change and achieving our nation's NZE, all while still prioritizing the principles of a just and fair transition for all.

This book contains a mixture of OJK's policies regarding sustainable finance, the implementation of which is expected to further encourage a financing transition towards a low-carbon economy while still prioritizing prudential principles, risk management and good governance.

OJK will continue to develop and strengthen aspects of its sustainable financial ecosystem in the days to come. It will do this through the creation of transparent regulations, through generating synergy with ministries and institutions, and through increasing the financial industry's capabilities, all in the hopes of further accelerating the transition of the nation's financial sector towards sustainability.

In closing, we hope that this book will serve as a useful guide for various parties in understanding and facing future challenges. Everything we have done and will do is all intended to create a more resilient banking industry that can contribute to supporting policy developments for alleviating and mitigating the impact of problems caused by climate change in Indonesia in the future.

Wassalamu'alaikum warahmatullahi wabarakatuh,

Santi Santi Santi Om

Mahendra Siregar

Chairman of the Board of
OJK Commissioners



Dian Ediana Rae

Chief Executive of Banking Supervision –
Member of the Board of OJK Commissioners

Assalamu'alaikum Warahmatullahi Wabarakaatuh,

Peace be upon us all, Shalom, Om Swastyastu,
Namo Buddhaya,

Greetings and Blessings

We offer our praise and gratitude to Allah SWT for allowing us to publish this Climate Risk Management and Scenario Analysis (CRMS) Guidebook for the Banking Sector. CRMS is a framework for assessing the resilience of bank business models and strategies in facing climate change. It is not only useful as a short-term reference, but also as a medium and long-term one.

This CRMS is useful for the Financial Services Authority (OJK), as it covers aspects of governance, business strategy, risk management, measurements and targets, as well as disclosure and reporting regarding the impact of climate risks and carbon emissions in the banking industry. We hope that this book will assist banks in developing climate

risk management frameworks that allow them to measure the impact of climate on the performance and sustainability of their businesses.

OJK prepared this guide by carrying out a series of studies and discussions involving Bank Indonesia, relevant ministries and institutions, academics, experts, with members of the banking industry (both the local and foreign ones), and with other relevant stakeholders. We hope that this CRMS can serve as a guidebook that the implementation of international standards related to management and supervision of climate-related financial risks.

After all, climate change has become an increasingly real global challenge, with impacts that are steadily being felt throughout various levels of society. In the midst of this dynamic change, the banking sector has a big role in maintaining economic stability and the financial system. It is for this reason that a deep understanding of climate risks is very important, as is ensuring that banks are resilient in the face of these issues.

In accordance with legal mandates, OJK's role in all of this is to strengthen Indonesia's economic resilience. It aims to do this by developing various policies to ensure that financial service institutions (especially ones in the banking sector) will be able to continue to remain productive and efficient and survive potential risks in the future. When it comes to dealing with climate change, OJK's policy direction is aimed at encouraging financial service institutions, especially banks, to survive through good governance and risk management principles.

We hope that this guidebook can allow banks to have a better understanding of how to manage climate risks, identify potential impacts, carry out resilience tests on their finances, and play a more active role in supporting sustainable finance. We believe that understanding climate risks is not only a requirement for surviving, but also opens up opportunities for creating long-term sustainability in our banking sector.

This book is one of our efforts to provide guidebook and information that is relevant, not only for banking industry players, but also for policy makers and for all parties involved in managing the risk impacts of climate change. This is all done with the aim of maintaining the stability of the country's economy and serves as a significant first step in facing the challenges of climate change.

May Allah (Glory be to Him, the Exalted) the Almighty God always provide guidebook, convenience, perfection and blessings to the Indonesian nation, to its government and to all of us.

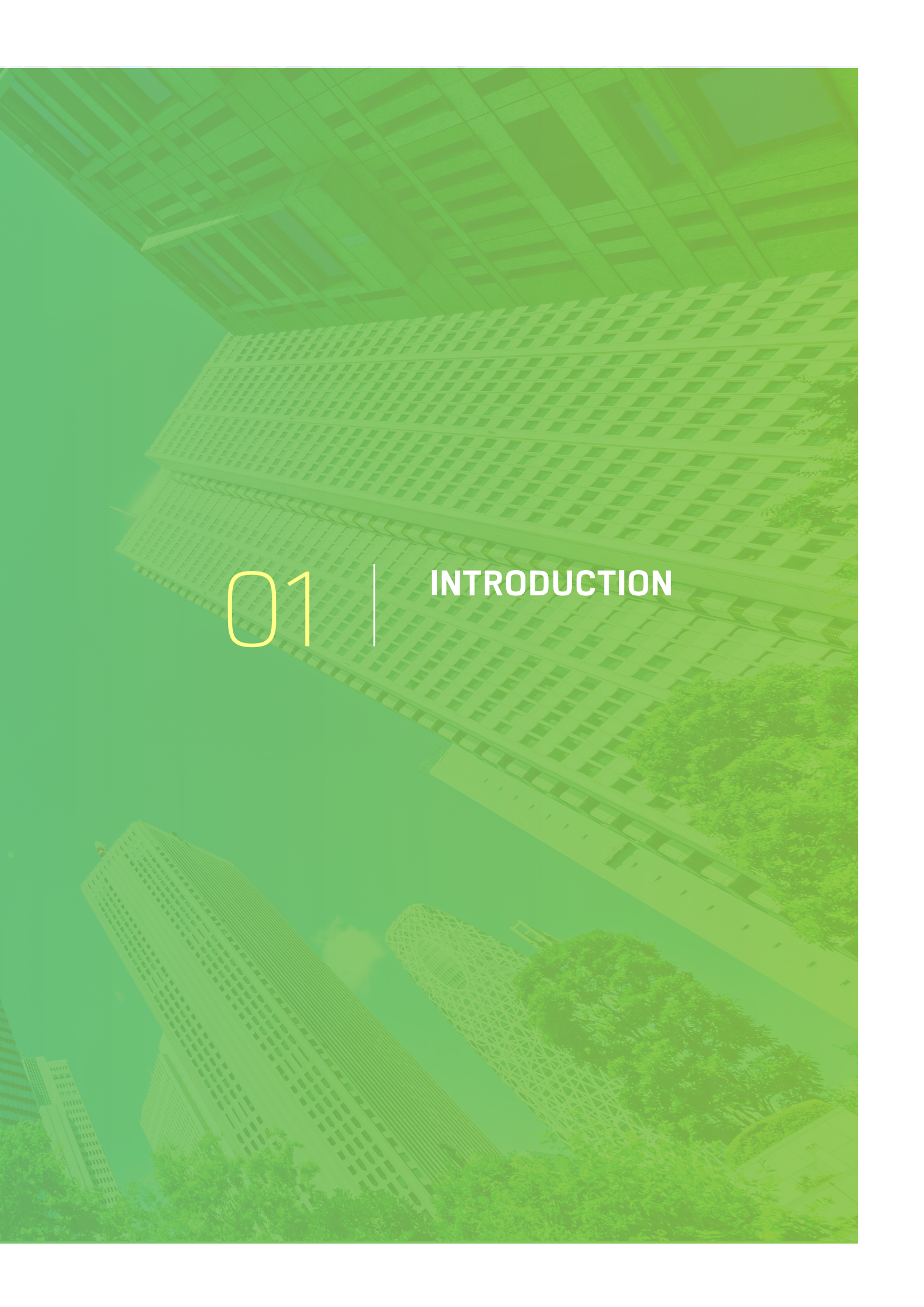
Wassalamu'alaikum warahmatullahi wabarakatuh,

Dian Ediana Rae

Chief Executive of Banking Supervision –
Member of the Board of OJK Commissioners

BANKING CLIMATE RISK MANAGEMENT AND SCENARIO ANALYSIS 2024





01 | INTRODUCTION

In accordance with Law No. 4/2023 on the Development and Strengthening of the Financial Sector (P2SK Law), Sustainable Finance is an ecosystem supported by comprehensive policies, regulations, norms, standards, products, transactions, and financial services that align economic, environmental, and social interests in financing sustainable activities and the transition towards sustainable economic growth. In supporting sustainable finance, the financial sector is faced with various challenges and the emergence of new risks related to the impact of climate change.

Climate change has become a significant issue due to the way in which its impact will result in new problems for human civilization, either slowly or through extreme events that will ultimately cause losses and damages, not only economically (meaning: in terms of income and physical assets) but also non-economically (meaning: affecting individuals, society, and the environment). Climate change can also have a significant negative impact on the health of the bank, with broader implications for the stability of the financial system and in terms of its influence on a country's economic growth rate. Things like floods, forest fires and extreme weather, as well as a decline in environmental quality, can all have an impact on economic value, including financial assets.

Various countries around the world have made efforts to reduce the negative impacts of climate change. They have made these decarbonization commitments through National Determined Contributions (NDC) and through efforts involving them increasingly strengthening their climate policies.

In its latest NDC document (referred to as the "Enhanced NDC 2022"), Indonesia has committed itself to reducing its unconditional greenhouse gas (GHG) emissions target to 31.89% and its conditional GHG emissions (meaning: done with international support) to 43.2% compared to business-as-usual

(BAU) scenarios of 915 Mt CO₂eq and 1,240 Mt CO₂eq respectively for 2030¹. This latest figure marked an increase from commitments Indonesia made in its previous NDC, during which it had a 29% unconditional and 41% conditional emissions reduction compared to BAU scenarios of 834 Mt CO₂e and 1,185 Mt CO₂e respectively for 2030.

Meanwhile, when it comes to its long-term targets, Indonesia in 2021 strengthened its climate commitment by way of an Updated Nationally Determined Contribution (NDC) that it presented through the publication of its Long-Term Strategy on Low Carbon and Climate Resilient Development 2050 Indonesia (hereinafter referred to as "LTS-LCCR 2050"). This long-term strategy outlines Indonesia's goal to reach peak national GHG emissions by 2030, with a net sink in its forestry and land use sectors, and to progress further towards net-zero emissions by 2060 or sooner².

Policies related to efforts to reduce carbon emissions can have a material impact on the sustainability of certain loans and investments, especially for bank financial portfolios in industries that produce more emissions. As such, the bank need to measure greenhouse gas (GHG) emissions related to their financial asset portfolio as a first step to support the pace of decarbonization.

Both direct and indirect types of GHG emissions are categorized based on scope. These emissions are also differentiated according to the source of emissions and activities in a company's value chain where the emissions in question occur. The three scopes stipulated by Greenhouse Gas (GHG) Protocol are Scope 1, Scope 2, and Scope 3. Scope 1 represents GHG emissions that occur directly from sources owned or controlled by the reporting company, such as emissions from combustion processes in boilers, furnaces and vehicles. Scope

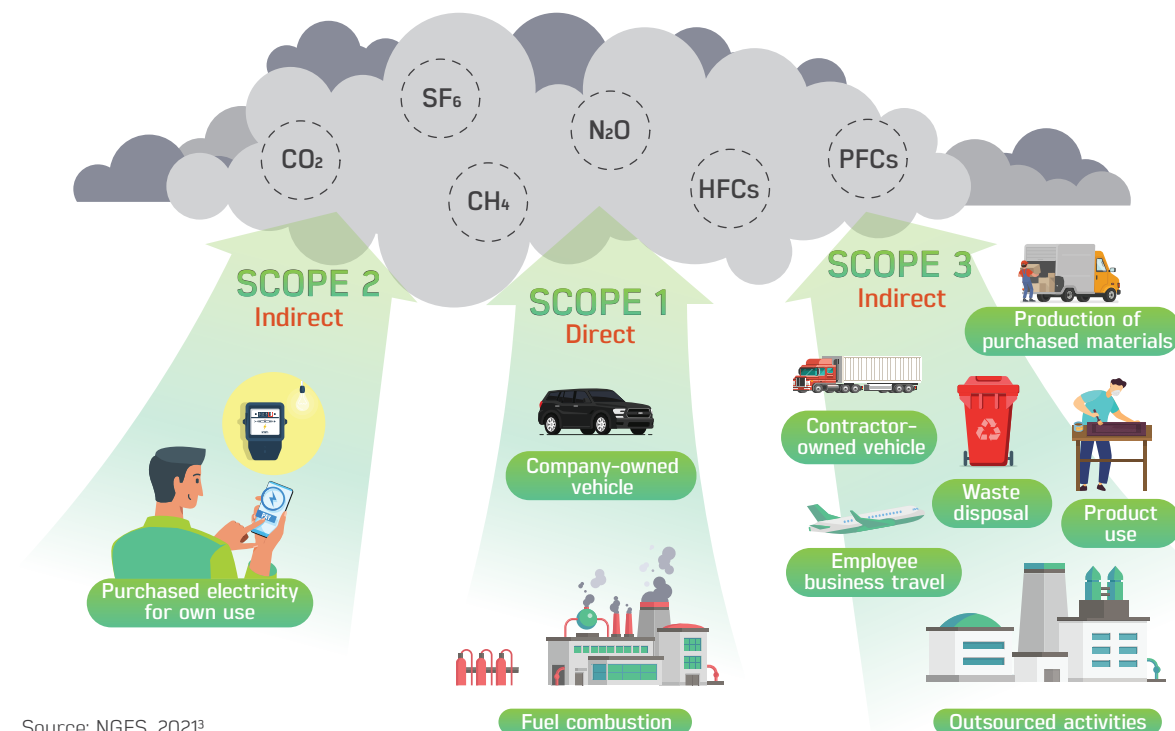
1 Enhanced NDC (23 September 2022)

2 Ministry of Environment and Forestry (2021). "Indonesia Long-Term Strategy for Low Carbon and Climate Resilience 2050"

1.1 BACKGROUND

INTRODUCTION

Figure 1. An Overview of Greenhouse Gas Emissions Protocol and Coverage



Source: NGFS, 2021³

2 refers to indirect GHG emissions originating from electricity, steam, heating or cooling plants obtained (as well as purchased) by the reporting company. Scope 3 occurs for all other types of indirect GHG emissions (which are not included in Scope 2) that occur within the reporting company's value chain. Scope 3 GHG emission disclosures are contained within the following 15 categories when the information is material. They are: 1) Goods and services purchased; 2) Capital goods; 3) Fuel and energy related activities; 4) Upstream transportation and distribution; 5) Waste generated in operations; 6) Business travel; 7) Employee travel; 8) Upstream leased assets; 9) Downstream transportation and distribution; 10) Processing of products sold; 11) Use of products sold; 12) Final treatment of products sold; 13) Downstream leased assets; 14) Franchises; and 15) Investments.

Within the banking industry, Scope 1 encompasses emissions from the combustion of vehicles used for operations. Scope 2 covers emissions from purchasing electricity. Scope 3 is for financed emissions, specifically, emissions related to credit facilities and investment portfolios.

Central the bank and financial institution supervisory authorities throughout several countries have carried out various stress tests or scenario analyzes of the impact of climate change risks. In line with this, the Basel Committee on Banking Supervision (BCBS) -- as an institution that is a reference for international standards -- has published a climate risk-related document titled "Principles for the effective management and supervision of climate-related financial risks" in November 2021 (that it later updated in June 2022⁴). The document recommends implementing

3 NGFS – Central Bank Disclosure

4 <https://www.bis.org/bcbs/publ/d532.htm>

a uniform scenario on the basis that climate change represents a global issue that requires cooperation between countries to overcome. Indonesia, as a BCBS member country, published a Consultative Paper titled “Principles of Effective Management of Climate-related Financial Risks”⁵ in November 2022 that it hopes the bank will use as a reference in determining the impact of climate and environmental risks on their financial performance.

The process of measuring the impact of climate change on financial performance and the level of bank health was carried out using several scenario simulations over different time periods. These simulations looked at the impact of rising air temperatures and the government’s policy response to curb these rising numbers. The Financial Stability Board (FSB) established a Task Force on Climate-related Financial Disclosures (TCFD) to develop recommendations on the information that companies should disclose to support investors, creditors and insurers in assessing and pricing risks related to climate change. The TCFD has encouraged the bank to conduct their own financial risk analysis based on several climate change scenarios (through TCFD Recommendation⁶ of June 2017).

One of the most important factors for carrying out such a stress test or scenario analysis is the availability and accuracy of greenhouse gas (GHG) emissions data. Emissions data from bank financial portfolios is a necessary input for conducting scenario analyses, especially in the context of managing transition risks. By knowing business emissions financed from credit/loans and investments, a bank can identify and manage risks, determine its direction for reducing emissions, and integrate the impacts of climate change into risk management.

Doing so allows a bank to take the necessary actions to minimize its exposure to riskier assets and encourage it to develop products that are environmentally friendlier such as low-carbon financing, green bonds, sustainability bonds, and sustainability-linked bonds, as regulated in Financial Services Authority Regulation (POJK) No.18/2023 concerning the Issuance and Requirements for Debt Securities and Sukuk Based on Sustainability.

Energy transition is a long-term process that must be carried out by all countries in the world to reduce carbon emissions responsible for causing climate change. As such, every country must start measuring, setting targets, building strategies and taking the necessary actions to support reducing carbon emissions (see: Figure 1). Each country’s government has to be committed to energy transitions to reach the same point of using more and more clean energy so that the goal of Net Zero Emissions (NZE) can be achieved.

Indonesia’s commitment to a low carbon economy began with its ratification of the Paris Agreement through its enactment of Law No. 16 of 2016. It then proceeded to target Nationally Determined Contributions (NDC), before pledging itself towards carbon neutrality for 2060. Apart from that, the government’s commitment to implementing a Carbon Tax (which will be enforced in accordance with the mandate of Law No.7/2021 and the growing use of electric cars, solar panels and other new renewable energy) is expected to have an impact on the business direction of the banking industry in the future. With regard to the energy sector, the Indonesian Government has set an emissions reduction target of 12.5% (to be done with its own efforts) and 15.5% (to be done with the help of international support). Reducing emissions from this sector is important as an important component of national economic development.

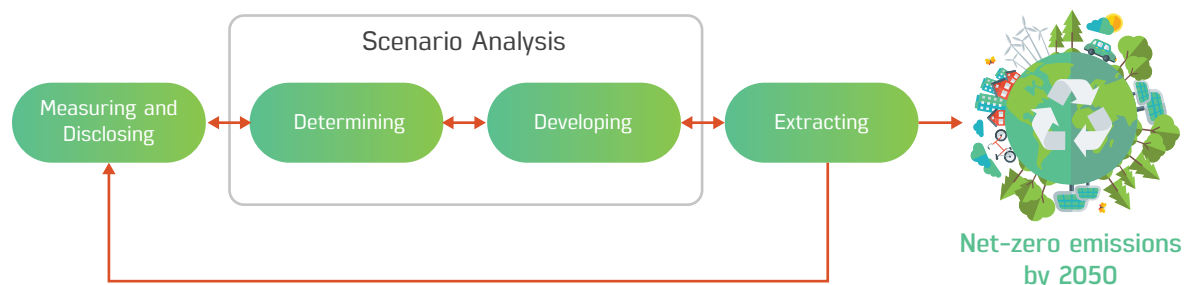
5 CP OJK Effective Management of Climate Risk

6 TCFD Report

1.1 BACKGROUND

INTRODUCTION

Figure 2. Implementation Stages Towards Net Zero Emissions 2050



The Financial Services Authority (OJK) plays a role in supervising and improving the performance of the financial services sector in developing Sustainable Finance. This is in accordance with the mandate of Law No. 4 of 2023 concerning the Development and Strengthening of the Financial Services Sector (hereinafter referred to as “UU P2SK”). Towards this end, OJK issued OJK Regulation Number 14 of 2023 (hereinafter referred to as “POJK No.14/2023”) concerning Carbon Trading through Carbon Exchange (a process that hereinafter will be referred to as “POJK Carbon Exchange”). It has also issued OJK Circular Letter Number 12/SEOJK.04/2023 concerning Procedures for Organizing Carbon Trading Through Carbon Exchange, which will serve as a guideline and reference for Carbon Trading through Carbon Exchange implemented by market organizers.

In addition, the Financial Services Authority has mandated that all financial institutions (including the bank) have to begin conducting stress tests to measure the impact of climate-related risks on their financial performance. It has delivered this mandate through Financial Services Authority Regulation Number 18/POJK.03/2016 (hereinafter referred to as “POJK No.18/2016”) concerning the Implementation of Risk Management for Commercial Banks, which requires the bank to

implement Risk Management effectively both for individual bank and for the bank together with their subsidiary companies.

Risks arising from climate change pose a challenge for the bank. They are, after all, being increasingly required to adapt by integrating climate risk considerations into their strategic decisions, business processes, governance and risk management frameworks. In line with this and with the increasingly complex development of the banking industry, it is necessary to strengthen the implementation of governance principles in the bank through the support of integrated risk and compliance management that can encourage improvements in the quality of healthy bank management. In order to do this, OJK has issued OJK Regulation No. 17 of 2023 concerning the Implementation of Commercial Bank Governance, which specifically provides a mandate for the implementation of sustainable finance. This process includes preparing a Sustainable Financial Action Plan. It also includes the process of implementing business practices and investment strategies that pay attention to Environmental, Social and Governance values, as well as implementing good Governance in Banks in managing climate-related risks.

1.2 EFFORTS TO RESPOND TO THE IMPACT OF CLIMATE CHANGE

INTRODUCTION

Climate change and the transition to net zero carbon emissions can pose increased risks for both individuals and companies. These risks, in turn, lead to further impacts on the financial sector. As such, exposure to climate change-related risks is a topic that has become one of OJK's strategic priorities since 2023. It has carried out resilience tests for climate change-related risks to assess the level of readiness that the bank have in better managing risks.

These OJK stress tests or scenario analyses serve as comprehensive reviews of how the bank integrate risks related to climate change into their strategy, governance and risk management frameworks. The results of these tests or analyses of climate change risks will indicate the extent to which a bank has the policies and strategies as well as risk mitigation needed to deal with climate change impacts.

Given that climate change has the potential to have a long-term impact on financial stability, OJK expects banking institutions to respond with:

- a. **Immediacy:** By taking early action to implement strategic changes in order to build resilience to climate change;
- b. **Strategy:** By taking into consideration how their actions can influence future results across several alternative scenarios and in both the short and long term;
- c. **Comprehensiveness:** By strengthening their risk management framework to mitigate the impact of financial risks from climate change. The bank in particular must manage risks by identifying any causal factors and impacts that can arise. This includes area coverage and size of the portfolio being affected, which is all the more important considering all the complexity arising from uncertainty and dependence on existing actions and regulations; and
- d. **Coordination:** By collaborating with other stakeholders in obtaining the necessary data/information and developing a methodology that suits the characteristics of each bank.

1.3 OBJECTIVES

INTRODUCTION

This document aims to provide guidebook for the bank to understand the various risks associated with climate change. It also aims to identify data-related needs for identifying these risks and their impact on bank assets, and to help build a framework for comprehensively managing these risks.

In addition, this guide also explains the principles of managing climate-related risks. It does this with aim of having the bank build initiatives to embed climate change risks in their business planning and with the aim of having them develop risk mitigation strategies. Apart from that, a bank can also use this guide to increase its understanding and its resilience to the impacts of climate change in the future, as well as use this guide to build initiatives and develop its strategies.

OJK hopes that the bank can develop a broader and more effective risk management framework by integrating risks related to the impact of climate change and with other types of risks. OJK also hopes that this document can provide further insight into the impact of climate risks as part of a bank's governance, risk management, Minimum Capital Requirements, stress testing and disclosure practices.

The bank are required to develop stress tests for the risks that climate change impacts have on their financial performance. Apart from having this matter regulated in POJK No.18/POJK.03/2016 concerning the Implementation of Risk Management for Commercial Banks, there is also SEOJK No. 34/SEOJK.03/2016, which similarly regulates that in the event that a bank carries out stress testing for exposures to specific risks, the bank in question must use historical data or a series of parameters and assumptions prepared by the bank itself and/or through assumptions requested by OJK.

Climate change and the transition to net zero carbon emissions can pose increased risks for both individuals and companies. These risks, in turn, lead to further impacts on the financial sector. As such, exposure to climate change-related risks is a topic that has become one of OJK's strategic priorities since 2023. It has carried out resilience tests for climate change-related risks to assess the level of readiness that the bank have in better managing risks.

In general, these OJK stress test or scenario analysis results serve as comprehensive reviews of how the bank integrate climate change-related risks into their strategy, governance and risk management frameworks. The results of these tests or analyses of climate change risks will indicate the extent to which a bank has the policies and strategies as well as risk mitigation needed to deal with climate change impacts.

BANKING CLIMATE RISK MANAGEMENT AND SCENARIO ANALYSIS 2024





02

CLIMATE RISK
GOVERNANCE

CLIMATE RISK GOVERNANCE



The Board of Directors and Management are required to carry out effective supervision to maintain their bank's resilience against the adverse impacts of climate change risks. The bank must identify all the relevant responsibilities for managing climate risk. Following this identification, the Bank may establish a new unit within its organizational structure specifically responsible for climate risk management, or assign these responsibilities to an existing unit. The management and oversight of climate-related risks must be balanced with their material impact, taking into account the size, main business lines, and complexity of the Bank's operations.

The Board of Directors has the primary responsibility for ensuring their bank's resilience to the negative impacts of climate change. It also is responsible for actively encouraging the acceleration of energy transitions towards renewable energies. In carrying out this role, a bank's Board of Directors must periodically evaluate the risks and opportunities arising from climate change and consider these risks and opportunities as it assesses and approves the business strategies and plans of its bank.

The Board of Directors must clearly assign roles and responsibilities to management regarding climate risk management. It must also establish a governance framework to ensure these risks are managed in an integrated manner between business units, risk management units and operational units. The Board of Directors must appoint a specific officer to carry out effective oversight of climate-related risks. For example,

the Board of Directors may appoint an Executive Officer for sustainable financial issues, especially for climate risks (through a Chief Sustainability Officer, or "CSO"). A bank's board can also add responsibility related to this to one of its existing executive officers.

OJK understands that different banks with different business scales have their own unique characteristics. The bank with large assets and businesses with high complexity, especially business lines affected by climate change, are advised to appoint a special executive officer that allows their company to have the necessary focus for managing climate-related risks.

This Executive Officer must create and implement policies and procedures to ensure their bank's readiness for climate change impact. They must also actively encourage accelerated transition and communication to customers and other stakeholders. The Executive Officer is

2.1 EFFECTIVE SUPERVISION BY DIRECTORS AND MANAGEMENT

CLIMATE RISK GOVERNANCE

also responsibility for managing daily risk and fostering business development by Identifying and capitalizing on the bank's existing potential.

These Executive Officers must review whether the Bank's organizational structure is effective and efficient. They must determine the roles and responsibilities of business units and risk management units in supporting the Bank's strategy for ensuring its readiness in managing climate risks. For example, the Bank might consider forming a dedicated committee or sub-committee consisting of cross-unit employees to manage climate risks and design strategies to seize future business opportunities.

2.2 UNDERSTANDING IMPACT AND RISK MITIGATION

CLIMATE RISK GOVERNANCE



The Board of Directors and Management must ensure that the bank possesses a robust understanding of climate risk impacts in order to clearly articulate its business and risk management strategies to all stakeholders.

The Board of Directors must actively and periodically hold meetings and discussions with related units to obtain information on business, risk management and Bank operations affected by climate change. This information includes things like a clear understanding of the risk mitigation that needs to be carried out regarding climate change impact transmissions on the Bank's operations. It also includes future business strategy development plans. Executive Officers have to regularly provide the Board of Directors with the latest information regarding risks and business developments related

to climate change to help the Board of Directors implement their supervisory activities more optimally.

The bank must strengthen their ability to manage risks related to the impacts of climate change and implement strategies to ensure their readiness to face these impacts. Each bank must also support these efforts through appropriate capacity development and training programs for all levels of the company, whether it's at the level of directors, executive officers or employees at other levels. This is especially important for relevant work units.

2.3 THREE LINES OF DEFENSE

CLIMATE RISK GOVERNANCE



The bank must begin to integrate Climate risk impacts into its internal control framework through the 'Three Lines of Defense' approach to ensure that the identification, measurement and mitigation of climate risks are all carried out appropriately, comprehensively and effectively.

The bank must ensure that roles, responsibilities and transparency have been divided into each of its layers of defense whenever they are managing risks related to the impact of climate change. Each bank has to create conducive environments that implement the three lines of defense. This is necessary so that all relevant stakeholders can play a good role in helping to manage climate risks. Broadly, the approach consists of a business management line, a risk and compliance management line, and an internal audit line:

- a. The first line of defense comprises operational-level functions that own the processes, responsibilities, and obligations for assessing, controlling, and mitigating risks. For example, this line resides within business units, whose role is to identify and manage risks associated with daily operations. Climate-related risk evaluations can be conducted during the initial stages of account openings, credit/financing applications and periodic reviews, as well as in the development and authorization processes for new bank products.
- b. The second line of defense encompasses control functions, risk management, compliance, and other similar roles that facilitate and monitor the effectiveness of

risk management practices implemented by operational-level functions. It also helps report all relevant risk information. The risk management function within the Bank must independently assess and monitor climate-related risks, separate from the first line of defense. Meanwhile, the compliance function ensures that the Bank's policies and operations adhere to laws, regulations, and other policies related to climate risks.

- c. The third line of defense is the internal audit function. Its defense method is carried out through a risk-based approach that provides assurance when it comes to the bank's effectiveness of governance, risk management and internal control, including how well the first and second lines of defense are being carried out. The independent internal audit function carries out independent and objective reviews of the quality and effectiveness of the bank's internal control framework and system as a whole. It also reviews the bank's risk management framework by taking into account changes in methodology, business and risk profiles, as well as data quality related to the impact of climate risks.

BANKING CLIMATE RISK MANAGEMENT AND SCENARIO ANALYSIS 2024





03

**BUSINESS
STRATEGY AND
RISK MANAGEMENT
FRAMEWORK**

BUSINESS STRATEGY AND RISK MANAGEMENT FRAMEWORK



The bank must integrate the significant or material potential impacts of climate risks into their business strategies, thus strengthening its resilience and undertaking necessary risk mitigation measures.

The bank must be able to identify and assess potential risks and opportunities that may arise as a result of climate change when they are in the process of developing and deciding on future business strategies based on existing information, especially if they find that it is necessary to make structural changes within the scope of their business.

In ensuring resilience to the long-term impacts of climate change, bank must use several scenarios analyzes to assess the impact of various factors related to climate change on their business strategies. This sort of analysis should be carried out over the course of various different time frames and scenarios of temperature increases due to high or low carbon emissions that might occur. Climate risk scenario analysis is useful for the bank on account of uncertainties and complexities in the future that can occur due to climate change. Such analyses also pose challenges for bank because these kinds of climate-related issues are unprecedented.

The exact nature of the long-term impacts of climate risks is uncertain. There is no guarantee as to when they will occur, nor is there any certainty on the magnitude of their impact on economic value. It all will depend on the actions taken by all stakeholders now and in the shorter term in the next few years. Bank in particular need to take

strategic approaches to determine the appropriate time period for making business policies and strategies. Bank may consider the following time periods: (a) short term (1 to 3 years); (b) medium term (more than 3 years to 10 years); and (c) long term (more than 10 years to at least 30 years). Making these time-frame distinctions can allow for better consideration of the impact of climate risks and the sustainability of strategies over time.

To ensure alignment between climate risks and business strategies, bank must determine internal targets (related to climate change impacts) and time frames for achieving these targets. Bank must also carry out regular monitoring so that they can keep an eye on and validate the mitigation and strategies that they have implemented to ensure their own resilience to climate risks.

The process of determining targets related to the impact of climate change is important. Doing so enables bank to take more specific directions for early action, including proactive and sustainable efforts in creating business strategies and anticipating any impacts on financial performance. The bank must consider any climate-related factors that can affect its core business lines and portfolios; including existing products and services, as well as those slated for future development by establishing targets that take into account the impact of climate change and actions to manage

3.1 BUSINESS STRATEGY

BUSINESS STRATEGY AND RISK MANAGEMENT FRAMEWORK

associated climate risks. Any significant deviations from the set targets will become the focus of the bank for reassessing the assumptions underlying its assessments.

Directors and management must clearly consider climate risks and their impact on changes to the bank's strategy and targets. This information has to then be conveyed to all internal employees at the bank. This is important to improve understanding and boost coordination between work units, all with the aim of creating better accountability and supervision.

The bank must review their business strategies appropriately after considering the management of climate risks, especially if these risks end up having any material impacts. For example, climate change can have an impact on reputation risk. As such, bank need to consider changing their long-term strategies. Of course, any changes in business strategy that are responsive to climate risks must be adjusted while taking into account the bank's internal capacity and capabilities in terms of systems, operations and human resources.

3.2 RISK MANAGEMENT FRAMEWORK

BUSINESS STRATEGY AND RISK MANAGEMENT FRAMEWORK



The bank must be capable of managing and integrating climate risks (especially when it comes to risks that are considered to have significant impacts) into their risk management framework with the approval of the entire Board of Directors. This must also be accomplished through an approach that involves identifying, measuring, monitoring and controlling significant climate risks.

The bank must be able to develop climate risk management strategies and frameworks that are in line with their overall business strategy, while mindful of the level of risk that needs to be taken (or “risk appetite”) and the established risk tolerance. It must identify and take into account all significant climate risks within a specific period of time that have the potential to affect their Internal Capital Adequacy Assessment Process (ICAAP). This includes identifying the impact of climate change that can affect the profitability of debtors and the bank itself as a result of the costs of Green House Gas (GHG) emissions that will ultimately have an impact on the bank’s capital level. One approach the bank can undertake is carry out stress testing on its capital levels by calculating its carbon footprint in forward-looking manner.

To support this, the bank must develop its risk management policies so that it can manage climate risks well. This policy also should include risk limits set by the Board of Directors. This ensures that any violations can trigger necessary management action. Things that the bank must do include:

- a. Developing a comprehensive understanding of the impacts of climate change, to map out the transmission of climate risks onto existing risk category such as credit, market, liquidity, operational, legal, strategic, compliance and reputation risks;
- b. Updating existing risk management policies and procedures to include matters related to climate change. For instance, the bank must ensure that risk management covers different time periods, including short term, medium term and long term perspectives;
- c. Reviewing the implementation of existing risk management practices, including data, methodologies and measurement frameworks. This must be done in accordance with the estimated time required to demonstrate continuous improvement in internal risk management capabilities and developments in the impacts of climate change (both globally and domestically). To ensure progress, the bank must have a long-term roadmap that

3.2 RISK MANAGEMENT FRAMEWORK

BUSINESS STRATEGY AND RISK MANAGEMENT FRAMEWORK

includes a measurement framework and targets to serve as key components of future implementation plans; and

- d. Integrating the impacts of risks related to climate change into their existing risk management cycle through several functions, specifically, those related to risk identification, risk measurement, risk monitoring and risk control. The bank must also establish procedures to measure and evaluate the impact of risks related to climate change that may affect its capital position.

BUSINESS STRATEGY AND RISK MANAGEMENT FRAMEWORK



The bank must continue to improve their ability to effectively build and develop data, tools and methodologies so they can identify risks related to any impacts of climate change that are considered significant.

The bank must continue to improve their internal capabilities to effectively manage risks related to the impacts of climate change. These internal capacities include:

- a. Identifying, collecting and improving the quality/details of debtor GHG emissions data and other climate-related data along with risk measurements and impacts that make use of both domestic and international sources, including publicly available information sources, scientific research, products and services from third parties, as well as data obtained directly from customers and partners;
- b. Possessing and implementing climate risk management policies (both qualitatively and quantitatively) in business-as-usual conditions and during stress periods;
- c. Ensuring that the implementation of risk management related to climate change has taken into consideration both short and long term future impacts, while the bank continuously enhances its capability in scenario analysis; and
- d. Strengthening the existing risk management model by incorporating climate risk management.

The bank that use external sources to obtain data and measurements to improve climate risk management must ensure that they have adequate understanding of the external risk management data and measurements obtained, including any certification and third-party verification that such data may have (if any). The bank must ensure the capabilities of external providers, including ensuring the latter's methodology, validation of existing data, and limitations to ensure suitability for the characteristics of the portfolios they own.

As time goes by and as their data, measurement and risk management become more mature, the bank that are significantly impacted by climate risks must develop the use of models and methodologies to measure climate risks both in terms of asset or liability portfolios and in terms of relationships with stakeholders. For example, the bank can add climate risk assessment factors to their existing credit risk assessment models.

3.4 RISK IDENTIFICATION AND MEASUREMENT

BUSINESS STRATEGY AND RISK MANAGEMENT FRAMEWORK



The bank must consider climate risks as part of their overall risk assessment to identify and quantify the impact of climate risks that are considered significant.

In identifying and measuring climate risks, the bank must do the following:

- a. Map the impact of climate risks, such as physical and transition risks, on financial and non-financial risks to assess their potential, significance and concentration;
- b. Establish targets and measurements related to the impact of climate risks, such as greenhouse gas emissions. These include emissions from the Bank's own operations (Scope 1), emissions from purchased energy (Scope 2), and emissions not included in Scope 1 and Scope 2, including debtor's financed emission (Scope 3). The bank must also recognize transmission impact on financial performance so that they can develop better methods for measuring climate-related risks. The bank must understand the various measurements required, understand their limitations, and select the appropriate methodology when performing calculations;
- c. Conduct scenario analysis with different assumptions to generate various alternative impacts of climate risks, thereby providing comprehensive information for risk identification and measurement across different scenarios and timeframes.
- d. Use several measurement dimensions to identify potential and concentration, whether from the bank's internal scope (such as asset portfolios, liabilities, operations and business lines) or from the bank's external scope (such as government policy and geographical conditions);
- e. Initiate and strengthen policies and processes, ensuring they adequately identify and evaluate climate-related risks from the outset of contractual relationships between the Bank and its customers/debtors, and ensure these evaluations are ongoing.
- f. Carrying out active communication with debtors and third parties that are considered significant (such as suppliers of goods) to obtain better information about understanding of climate risks, track records, commitments, and transition strategies in managing these risks. This aims to facilitate the bank in collecting the necessary data and information, including helping them in preparing the necessary climate change mitigation and adaptation measures; and
- g. Establish systems and procedures for collecting and processing data related to climate risk (both financial and non-financial data) throughout the Bank's operations. Apart from that, the bank must also ensure that the collected data can be combined and processed accurately and reliably.

3.4 RISK IDENTIFICATION AND MEASUREMENT

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In developing a methodology for identifying and measuring climate risks, the bank may consider one or a combination of the following two approaches:

- a. Top-down stress test approach:** This involves mapping portfolio risks in aggregate by determining key variables to be used. For example, grouping portfolios based on geographic location to assess disaster levels, and grouping portfolios based on economic sectors, given their varying greenhouse gas emissions.
- b. Bottom-up stress test approach:** This involves identifying portfolio, investment, credit/financing risks to third parties and

then accumulating these risks to obtain sectoral portfolio value, usually carried out on exposures in specific economic sectors that are considered significant. For example, the economic sectors targeted by Indonesia's NDC are used as a basis for conducting risk assessments. Apart from that, the bank can also see customers/debtors classified in watchlist categories (meaning: sectors that are considered to have the potential to damage the environment and are deemed to have no plans to make improvements).

BUSINESS STRATEGY AND RISK MANAGEMENT FRAMEWORK



The bank must actively monitor any risks due to climate impacts that are considered significant and implement risk controls on a regular basis. This aims to ensure the bank can mitigate the negative impacts of potential increases in the concentration of climate risks (both physical and transitional risks) in accordance with their risk profile and business strategy. These efforts are to be supported by the right data generated through risk analysis and clear reporting procedures

In developing effective climate risk monitoring and control, the bank must do the following:

- a. Use various parameters with measurable metrics and targets (both quantitative and qualitative) that must include, among others, greenhouse gas (GHG) emissions and the impact of physical risks, both acute and chronic;
- b. Integrate metrics related to climate risks and their impact on other risks into existing risk monitoring and reporting frameworks that can support more effective decision making in managing climate risks, including monitoring agreed-upon risk profiles, business plans and strategies, and targets to be achieved in relation to climate risk impacts;
- c. Have forward-looking metrics to detect and respond to current and potential climate risks. For example, analysis can be carried out based on scenarios on the impact of different climate risks to ensure the resilience of the bank's portfolio and to also calculate any potential losses incurred;
- d. Consider the concentration of climate risk impacts based on the portfolio, economic sector, geographic location, and third-party customers and partners that are deemed important;
- e. Consider the bank's vulnerability when it comes to operations that are exposed to climate risks, including vulnerabilities stemming from the location of head offices or branch offices or data centers that are exposed to physical risks such as flooding;
- f. Establish appropriate reporting frequencies and periods to ensure that the Board of Directors and executive officers provide the most up-to-date information regarding the impacts of climate change, accompanied by follow-up actions taken to anticipate potential future risks. This includes the ongoing transition program towards a low-carbon economy, activities that could have a negative impact on climate change and be detrimental to the bank, and physical risks that could have a negative impact on the bank's operations and business lines;
- g. Establish necessary limits to provide early warning signals/indications where the Board of Directors and executive officers can take necessary corrective actions to prevent climate risk impacts; and
- h. Monitor the implementation of corrective actions and potential non-compliance with bank policies related to climate risk.

3.5 RISK MONITORING AND CONTROLLING

BUSINESS STRATEGY AND RISK MANAGEMENT FRAMEWORK

The bank must also pay attention to various specific economic sectors, especially any affected customers/debtors, by carrying out the following:

- a. The bank must develop policies based on economic sectors to manage risks related to the impacts of climate change by considering risk factors for the transition to a low-carbon economy. For example, this can be done by establishing risk profile criteria per economic sector for both customers who are already debtors and potential debtors; by establishing certain limitations or exclusion criteria; as well as by coordinating with relevant ministries/institutions in determining the steps needed to mitigate and adapt to climate change;
- b. The bank must be able to manage the economic impacts related to physical and transition risks and risks to their reputation. Towards this end, the bank must be able to integrate these things into their risk profile framework and implement policies and procedures that actively encourage customers and third-party partners to implement more sustainable practices and prepare themselves for the impacts of climate change. This also includes a commitment to a transparent, gradual and progressive transition strategy in managing exposures deemed vulnerable to climate risks;
- c. The Bank must take actions to encourage customers/debtors and third-party partners to transition to a low carbon economy that include the following:
 1. Allocating certain funds (for example, in the form of social and environmental responsibility) to help customers/debtors understand and prepare to face the impacts of climate change;
 2. Providing incentives to debtors with lower interest rates if they have a clear strategy to support climate transitions; and
 3. Involving customers/debtors and third-party partners in the development of transition strategies including setting specific and credible climate targets and adopting sustainable certification, practices and international standards.
- d. The bank can avoid the practice of greenwashing their portfolios by using established green/sustainable standards and taxonomies. The bank can also rely on verification from third parties and existing green certification to ensure that disclosures made by debtors/third party partners are in accordance with standards, metrics, and relevant methodologies. The bank also need to carry out regular updates to ensure related matters remain relevant, current and valid.

3.6 TYPES OF CLIMATE-RELATED RISKS

BUSINESS STRATEGY AND RISK MANAGEMENT FRAMEWORK



The bank must understand the transmission and impact of climate risks (physical and transition risks) on other types of existing risks and ensure that their risk management systems and processes take into account the impact of these risks, especially those that are considered significant. The impact of climate risks can play a role in serving as triggers from other types of risks that already exist. Accordingly, The bank must understand and calculate the impact of risk transmissions.

Climate risk and environmental risk significantly impact banking risk. Studies reveal that climate change has led to the emergence of climate-related prudential risks in the banking sector⁷. Climate risks refer to transition risks and physical risks:

a. Transition Risks

Risks arising from changes in government policy direction, technological advances and social dynamics, along with the shift in the world economy's goal towards a low-carbon economy, all of which requires the bank to adjust their policy direction. Doing so has the potential to impact their business, reputation and the value of their assets.

b. Physical Risks

This risk can be classified into two types: risks caused by severe natural disasters (acute physical risks) and risks that are gradually affected by long-term changes in climate patterns caused by things like rising temperatures and sea levels (chronic physical risks). Acute physical risks include storms, floods and forest fires that occur as a result

of specific events, while chronic physical risks include rising temperatures and rising sea levels and focus on long-term changes in climate patterns. In determining vulnerability to physical risks, an organization must consider climate-related hazards, its exposure to those hazards, and its vulnerability⁸.

The bank plays a very important role in facilitating businesses to move towards a green and sustainable economy, by allocating credit and investment to more sustainable sectors⁹. Based on the results of one particular study, it has been found that any banks that have medium-to-high levels of attention for these climate issues can experience a reduction in risks by being committed to reducing the impact of climate change. In addition, the bank's country-based location factor also plays a key role in reducing credit risk, especially when it comes to a country's commitment to climate change issues.

7 Climate-Related Prudential Risks in the Banking Sector: A Review of the Emerging Regulatory and Supervisory Practices <https://www.mdpi.com/2071-1050/12/13/5325>.

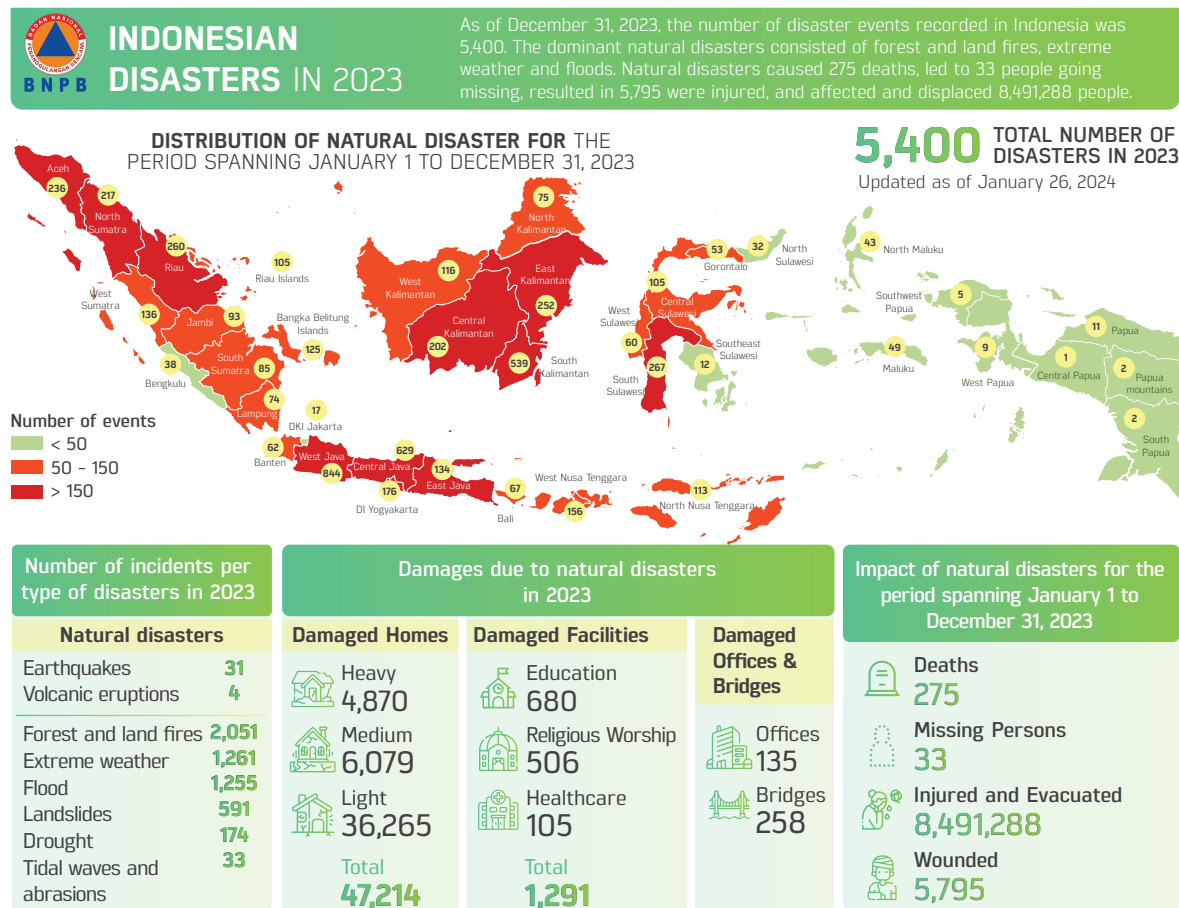
8 TCFD (2021) (https://assets.bbhub.io/company/sites/60/2021/07/2021-Metrics_Targets_Guidance-1.pdf).

9 Birindeli et al. (2022). Climate change commitment, credit risk and the country's environmental performance: Empirical evidence from a sample of international banks.

3.6 TYPES OF CLIMATE-RELATED RISKS

BUSINESS STRATEGY AND RISK MANAGEMENT FRAMEWORK

Figure 3. Indonesia Disaster Map, National Disaster Mitigation Agency (BNPB) 2023



Source: National Disaster Mitigation Agency (BNPB), (2023)¹⁰

No: 6/U308/099/Ben-Indonesia/BNPB/31122023

When it comes to physical risks, Indonesia has a fairly high risk of disasters due to its geographical location in the tropics and at the confluence of two oceans and two continents. This location makes it prone to floods, landslides, extreme weather, extreme tidal waves and abrasion, as well as droughts, which can trigger forest and land fires¹¹. Based on National Disaster Mitigation Agency (BNPB) data from 2023, Indonesia suffered a number of natural disasters such as floods, landslides, forest and land fires, earthquakes, volcanic eruptions, heat waves, abrasion, and

others. There were 2,051 incidents of forest and land fire disasters. Meanwhile, there were 1,255 incidents of flooding.

The direction of the government's policy transition towards a low-carbon economy creates its own possibility of exposure to transition risks for the bank. Indonesia's commitment to a low carbon economy began with the ratification of the Paris Agreement through the enactment of Law No. 16 of 2016, and then went on to continue with Indonesia's Nationally Determined Contribution (NDC) targets in the form of reducing carbon emissions by 41% by 2030 and moving towards carbon neutrality by 2060. There is also the government's commitment to implement a Carbon Tax, which is being enforced

¹⁰ National Disaster Mitigation Agency (BNPB) Geographic Information Systems (GIS) Disaster Data (2023)

¹¹ National Disaster Mitigation Agency (BNPB) (2021). "Indonesian Disaster Risk Index 2021"

3.6 TYPES OF CLIMATE-RELATED RISKS

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in accordance with the mandate of Law No. 7/2021, and the growing use of electric cars, solar panels and other new renewable energy. All of these are expected to have an impact on the future direction of the banking industry's business. Risks arising from climate change pose as challenges for the bank, which are increasingly being required to adapt by integrating climate risk considerations into their strategic decisions, business processes, governance and risk management frameworks.

In general, the impact of climate change on banking risk can be categorized according to the following types:

a. Credit Risk

In conducting a credit risk assessment, the Bank must take into consideration the impact of climate risks as well as the impact that these risks have on the debtor's finances and the debtor's ability to fulfill their credit obligations from the start of their credit agreements until the time when these agreements have been paid off.

In accordance with Statement of Financial Accounting Standards (PSAK) 71, the bank must calculate Expected Credit Loss (ECL) for a 12-month and lifetime period by taking into account the influence of future macroeconomic factor calculations (or "forward-looking adjustments"). Apart from calculating the ECL for different future macroeconomic conditions, the bank must also determine the weighted probability for the possibility of various specific macroeconomic scenarios occurring.

Some of the macroeconomic information needed in calculating impairment includes Gross Domestic Product (GDP), unemployment rate, inflation, Bank Indonesia reference interest rate (BI-Rates), foreign currency exchange rate, commercial property price indexes, and commodity price indexes (such

as coal) for short and long term durations according to the bank's credit portfolio. For quantitative credit risk assessment of debtors, the bank can adjust their credit risk indicators -- such as probability of default (PD), loss given default (LGD) and exposure at default (EAD) -- by considering a time period appropriate to the impact of the risks related to climate, whether for the short term, medium term or long term. This is so that the indicators used can also calculate impacts that occur in the future (and be forward looking). The impact of these climate-related risks may also result in an increase in the Loan Loss Provision (LLP) for the bank's portfolio. Adjustments to the calculation of LLP components can be seen illustrated below:

1. PD: An increase in debtor PD can be triggered by a decrease in consumer demand for products from industries with high carbon emissions. It can also be triggered by the imposition of a carbon tax on emissions, and be triggered by bad weather conditions that have a negative impact on the business of specific sectors. This is seen as increasing pressure on debtor profits and can result in a higher possibility of default;
2. LGD: There lies the potential for assets to become unused (this is referred to as "stranded assets"), or for the value of a debtor's assets to decrease. If the debtor's assets become collateral and their value is reduced, then the debtor's potential for recovery in the event of them defaulting will also be lower. For example, the assessment of property prices in areas prone to flooding as a result of climate change can also be affected, resulting in lower value of property as collateral, which ends up effecting recovery levels; and

3.6 TYPES OF CLIMATE-RELATED RISKS

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3. EAD: Debtors affected by physical risks may need to withdraw more credit from the ceiling that has been provided to overcome sudden impacts, such as floods or forest fires.

b. Market Risks

The bank must periodically review and incorporate climate risk considerations into their investment strategies and portfolio allocations. Uncertainty regarding the timing, intensity and location of future severe weather events and other natural disasters may lead to higher volatility in financial markets. Changes in policies, investor sentiments, and technological advances can also cause sudden changes in financial asset prices. To develop an understanding of a portfolio's sensitivity to the impacts of climate risks, the bank may consider the following risk drivers in their assessments:

1. Potential rating downgrades and asset devaluations caused by lower corporate profitability, increased litigation, shifting consumer preferences, and the implementation of new climate-related policies; and
2. Effectiveness of hedging transactions for assets owned by the bank due to the impact of climate risks.

c. Liquidity Risks

The bank must consider the impact of climate risks in carrying out liquidity management of its assets and liabilities. Doing so is necessary for the bank to assess the ability to fulfill its obligations in accordance with maturity periods, regardless of whether these obligations are to be fulfilled under normal business conditions or under stress conditions.

The bank must also consider risk relationships, both between components of assets owned and between assets and liabilities when providing credit/financing or investing in an individual/company entity as well as when accepting deposits. The bank must periodically assess the impact of climate risks on funding stability, potential outflow of funds, and the adequacy of liquidity buffers by considering the possibility of risks related to the impact of climate change. If the impact is considered significant, the Bank must include the impact calculation in the liquidity buffer. The bank may consider the following aspects in assessing liquidity risk:

1. Asset ownership profile, in relation to vulnerability to climate risks that may affect credit ratings, asset prices and asset liquidity levels;
2. Shifting investor preferences towards sustainable financial instruments which can influence the breadth and depth of the market for existing assets; and
3. The composition and profile of depositors, economic sectors and geographic locations that may be vulnerable to climate-related risks, which could result in significant and sudden withdrawals of deposits/third party funds.

The bank can collect data such as credit restructuring requests, deposit withdrawals, and other behavioral changes from both customers and investors when climate risk events occur to model the potential impact on liquidity.

3.6 TYPES OF CLIMATE-RELATED RISKS

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The bank can consider the impact of climate-related risks on the liquidity position in each branch and the contingency plans that will be implemented, for example operational disruptions or other disruptions that could limit the Bank's ability to provide liquidity when events occur due to climate risks.

d. Operational Risk

The bank must assess the impact of events resulting from climate change on overall operations, including activities involving third parties (outsourcing). This is intended to ensure that if there is a disruption in operational activities, the disruption can be recovered quickly to maintain optimal service. The bank can assess sources of operational risk that have the potential to cause direct or indirect losses as follows:

1. Vulnerability of office locations (headquarters and branches), data and recovery centers (Data Center/Disaster Recovery Center), and third party service providers to the impacts of climate change such as during bad weather;
2. The impact of disasters due to climate change which affects employee mobility to and from the workplace;
3. Implications if there are stricter regulations related to the impacts of climate change;
4. Potential lawsuits filed against the Bank for business practices deemed directly or indirectly harmful to the environment; and

In managing physical risks that can affect its operations, the bank are required to carry out the following actions:

1. Conduct assessments of their operations on an ongoing basis, including assessments for any potential need to relocate the bank's business units that are considered important (such as main branch offices, servers and data centers) to different locations/areas that are considered geographically less vulnerable to the impact of climate risks to reduce potential disruptions from happening; and
2. Adopt climate change adaptation strategies to reduce their exposure to physical risks, such as ensuring that the basic structure of their building/branch offices are placed higher than any surrounding buildings to reduce the potential for damage due to flooding and the impact that such flooding may have on the bank's operations.

3.7 TRANSITION PLANNING

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The Bank must have a transition plan through internal strategic planning and risk management. This planning should prepare for changes in the business model while considering associated risks and potentials, thereby fostering a smoother and more effective transition.

The bank holds important role in planning Indonesia's funding transition through lending/financing. Doing this enables funded customers/debtors to also carry out this same transition. The bank in particular have to play a role as partners for customers to encourage changes (through the implementation of risk mitigation and adaptation strategies) in the business strategies and risk profiles of these customers/debtors so that credit/financing disbursement can be used to support the transition to a low carbon economy.

The bank need to have long-term risk perspectives for the sustainability of its business models. This means that the bank need to improve its risk management tools in a sustainable and forward-looking manner, including through various forms of scenario analyses and stress tests. The bank must also continue to improve their availability and their understanding of all the necessary supporting data. This process includes improvements on setting metrics and targets so that the bank can carry out better risk assessments. For example, emissions for specific debtors financed at any given time must be supplemented with future calculation information on things like the types of transition paths being planned by these debtors. OJK encourages banks to consider setting relevant decarbonization targets that can support the transition to a low-carbon economy.

The Bank must establish a clear and actionable risk appetite policy, specifying the types and levels of risk it is willing to accept. This policy should serve as a foundation for decision-making, taking into account overall risks when formulating business strategies for transitioning to a low-carbon economy. Mitigation and adaptation measures should be considered as responses to both transition and physical risks that the Bank faces through its exposure to customers. For example, implementing the transition to a low-carbon economy will have the effect of affecting structural changes in the bank's business environment.

Environmental risks beyond climate risks must be considered proactively and comprehensively as part of the bank's transition planning process given the interdependence between climate and the environment and given that this link become widely recognized. It is possible that there may be trade-offs in terms of environmental impacts that arise in efforts to mitigate climate risks. The bank must be able to anticipate the impact of environmental risks (including potential risks in the transition planning process).

3.7 TRANSITION PLANNING

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The bank must make meaningful and relevant disclosures of information related to its transition plans to enable stakeholders to understand how the bank is responding in the short, medium and long term to the climate risks they face, including the type of governance the bank have in place to anticipate the impacts of these climate risks. This will also be useful to support scenario analysis in estimating Green House Gas (GHG) emissions from debtors who receive credit/financing from bank.

The bank are expected to continue to improve their transition planning on an ongoing basis to produce better business processes. This includes improving transition planning methodologies and industrial developments (such as compliance with regulations, verified emission calculations, new technologies and other potential environmental risks beyond climate change).

BANKING CLIMATE RISK MANAGEMENT AND SCENARIO ANALYSIS 2024





04

SCENARIO DESIGN
AND ANALYSIS

4.1 DESIGN FRAMEWORK

SCENARIO DESIGN AND ANALYSIS



The bank is required to have a scenario design framework that can be used to manage any risks and business opportunities related to climate risk. In General, scenario design is a technique that banks can use to identify and assess the potential impact of various events that may occur. In the context of climate change, the bank carries out further analysis to examine the resilience of businesses and strategies to climate change-related risks and measure the impact these risks have on their portfolios across various scenarios, including when events due to extreme climate change occur.

Every financial authorities has different frameworks and procedures for carrying out stress testing activities related to the impact of climate change risks. Several other authorities have even mandated resilience tests not only in the banking sector but also involving other sectors such as insurance and capital markets.

The bank must use scenario design and analysis to ensure that their business strategies are resilient to climate-related risks that are considered material. Given the complexity and evolving nature of risks, the scope of scenario design and analysis must also include risk profiles, risk appetites and overall risk management frameworks.

The bank have to create a climate scenario design framework and carry out further analysis in developing business strategies as part of risk management. These efforts include:

- a. Identifying various climate-related scenarios while also defining each of these scenarios by considering climate-related risks in the short term and long term;
- b. Reviewing the suitability of strategies and business models across various climate scenarios;
- c. Taking into account any economic risks that may arise from implementing transition phases for sectors or segments with high carbon emissions and are considered vulnerable to climate-related risks; and
- d. Using the scope of scenario design and analysis to make necessary business strategy adjustments and identify several appropriate strategic alternatives to boost their resilience to climate-related risks and mitigate climate-related disruptions to their business and operations

Based on the results of this scenario analysis, a bank must be able to determine the managerial actions required at both the Board of Directors and executive officer levels to mitigate all impacts of climate-related risks. These actions mainly encompass financial aspects, including adaptation or mitigation measures that can be implemented in both the short and long term.

By taking into consideration the complexity of climate change risk impacts (including various related aspects and the involvement of many stakeholders), the bank can take a gradual approach in developing better scenario design and analysis. As a first step, the bank can potentially consider

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SCENARIO DESIGN AND ANALYSIS

using simple models and qualitative analysis to explore various climate change scenarios, their impacts, and their required mitigation plans.

Analyzing the impact of climate change and mitigation policies on industries, financial institutions including banks, and the financial system in general is necessary. The Network for Greening the Financial System (NGFS) has worked together with several institutions to develop scenarios using Integrated Assessment Models (IAM) for the short, medium and long terms. These models are used to look at the long-term relationship between emissions, carbon prices and global economic variables. Long-term analysis is key to designing transition strategies so that we can understand the comparison between costs and benefits obtained, as well as assessing the impacts of physical risks. Meanwhile, short-term analysis provides a more real picture of the possible impact of disruptions related to climate change risks in the macro financial system, including the way they affect variables such as Gross Domestic Growth (GDP), inflation rate, and local currency exchange rates against foreign currencies.

The bank also have to pay attention to variables that can influence climate risk calculations, including GHG emissions or carbon footprints and carbon prices. The bank are encouraged to continue to develop their capabilities in modeling scenarios and their impacts on finances and operations. They can do this by using IAM in their design and analysis of climate scenarios so that the models developed can be more in line with their business and operational models. IAM integrates economics with matters related to climate change and comprehensively integrates the impacts of energy, land use change, agriculture, technology and infrastructure. IAM also links GHG emissions calculations to a series of carbon prices and looks at their impact on economic growth.

1. Long Term Scenarios

In developing resilience stress tests for climate risks in Indonesia, the Financial Services Authority (OJK) has adopted NGFS¹² fourth version of its climate scenario published in November 2023 (the first version was published in 2020, the second in 2021, and the third in 2022). These climate scenarios will always be updated whenever there is any new scenario information. NGFS divides all climate change impact scenarios into 4 categories: Orderly, Disorderly, Hot House World, and Too little, Too Late. Each of these scenarios uses a different roadmap in determining variables to achieve Paris Agreement targets for 2050, including roadmaps in relation to changes in aspects of climate influence on the economy, including changes in carbon prices.

12 NGFS Portal (<https://www.ngfs.net/ngfs-scenarios-portal/>)

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Figure 4. Change in NGFS' Climate Scenario from Phase 3 to Phase 4

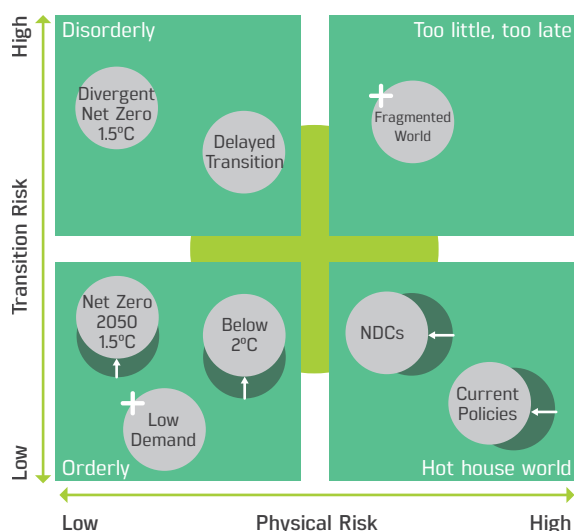


Figure 5. Phase 4 of NGFS Climate Scenario Framework

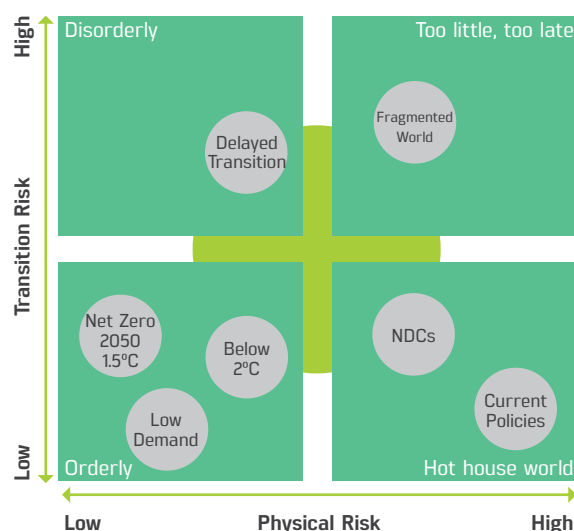
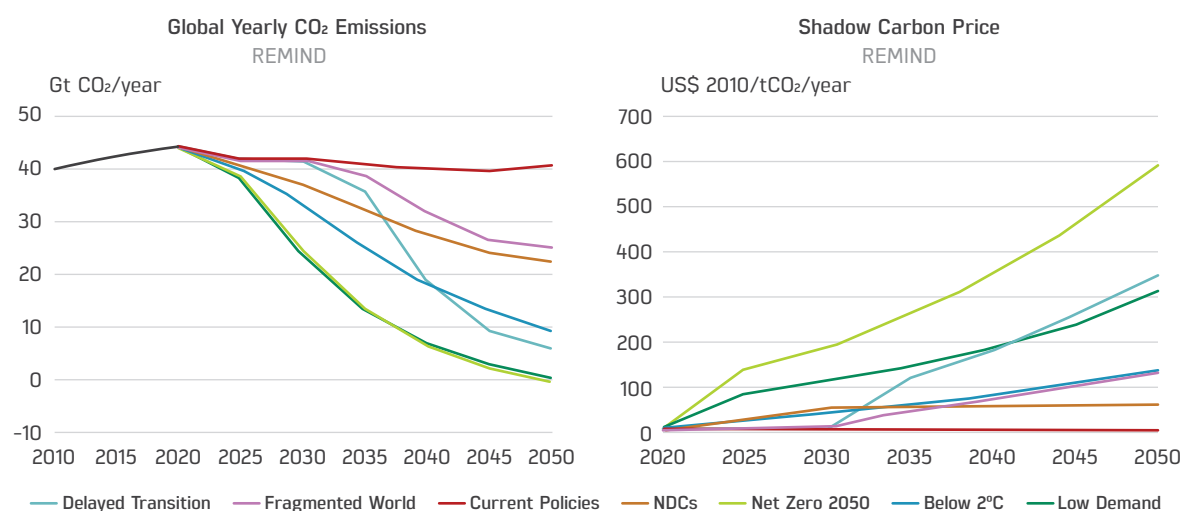


Figure 6. CO₂ emissions and carbon price assumptions across NGFS scenarios



The following are scenarios NGFS has developed in Phase 4 (the variables used in each scenario are detailed on NGFS' website, as are all technical explanations):

1. Orderly

This scenario assumes that policies to address the impacts of climate change are introduced early and gradually become stricter, which would result in relatively lower impacts of physical and transition risks.






a. Low Demand (new scenario in phase 4):

This scenario assumes that significant behavioral changes occur as a result of reduced energy demand. This would reduce pressure on the economic system to achieve Net Zero CO₂ emissions globally by 2050. As a result, the shadow carbon price of this scenario could be lower than that of the 2050 Net Zero scenario, although both this and the Net Zero 2050 scenario have the same end-of-century

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warming limits for the year 2100. This scenario has higher physical risks but lower transition risks compared to the Net Zero 2050 scenario.

	Policy ambition	1.4°C
	Policy reaction	Immediate and smooth
	Technology change	Fast change
	CDR	Medium use
	Regional policy variation	Medium variation






b. Net Zero 2050:

An ambitious scenario that limits global warming to 1.5°C through stringent climate policies and innovation as a means to achieve net zero CO₂ emissions by 2050. Several jurisdictions such as the United States, the European Union and Japan will have already achieved net zero for all greenhouse gases glass by that time. This scenario assumes that ambitious climate policies are implemented immediately. Carbon Dioxide Removal (CDR) is used to accelerate decarbonization but is kept to a minimum and is broadly in line with sustainable levels of bioenergy production. Net CO₂ emissions will reach zero around 2050, providing at least a 50% chance of limiting global warming to below 1.5°C by the end of the century, with no or low overshoot (<0.1°C) of 1.5°C for previous years. Physical risk for this scenario is relatively low but transition risk is high.

	Policy ambition	1.4°C
	Policy reaction	Immediate and smooth
	Technology change	Fast change
	CDR	Medium-high use
	Regional policy variation	Medium variation

c. Below 2°C:

In this scenario that involves gradually increasing the tightening of climate policy, there is a 67% chance of limiting global warming to below 2°C. This scenario assumes that climate policy is implemented immediately and becomes gradually stricter (though not as ambitious as in Net Zero 2050). CDR implementation would be relatively low in this scenario. Net zero CO₂ emissions will be achieved after 2070 with relatively low physical and transition risks.






	Policy ambition	1.6°C
	Policy reaction	Immediate and smooth
	Technology change	Moderate change
	CDR	Medium-high use
	Regional policy variation	Low variation

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2. Disorderly

This scenario explores higher transition risks due to delayed or different policies across countries and sectors. For example, carbon prices would typically spike higher to reach certain temperature targets.

	Policy ambition	1.6°C
	Policy reaction	Delayed
	Technology change	Slow/Fast change
	CDR	Low-medium use
	Regional policy variation	High variation

Delayed Transition:

This scenario assumes that global annual emissions will not decrease until 2030. Stricter policies are then implemented to limit temperature increases to below 2°C, while negative emissions would remain limited. The assumption being used in this scenario is that there will be no new climate policies until 2030 and that actions in each country and region will differ based on the policies currently implemented that will lead to a "recovery of fossil use" due to the economic crisis caused by COVID-19. The availability of CDR technology is assumed to be low, which pushes carbon price higher when compared to Net Zero 2050. As a result, the amount of emissions exceeds the carbon target for a certain time and will decrease more quickly compared to the Below 2°C scenario after 2030. This ensures a 67%






chance to limit temperature rise to below 2°C, leading to higher transition risks and physical risks compared to both Net Zero 2050 and Below 2°C scenarios.

3. Hot house world

This scenario assumes that policies to address the impacts of climate change will have been implemented in some jurisdictions, but that government efforts around the world will still not enough to stop significant global warming. Critical temperature thresholds will be exceeded, causing severe physical risks and irreversible impacts such as sea level rise.

a. Nationally Determined Contribution (NDC)

The NDC scenario includes all policies that have been established in each country despite not having yet been implemented. This scenario assumes that climate-related ambition is moderate and heterogeneous, as reflected in NDCs in early 2021 that will continue throughout the 21st century (meaning: low transition risks). There will be a decrease in emissions under this scenario, but there will also still be an increase in temperature of 2.6°C which is associated with moderate to severe physical risks, all while the transition risk remains relatively low.






	Policy ambition	2.6°C
	Policy reaction	NDCs
	Technology change	Slow change
	CDR	Lowd-medium use
	Regional policy variation	Medium variation

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b. Current policies:

The current policy assumes that only the implementation of the current policy continues to be maintained, which would result in high physical risks. Emissions will continue to increase until 2080, leading to an increase in global temperatures of around 3°C and severe physical risks, including irreversible changes such as higher sea level rise. This scenario can help central banks and supervisory authorities to consider long-term physical risks to the economy and financial system. After all, if the current scenario continues, there will be a "warmer world" in the future..






	Policy ambition	3°C+
	Policy reaction	None-current policies
	Technology change	Slow change
	CDR	Low use
	Regional policy variation	Low variation

4. Too little too late

This scenario reflects delays and differences between countries in implementing policies to address the impacts of climate change, leading to increased transition risks in some countries and high physical risks in all countries due to the overall ineffectiveness of the transition process.

Fragmented World:

This scenario assumes policy ambitions to address climate change are delayed and vary globally. This scenario will lead to an increase in transition risks in several countries, resulting in high physical risks in the majority of countries due to ineffective transitions. Countries that do not have a Net Zero target will follow the Current Policies policy, while other countries achieve their targets partially (an estimated 80% of their targets)..

	Policy ambition	2.3°C
	Policy reaction	Delayed and fragmented
	Technology change	First slow, then fragmented
	CDR	Low-medium use
	Regional policy variation	High variation

The summary of each climate scenario based on NGFS Version 4 can be seen detailed in table 4.1.

2. Short Term Scenarios

Several authorities and regulators have begun to analyze the short-term impacts of climate change along with the necessary mitigation policies in relation to the real economy, individual financial institutions, and the broader financial system.

With a time horizon of three to five years, short-term scenarios can overcome limitations in macroeconomic and financial risk analyzes that focus on long-term climate impacts on economic indicators (as depicted in the various current NGFS climate scenarios).

4.1 DESIGN FRAMEWORK

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Table 4.1. NGFS Climate Scenario

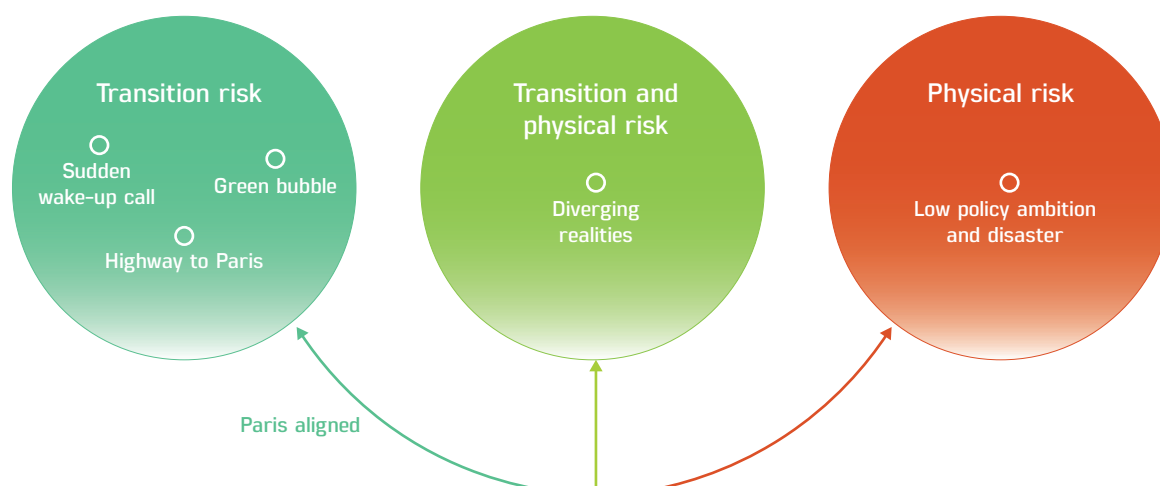
Scenario	Physical risk	Transition risk	Policy ambition	Policy reaction	Technology change	Carbondioxide removal	Regional policy variation
Low Demand	Low-moderate	Low	1.4°C	Immediate & smooth	Fast change	Medium use	Medium variation
Net Zero 2050	Low	Low-moderate	1.4°C	Immediate & smooth	Fast change	Medium-high use	Medium variation
Below two C	Low-moderate	Low-moderate	1.6°C	Immediate & smooth	Moderate change	Medium-high use	Low variation
Delayed transition	Low-moderate	Moderate-high	1.6°C	Delayed	Moderate change	Low-medium use	High variation
Fragmented world	Moderate-high	Moderate-high	2.3°C	Delayed and fragmented	First slow, then fragmented	Low-medium use	High variation
NDCs	Moderate-high	Low	2.6°C	NDCs	Slow change	Low-medium use	Medium variation
Current Policies	High	Low	>3°C	None-current policies	Slow change	Low use	Low variation

Source: NGFS (2023), processed by the Financial Services Authority

NGFS proposes five different climate scenario narratives to support short-term dynamics related to the varying impacts of transition and physical risks. Three of the scenarios focus on mitigation efforts and represent significant transition risks based on the current state of increased uncertainty regarding future fossil energy supplies caused by geopolitical tensions, which could lead to accelerated or delayed implementation of climate policies, all of which depend on developments in public opinion.

There is one scenario that suggests a high physical risk impact for the short term. In the short term, the impact of physical risks are determined in advance due to the need to implement increasingly stringent climate policies. Another scenario demonstrates significant transition risk impacts and physical risks. It is assumed that only a few countries under this scenario will implement climate mitigation policies strictly in anticipation of the impact of transition risks.

Figure 7. NGFS Short Term Scenario



SCENARIO DESIGN AND ANALYSIS



The bank must ensure that the scenario designs and analyses they carry out are relevant, follow specific applicable standards, are detailed, and use appropriate time frames, whether for the short, medium or long terms. This scenario design and analysis is to be carried out proportionally while considering the materiality of climate-related risks to business and bank operations.

When designing appropriate climate scenarios, the bank should clearly define their objectives and expected outcomes when selecting a particular climate scenario for use in analysis. At the very least, all selected climate-related scenarios should reflect the following characteristics:

a. Severe but Plausible

Stress testing is generally described as an evaluation of a bank's financial position under a challenging but still reasonable scenario. This type of scenario is used to assist the bank in decision making. Events in stress test scenarios related to climate risk must actually be events that occur and can be explained (for example, any hypothesized disaster that will happen and how such disasters will happen have to be realistic). The scenarios must include both normal baseline conditions and extreme conditions to provide diverse results regarding potential future climate conditions. Due to the fact that there is uncertainty regarding future calculations, scenario design and analysis can assist the bank in obtaining alternative assumptions that are considered to have an impact on their business. The complexity of testing can vary from simple sensitivity tests to those that involve many variables and are interconnected with each other. This aims to assess the impact of severe climate risks on a bank's finances (such as the impact on income and capital);

b. Relevant

Directors and executive officers must consider a number of scenarios that are easy to understand, document, implement, and provide alternative worst-case scenarios that suit the conditions of each bank. Each bank must also use scenario analysis to evaluate their ability to overcome climate-related risks in each alternative scenario. Doing so is necessary so as to strengthen their resilience to the impacts of these risks;

c. Different Perspectives

Each climate risk resilience test scenario must use a clearly different perspective. These differences must be well explained. The different assumptions used will provide different results over time. For example, the impact of carbon pricing on a bank's finances may vary depending on the timescales of implementation;

d. Consistent

Any climate scenario design must have a strong foundation that is based on existing evidence or expected trends. The purpose of such a scenario analysis is to see the interactions between variables and their impact. The selection of variables and the value of each variable must be in accordance with current real conditions or in accordance with existing

SCENARIO DESIGN AND ANALYSIS

trends, unless there is strong enough evidence that there will be significant changes. For example, there should be no assumptions that fossil fuel usage will somehow end suddenly in a specific year without actually considering the availability of renewable energy sources to replace them; and

e. Adjusted to Bank Conditions (Tailor Made)

Climate scenario design must include important elements that can influence the results of scenario analysis that can influence the results of scenario analysis, such as location, asset types, operations, and revenue sources. It also includes factors such as how climate change can affect customers, bank stakeholders (including investors and shareholders), and changes in demand for a bank's products and services.

When conducting scenario analysis, The bank can use OJK references as guidelines. But they can also develop them according to the conditions of each bank. In developing climate scenarios, the bank may consider starting with climate change scenarios used globally, such as ones used by the Network for Greening the Financial System (NGFS), the Intergovernmental Panel on Climate Change (IPCC), and the International Energy Agency (IEA). Climate scenarios created by these international institutions provide definitions, targets for increasing temperatures to be achieved in specific years, macroeconomic indicators, technological changes, economic activities and emission levels. For example, the scenarios developed by the IPCC allow users of the IPCC's scenarios to see the potential for increased Green House Gas (GHG) emissions in the future and the various mitigation and adaptation strategies that are needed to address these scenarios. Meanwhile, the IEA has created an alternative scenario based on energy sector transitions.

In developing CRMS, Indonesian the bank are encouraged to explore the use of NGFS scenarios that are relevant to Indonesian contexts. As an example, they can use NGFS scenarios that make use of additional assumptions related to climate policies in Indonesia (both existing and upcoming policies), such as assumptions that involve supporting Nationally Determined Contribution (NDC) targets and carbon tax plans from the government, and other policies to support the achievement of Net Zero Emissions (NZE) targets.

The design and analysis of climate scenarios developed the bank must take into consideration time spans for short, medium and long terms. In the short term, the bank may foresee the possibility of natural disasters occurring and their impacts on the debtors' collateral. Meanwhile, for the medium and long terms, the bank is require to carry out analysis with the assumption that the impacts resulting from climate change will appear gradually over the course of several decades.

The bank must use detailed and relevant data in climate scenario analysis. They should also consider interactions between climate-related risks and the activities of debtors and third parties. In determining the level of detail of analysis, the bank may consider the following factors:

- a. Macroeconomic data (for example, the impact of climate on data at the national level such as economic growth, foreign exchange rates and inflation rates); and
- b. Debtor data (such as emission exposure or specific information on corporate transition plans). However, this analysis is more complex and requires highly detailed and consistent data and information. Collecting and analyzing this data can be time-consuming.

SCENARIO DESIGN AND ANALYSIS

The depth of the climate scenario analysis carried out by the bank must be proportional to the materiality of the impacts that may arise from climate risks. This is done by considering things like the size, nature and complexity of a bank's business and operations and other matters related to the following:

- a. Total amount of credit and collateral;
- b. The relationship between the debtor and the state's financial economic system;
- c. Geographical location;
- d. Expectation of physical damage as a result of climate change considered to be detrimental;
- e. Transition steps taken by the debtor towards climate change, such as actions to reduce greenhouse gas emissions; and
- f. Information such as future trends related to consumer preferences, environmentally-friendly technological innovations, and policy developments by the government.

A bank that decides to include a debtor's climate change adaptation plan in its scenario analysis can only do so if the following conditions are met:

- a. There is evidence in the form of documents that have been verified and validated that the debtor's adaptation plan has been implemented; and
- b. If it is still in the planning stage, then the bank must ensure that the borrower's plan is executed considering the borrower's current performance against set targets, technological support, resources required to achieve the targets, credibility of the strategy, and potential negative consequences in implementing the plan.

BANKING CLIMATE RISK MANAGEMENT AND SCENARIO ANALYSIS 2024





05 | DISCLOSURE

DISCLOSURE



The bank must produce disclosure reports related to Sustainable Finance, particularly the impacts of climate risks that are reliable, understood, and comparable, to support informed decision-making by stakeholders and strengthen effective management of material climate-related risks.

The bank must establish policies approved by the board of directors and/or board of commissioners regarding disclosure reports on sustainable finance, particularly concerning the impacts of climate risks that are accountable and of high quality, while avoiding greenwashing practices. The policies bank establish must also include governance arrangements for disclosure and audit reports, whether these disclosures and reports are generated from internal parties and external parties (the latter of which is only if deemed necessary). The disclosure report on Sustainable Finance, especially the impacts of climate risks, is published simultaneously with the annual report.

The disclosure report is crucial as it demonstrates the bank's qualitative and quantitative ability to manage sustainability aspects, especially climate risks, related to environmental, social, and governance matters, to all stakeholders including shareholders, investors, and the public. In this report, the bank must consider materiality aspects, meaning if the omission, misrepresentation, or obscuring of information is estimated to affect decisions made by users of the disclosure report, such as investors

The bank must conduct periodic reviews of the policy to continuously improve its quality, completeness, and relevance, taking into account developments regarding disclosure of the impacts of climate and sustainable financial risks both domestically and globally. This is aimed at encouraging improvements in the methodologies used in disclosure reports to align with existing standards.

These disclosure reports have to be designed in such a way that they are aligned with international standard recommendations, including those from the Task Force on Climate-related Financial Disclosures (TCFD). This task force has been merged into the International Sustainability Standards Board (ISSB)¹³, which has released International Financial Reporting Standards (IFRS) S1: General Requirements for Disclosure of Sustainability-related Financial Information, and IFRS S2: Climate-related Disclosures. One of these is related to the disclosure of GHG emissions and future targets that encompass scopes 1, 2 and 3.

In addition, the Basel Committee on Banking Supervision (BCBS) has also published a consultative document titled "Disclosure of

13 IFRS S1 and S2 (<https://www.ifrs.org/news-and-events/news/2023/06/issb-issues-ifrs-s1-ifrs-s2/>)

DISCLOSURE

Climate-related financial Risks”¹⁴ in November of 2023. A bank’s publication of its climate risk impact disclosure report is to be carried out simultaneously with the publication of its annual financial report. This disclosure report can focus on the following specific matters:

- a. Qualitative disclosures related to governance principles, strategy, risk management and concentration risk in regards to the impact of climate change and business opportunities;
- b. Quantitative disclosures, such as the amount of credit/financing per sector, vulnerable exposure to natural disasters per region, and calculations of emissions categorized with scopes 1, 2 and 3, including financed emissions. For the first year of their emissions disclosure reports, the bank can prioritize disclosure of scopes 1 and 2 emissions first and then expand to scope 3 in their next disclosure report;
- c. Potential impacts and actual losses (from risks related to climate change) on business, strategy and finance; and
- d. Metrics and targets used to assess and manage relevant risks. This data that is presented on this matter has to span a period of at least 2 (two) years so that they can be compared, except for reporting in the first year.

The bank are expected to work towards adopting “stretch” recommendations. This specifically refers to the concept of a bank increasing its efforts related to disclosing information related to climate change in financial reports and sustainability reports. By adopting or achieving these targets,

the bank can do more than just comply with the basic or minimum requirements that have been set out for them. The process of adopting targets compared to international standards often receives positive recognition from stakeholders and investors when they want to obtain more comprehensive information about a bank’s business activities. A bank’s business activities cover all business opportunities and risks related to sustainability, especially when it comes to climate, which is expected to affect a company’s prospects, cash flow, access to finance, and cost of capital in the short, medium and long terms.

Apart from annually publishing a sustainability report, the bank can also disclose information related to their support for sustainable finance, especially when it comes to climate risk. They can disclose this information on their website periodically and over a shorter period. Information on their website must be contained in a separate section. This is so that relevant stakeholders and investors can get access to this crucial information quickly and easily.

In accordance with Financial Services Authority Regulation (POJK) No. 51/2017, the bank are responsible for ensuring that all disclosures contained within sustainability reports are accurate, verifiable, complete and not misleading. The bank can request an independent audit by an external auditor to ensure the correctness and completeness of their sustainability disclosure reports. The bank may also consider appointing independent and qualified external third parties to verify or provide assurance on their disclosures, such as external assurance of climate-related metrics and targets. Doing so can further increase the reliability and credibility of their disclosures.

¹⁴ Disclosure of Climate Related Financial Risks 2023
(<https://www.bis.org/bcbs/publ/d560.pdf>)

BANKING CLIMATE RISK MANAGEMENT AND SCENARIO ANALYSIS 2024





06

IMPLEMENTATION
PLANNING

IMPLEMENTATION PLANNING



Banks must develop and disclose risk management implementation plans related to the impact of climate change. These plans and disclosures have to be approved by a bank's Board of Directors and/or Board of Commissioners and must have clear schedules that contain targets and results. This is done to identify existing gaps and strategies to overcome these gaps.

The bank must conduct an analysis of current climate risk management practices and compare them with this guideline and other applicable international standards. Additionally, it should map out any gaps in practices that have not been addressed. The bank must develop a program plan that has been approved by the board of directors and/or commissioners with a clear schedule, aimed at addressing the identified gaps.

When it comes to this implementation planning, the bank must carry out the following processes:

- a. Ensure whether the bank's current policies and procedures are still relevant and effective for managing climate-related risks, as well as clarifying their governance regarding climate risk management;
- b. Establish responsible team membership and reporting mechanisms to ensure report compliance with these guidelines;
- c. Make improvements to their policies, systems and procedures to address identified gaps and to better manage risks related to the impacts of climate change; and
- d. Formulate roadmaps for both the short and long terms to provide improved direction for their strategy and policy development accompanied by metrics and targets.

The results of the Climate Risk Stress Testing (CRST) conducted according to the template format in Book 6 of this Guideline shall be reported by participating pilot banks no later than July 31, 2024. For other banks, information regarding this will be provided later. Furthermore, banks are also expected to submit reporting templates in accordance with the format of this guideline, including the assumptions used, input data, and outputs generated, accompanied by any necessary supporting documents.

The OJK's CRST is conducted as a learning tool aimed at enhancing banks' capacity to assess the impacts of climate and environmental changes. Thus, it is expected to create early awareness of the impacts of climate and environmental risks on the financial performance of banks. This activity was also carried out to assess the ability that the bank have to conduct resilience testing models that not only were based on existing risks (through the use of a Bottom-up Joint Stress Test which has been developed internally), but also were based on developing a further resilience testing framework. This framework integrates related impact risks of climate change for both the short and long terms. The bank must immediately provide written notification to OJK in the event that they identify potential problems that could hinder reporting in accordance with these guidelines. Any KBMI3 banks, KBMI4 banks, or any banks that are participants of

IMPLEMENTATION PLANNING

the Piloting Stress Test must submit their report along with executive summaries in accordance with the format provided by OJK in this guide. This must be done no later than July 31, 2024 and must be submitted to the Department of Banking Regulation and Development, with copies delivered to the following:

a. Relevant bank supervision departments. Or, at the Jakarta regional office of the OJK for any banks located in the Special Capital Region of Jakarta Province or Banten Province

that happen to have head offices abroad (or for banks domiciled abroad with branch offices in the DKI Jakarta Province or Banten Province); or

b. Regional offices of the Financial Services Authority or local offices of the Financial Services Authority in accordance with wherever the region a bank's head office is located. This is for Banks with offices outside the DKI Jakarta Province or Banten Province

REFERENCES

There are no specific references for carrying out internal modeling other than the scenarios mentioned above. The bank can make their own assumptions and use internal data sources or data sources from government ministries/agencies. In addition, the bank can use data and information from other institutions, whether domestic or international.

The following are several publication references that can help the bank in preparing internal methodologies and models accompanied by assumptions for implementing CRMS:

No	Publication title	Source
1	List of ASEAN Green/ Social/ Sustainability Bonds/Sukuk	ACMF (2023)
2	Climate-related financial risks – measurement methodologies	BCBS (April, 2021)
3	Climate-related financial risks – measurement methodologies	BCBS (April, 2021)
4	Climate-related risk drivers and their transmission channels	BCBS (April, 2021)
5	Frequently asked questions on climate related financial risks	BCBS (December 2022)
6	Principles for the effective management and supervision of climate-related financial risks	BCBS (June, 2022)
7	Disclosure of climate-related financial risks	BCBS (November, 2023)
8	Disaster Distribution Map from the Geospatial Information Agency (BIG)	Geospatial Information Agency (BIG) (2023)
9	Flooding Potential Data from the Meteorology and Geophysics Agency (BMKG)	Meteorology and Geophysics Agency (BMKG) (2023)
10	Indonesia Disaster Risk Index (IRBI) from the National Disaster Management Agency (BNPB)	National Disaster Management Agency (BNPB) (2022)
11	Indonesian Disaster Data Geoportal	National Disaster Management Agency (BNPB) (2023)
12	Indonesia ESG Star Listed Companies	Indonesia Stock Exchange (2023)
13	ECB 2022 Climate Risk Stress Test	ECB (2022)
14	Green Building Indonesia	GBC Indonesia (2023)
15	IFRS S1 General Requirements for Disclosure of Sustainability-related Financial Information	IFRS (2023)
16	IFRS S2 Climate-related Disclosures	IFRS (2023)

REFERENCES

No	Publication title	Source
17	Energy Efficiency Indicators	Internal Energy Agency (2023)
18	2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories	IPCC (2019)
19	National Greenhouse Gas Inventory System	Ministry of Environment and Forestry (2023)
20	National Climate Change Registry System	Ministry of Environment and Forestry (2023)
21	Enhanced Nationally Determined Contribution (ENDC) Republic of Indonesia	Ministry of Environment and Forestry (September, 2022)
22	NGFS Scenario Portal	NGFS (2023)
23	NGFS Short Term Climate Scenario	NGFS (October, 2023)
24	NGFS Climate Scenarios for central bank and supervisors – Phase IV	NGFS (November, 2023)
25	Climate Scenario Analysis by Jurisdictions: Initial findings and lessons	NGFS (November, 2023)
26	Climate Scenario Database: Technical Documentation	NGFS (November, 2023)
27	Compound Risks: Implications for Physical Climate Scenario Analysis	NGFS (November, 2023)
28	OECD Business and Finance Outlook 2020	OECD (September, 2020)
29	Consultative Paper: Principles of Effective Management of Climate-Related Financial Risks	Financial Services Authority (OJK) (September, 2022)
30	Paris Agreement Capital Transition Assessment	PACTA (2023)
31	NDC Targets (including Indonesia)	UNFCCC (2023)
32	Climate Risk Country Profile: Indonesia	Worldbank & ADB (2021)
33	Climate Change Knowledge Portal	Worldbank (2020)

DISCLAIMER

The stress test scenarios, macroeconomic variables, emissions and disasters found within OJK's CRMS are not predictions of what will happen in the future. They used are based on sources that are considered reasonable and have been adapted to various international standards and policies to anticipate the impacts of climate change from the Indonesian government. CRMS is designed to determine the Indonesian banking financial system's resilience to physical risks and transition risks related to its climate transition journey.

OJK's scenario specifications are based on climate scenarios from the Network for Greening the Financial System (NGFS). NGFS' climate scenarios aim to provide a common basis for central banks and supervisory authorities around the world to analyze the impact of climate change risks in various scenarios that may occur in the future. The existing scenarios were selected by utilizing economic and climate models that have been widely used, including GCAM, REMIND-MAGPIE, MESSAGEix-GLOBIOM, and the National Institute of Economic and Social Research (NiGEM). The various macroeconomic variables and assumptions and CRMS used by OJK were made based on a series of discussions held with relevant Ministries/Institutions and other third parties.

Calculations of each scenario found within OJK's reporting templates encompass the period spanning 2024 to 2050. They are based on NGFS data that applies specifically to Indonesia. Macroeconomic and carbon variables have been adjusted to create annual values for 2024, 2025, and 2026 and for ten-year periods for 2030, 2040, and 2050. Data from sources outside OJK are gathered from publicly available sources. OJK and other data providers are not responsible for the data presented in this document.

Although the measurement of risks and impacts resulting from climate change is uncertain, a combination of physical risks and transition risks will no doubt emerge in the future. In this guide there are references that may be used for implementing CRMS. However, the figures provided are still hypothetical and not official estimates.

This data does not represent OJK's official view regarding the future of the Indonesian economy, whether for the short or long terms. If a bank requires estimates for other variables in theory analysis, they can use other assumptions and sources as long as they can also ensure validation. All information and data contained in this guide is copyrighted to OJK and is protected by law.

SUPPORTING DOCUMENTS

There are 5 supporting documents that encompass book 2 (two) to 6 (six) that are an inseparable part of OJK's Book 1 on Climate Risk Management and Scenario Analysis (CRMS). The following are details of these supporting documents:

1. Book 2 – Climate Risk Stress Test (CRST) Technical Guidebook

This book contains the steps that the bank need to take in implementing CRST to ensure that the CRST they have carried out can capture the impact of climate change risks, whether in the short (2024-2026), medium (2030) or long (2040-2050) terms.

The bank can use data and information based on climate change impact scenarios from NGS as well as several sources found within Indonesian ministries/institutions, especially when it comes to data on natural disasters due to climate change, as well as data and information originating from a bank's internal sources.

Compared to its initial phase guidebook that was published in 2023, OJK has made several improvements to its CRST framework regarding the assumptions and approaches required within climate scenarios and for reporting formats. All Commercial Banks, especially those that previously made reports in 2023, must develop better CRST methodologies that take into account input they have obtained previously, such as using more detailed data and a wider scope in calculating the impact of climate risks.

Future CRST implementation will continue to focus on two primary types of climate risks: physical risks and transition risks. In addition, because the impact of financial losses caused by climate risk can also have an impact on the macro-economy in general, the bank can also use the very same data assumptions regarding macro-economic variables based on NGFS

and the impact of disasters from Indonesian Ministries/Institutions. The bank can also use more conservative assumptions (with detailed explanations) if they do not use the variables provided in this guide.

2. Book 3 – Carbon Emission Calculation Methods

If the bank want to measure exposure to Green House Gas (GHG) emissions for both itself and the companies it finances, each bank is expected to have a methodology needed to calculate GHG emissions, which includes GHG emissions encompassed in scopes 1, 2 and 3. These provide important information for mapping direct and indirect emissions.

The bank can collaborate with the Ministry of Environment and Forestry to obtain a methodology for calculating emissions for themselves and for their debtors. Information regarding these emissions can be accessed through sources like the National Greenhouse Gas Inventory System (SIGN-SMART)¹⁵ website to provide valid, accurate and up-to-date data and information regarding GHG emissions. This site also functions to increase the effectiveness of data processing and GHG estimations at the national, provincial and district/city levels.

As an alternative, the bank can also use emission calculation standards from international institutions such as the Intergovernmental Panel on Climate Change (IPCC)¹⁶, ISO 14064¹⁷, PAS 2050¹⁸, and the United Nations Framework Convention on Climate Change (UNFCCC).

3. Book 4 – Macroeconomic Data Assumptions

In developing their CRST, especially for use in calculating transition risks and the impact these risks have on the Probability of Default,

15 Sign Smart, Ministry of Environment and Forestry

16 IPCC, 2006

17 ISO 14064-1:2018

18 GHG Protocol 2011

SUPPORTING DOCUMENTS

the bank can make use of macroeconomic and other supporting data from NGFS that is specific to Indonesia.

There is some data that has been adapted to an Indonesian context that is taken from official sources, such as the Ministry of Energy and Mineral Resources and the Central Statistics Agency (BPS). This data can be used for CRSTs that can better reflect Indonesia's conditions.

If other macroeconomic data is needed, the bank can use models they have developed internally or use ones that are sourced from authorized Indonesian ministries/institutions.

4. Book 5 – Disaster Data

The bank are required to carry out resilience tests in accordance with the CRMS Technical Guidebook. They can do so by considering transition risks and physical risks. Specifically, when it comes to physical risks, the use of flood and forest fire disaster data from the National Disaster Mitigation Agency (BNPB) can be used for the bank when implementing CRSTs. This data can serve as an important step in understanding the impact of climate change on banking operations and investments.

This book contains data on cities and districts throughout Indonesia that are ranked high on the Indonesian Disaster Risk Index (IRBI). This data is taken from the National Disaster Management Agency (BNPB) and contains information on flood disasters and forest fire disasters. The bank can also evaluate their credit/financing portfolio in the context of geographic locations that are potentially

affected by disasters. As such, the bank can further calculate their total banking exposure to disaster risk and any potential ensuing losses that may arise.

5. Book 6 – CRMS Reporting Template

To obtain uniform and comparable banking CRMS calculation results, the bank are required to submit responses back to the OJK within a specified time limit that is in accordance with the complete format in this Book.

The responses they need to send back are responses to questions that are qualitative and quantitative in nature. These are divided into 8 (eight) sections in the CRMS Reporting Template, specifically -- A. General Guidebook; B. CRMS Implementation Readiness; C. Transition Risks; D. Physical Risks; E. Credit Risk Calculations; F. Market Risk Calculations; G. Main Financial Indicators; and H. Executive Summaries. Any responses a bank provides must be supported by clear explanations and be accompanied by documentary evidence (if any such evidence exists).

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