OTORITAS JASA KEUANGAN

BANKING CLIMATE RISK MANAGEMENT AND SCENARIO ANALYSIS 2024

BOOK 2

TECHNICAL GUIDEBOOK

DEPARTMENT OF BANKING REGULATION AND DEVELOPMENT,
INDONESIA FINANCIAL SERVICE AUTHORITY

BANKING CLIMATE RISK MANAGEMENT AND SCENARIO ANALYSIS

2024

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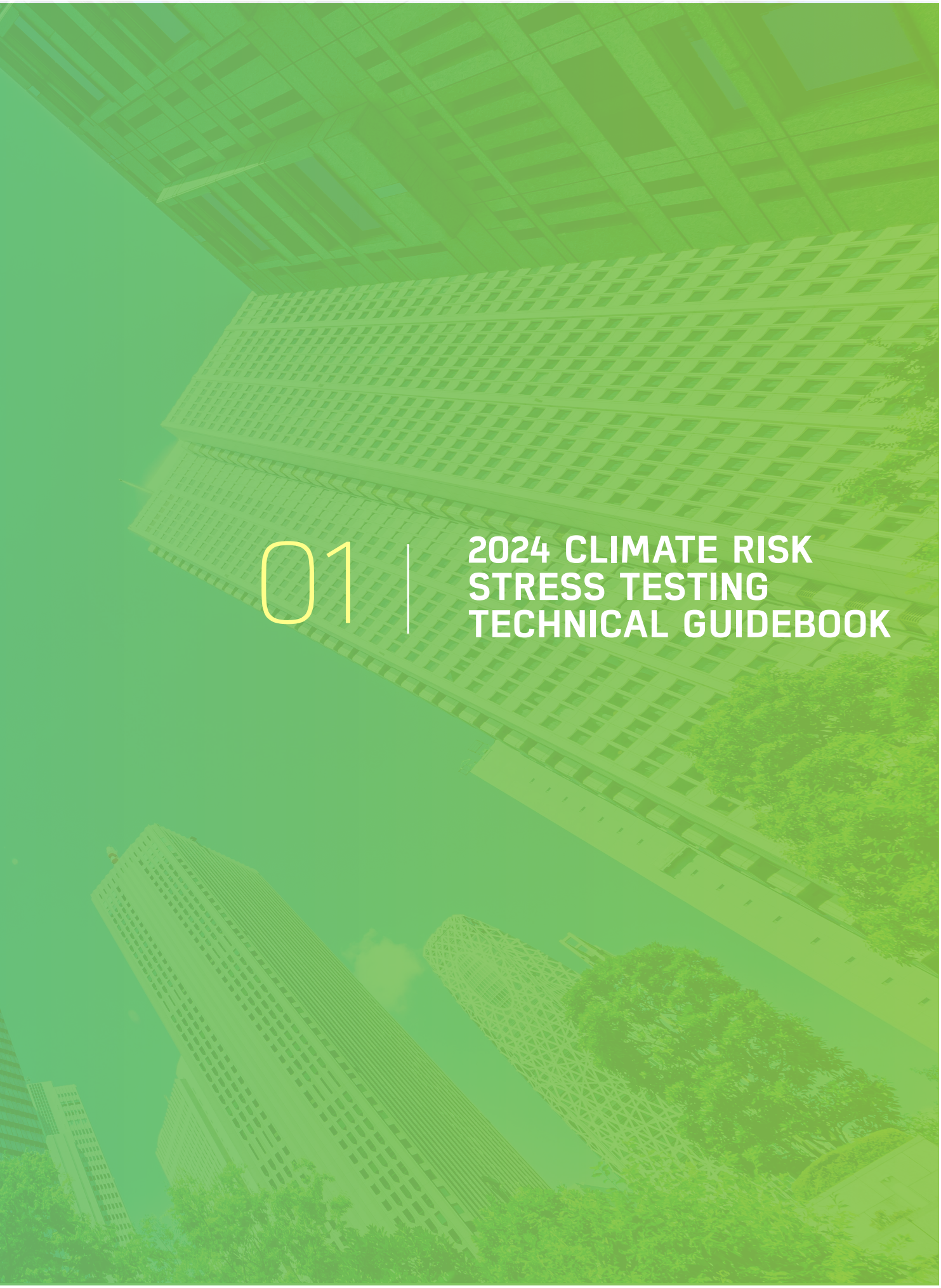

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2024 CLIMATE RISK STRESS TESTING TECHNICAL GUIDEBOOK

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2024 CLIMATE RISK STRESS TESTING TECHNICAL GUIDEBOOK

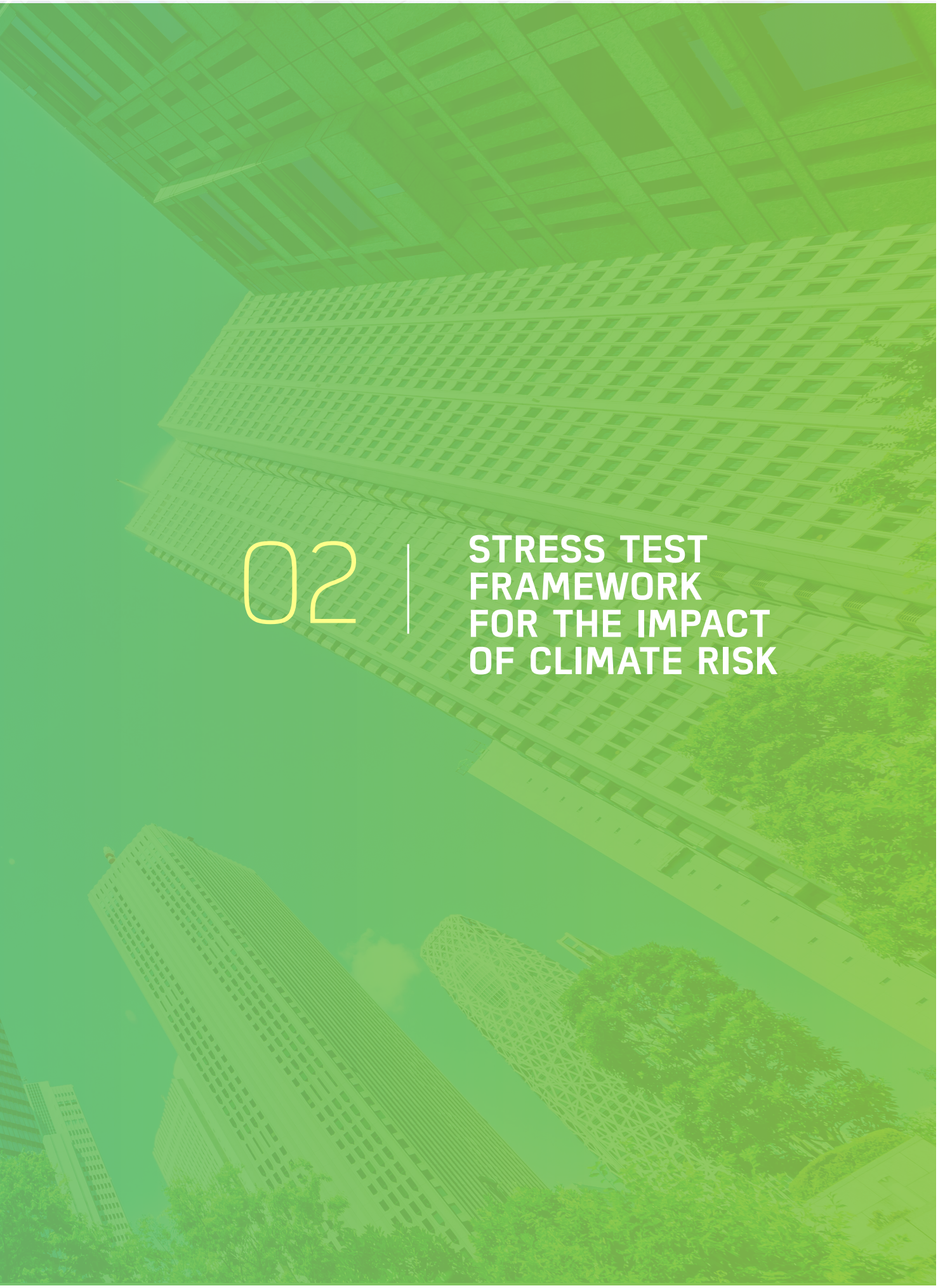
In 2023, OJK commenced the initial phase of Bottom-Up Climate Risk Stress Testing (CRST) involving 11 banks, all members of the OJK Sustainable Finance Task Force. In line with this initiative, the authority issued OJK Letter Number S-16/PB.013/2023 dated August 26, 2023, addressed to 18 banks categorized as "Bank Group Based on Core Capital (KBMI) 3 and 4 to be participating in the initial phase. These banks are encouraged to start the development of the Bottom-Up CRST initial stage for KBMI 3 and 4, with a reporting target set for July 2024. Drawing on feedback from the 11 banks previously engaged in the initial phase, OJK has refined the CRST framework to achieve a more comprehensive evaluation of bank portfolios exposed to climate risk.

This endeavor also aims to bolster banks' capacity in managing risks associated with climate change. Banks engaged in pilot CRST under this manual framework are expected to gain deeper insights into their potential vulnerability to climate risks and formulate appropriate strategic responses to mitigate these risks.

It's essential to note that scenarios employed in Bottom-Up CRST do not represent OJK's projection of climate change and economic conditions. These scenarios are hypothetical and crafted for evaluating the banking sector's resilience under extreme emissions and disaster events. Unlike the previous version of the CRST guidebook, this version incorporates significant additions to the CRST framework, with a primary focus on determining which the Network for Greening the Financial System (NGFS) climate scenario should be utilized; identifying priority sectors, basic assumptions and macroeconomic data; understanding the methodology of Probability of Default (PD) and Loss Given Default (LGD) calculations; and giving standardized reporting template for banks.

Banks participating in this CRST stage are encouraged to conduct further analyses of climate change's impact on their financial performance, leveraging the transmission framework standards, assumptions, and reporting template outlined in this manual. Nonetheless, banks have the flexibility to utilize other or more detailed data sources and methodologies that are better aligned with their characteristics to project the impact of climate risks on their financial performance.

BANKING CLIMATE RISK MANAGEMENT AND SCENARIO ANALYSIS 2024



02 | STRESS TEST FRAMEWORK FOR THE IMPACT OF CLIMATE RISK

STRESS TESTING FRAMEWORK FOR THE IMPACT OF CLIMATE RISK

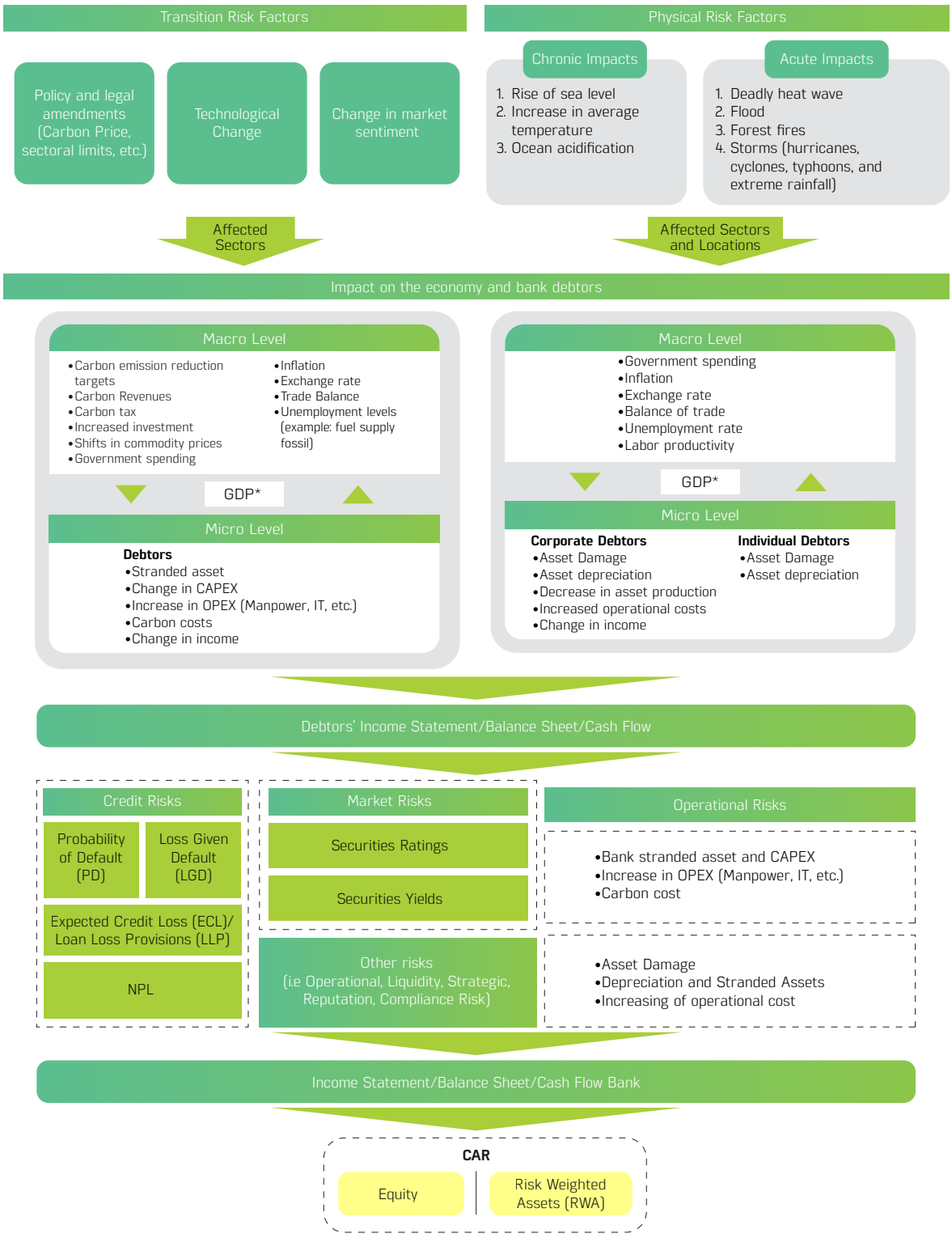
At this stage of CRST, banks are expected to refer to the general description of the flow of climate risk transmission on bank financial performance as depicted in Figure 1. Banks need to heed the impact of both transitional and physical risk factors at least on the following:

1. Macroeconomy.
2. Business performance of bank debtors, with the following analysis priorities:
    a. Physical Risk: Damage to assets, depreciation on asset, and change in cash flows.
    b. Transition Risk: Carbon cost, change in income, and change in cash flows.
3. These factors will affect the debtor's business and financial performance, including the debtor's ability to repay the bank.
4. Bank's own performance (Capital Adequacy Ratio/CAR).

In the initial phase, banks are only required to analyze the impact of climate risk on **Credit Risk** (Quantitatively Analized) with transmission to PD, LGD, Expected Credit Loss (ECL)/CKPN, and NPL; **Market Risk** (Quantitatively Analized) with transmission to Rating and Yield of government and corporate securities; Quantitative calculation of both credit and market risks further calculates the impact on KPMM; **Operational Risk** (Quantitatively Analized) with transmission to additional costs that must be borne due to damage to bank assets, decrease in the value of bank assets, and increase in bank operational costs; and **Liquidity Risk** (Quantitatively Analized) with transmission to the potential possibility of the Liquidity Coverage Ratio (LCR) decreasing due to climate risk, especially if climate risk causes the LCR to be below 100%, including the potential impact on High Quality Liquid Assets (HQLA), the influence on credit withdrawals by debtors who already have a credit ceiling, and the savings capacity of depositors. The above transmission of the impact of climate risk on bank financial risk is a condition that applies to Conventional Commercial Banks. In the event that the bank is a Sharia Bank, the impact on each inherent risk is adjusted based on the provisions and standards applicable to Sharia Banks. Furthermore, banks are expected to be able to calculate the impact of climate risk through the transmission of each financial risk in question to capital. The climate and macroeconomic scenario assumptions used will be fully explained in **Section 2.2**

STRESS TESTING FRAMEWORK FOR THE IMPACT OF CLIMATE RISK

Figure 1. Impact of Climate on Bank Performance: A Comprehensive Overview



STRESS TESTING FRAMEWORK FOR THE IMPACT OF CLIMATE RISK

At this CRST stage, banks are expected to utilize more standardized analysis methods and specifications to estimate the influence of climate risk on bank financial risks. Therefore, OJK has created a framework, as depicted in Figure 2, which serves as the basis for banks to conduct CRST. This is intended to facilitate the comparison of CRST results among banks, particularly regarding the model designs employed to measure risk for each available climate scenario.

For **transition risk**, the **short-term** scenario involves a projection analysis period of 3 years into the future (n, n+1, n+2). For reporting in 2024, banks are expected to project financial performance conditions affected by climate and macroeconomic shocks in 2024, 2025 and 2026. Meanwhile, the **medium-term** scenario focuses on the 2030 time point, and the **long-term** scenarios target the 2040 and 2050 time points, following NGFS Phase 4 transition specifications. These scenarios include:

- Net Zero 2050 (orderly transition pathway);
- Delayed Transition (disorderly transition pathway); and
- Current Policies (hot house transition pathway).

The selection of these three priority scenarios aligns with common practices in other countries, as well as the direction of transition policies and Indonesia's emission reduction targets. In the Net Zero scenario, it is assumed that all countries will strive to achieve carbon neutrality by 2050, leading to high exposure to transition risks due to climate change, which will further impact risks for financial institutions. Conversely, exposure to physical risks decreases due to mitigation efforts aimed at controlling the earth's temperature increase. In contrast, the current policies scenario assumes that no new policies will be implemented to combat the impact of climate change, resulting in limited impacts of transition risk on financial institutions but creating physical risks in the long term.

Figure 2. Implementation Stages towards Net Zero Emission (NZE) 2050

	Exposure	Scenario	Projection	Duration	Credit Risk	Market Risk	Operational Risk	Other Risks
Transitional Risks	Indonesia	Short-Term	Baseline	3 year (n, n+1, n+2)	Productive Loans (including MSMEs)	Bonds	Liquidity Risk	Strategic and Reputation Risks and related needs (optional analysis)
			Stress					
		Long-Term	Orderly	30 year (2030, 2040, 2050)	Productive Loans (including MSMEs)		Qualitatively Analyzed	
			Disorderly					
			Hot House					
Risiko Fisik	Indonesia	Forest Fires	Baseline	1 year (n)	Productive Loans (including MSMEs)			
			Stress					
		Flood	Baseline	1 year (n)	Property Ownership Loans			
			Stress					

n: year when stress test is conducted
Example: if the reporting takes place in 2024, then n: 2024; n+1; 2025; n+2; 2026)
Description: Credit and market risks are quantitatively analyzed and other risks are qualitatively analyzed

STRESS TESTING FRAMEWORK FOR THE IMPACT OF CLIMATE RISK

In the context of the delayed transition scenario, it is assumed that no special policy concerning carbon emission during the period xxx will be implemented. However, in 2030, the government is expected to enact significantly different policies aimed at achieving carbon neutrality by around 2050. The speed of transition undertaken by various companies, in alignment with efforts to reduce emissions and support government policy, will introduce transition risks for financial institutions. Banks may identify and utilize alternative scenarios deemed relevant for implementation within the CRST framework.

Moreover, the analysis period for **physical risks** is limited to projections for a single year, denoted as 'n' (one year). For the CRST 2024 pilot reporting, projections are made specifically for the year 2024. Long-term analysis of physical risks will be developed in subsequent stages of the CRST initiative, in tandem with the advancement of analytical methodologies and the availability of more precise Indonesian disaster projection data.

2.2.1 CRST SCENARIO

a. Macroeconomy

The short-term and long-term scenarios entail fluctuations in Indonesia's macroeconomic indicators, particularly economic growth, stemming from shifts in global economic conditions throughout the evaluation period. It is assumed that Indonesia's economic growth will vary in accordance with the climate scenario assumptions derived from NGFS data. These macroeconomic assumptions have been adjusted to account for the impact of transition policies aimed at reducing emissions within each scenario. Government policies identified as drivers for CRST include, among other measures, **the implementation of a carbon tax and the establishment of a carbon pricing system targeting high-emission sectors**[1] These policies align with Indonesia's Nationally Determined Contributions (NDC) and are designed to expedite the transition towards a low-carbon economy.

However, these efforts have led to increased energy prices, which in turn have had a growing impact on reducing Indonesia's GDP. Detailed data[2] assumptions regarding economic growth and exchange rate variables, applicable for both **short-term and long-term scenarios**, are further accessible in Book 4.

Throughout the observation period, banks can refer to changes in variables provided based on the NGFS scenarios presented by the OJK in Book 4 to determine the driving factors behind macroeconomic risks in Indonesia. However, banks retain the flexibility to utilize additional indicators and macroeconomic data as needed.

a. Credit Risk

Banks need to pay attention to the transmission of transition and physical risks to credit risk. This involves:

1) Transition Risk

In the transition scenario, the implementation of carbon pricing policies is considered as a means to expedite the transition towards a sustainable economy. To identify transition risks, particularly those associated with rising carbon costs and the trajectory of future transitions, the bank calculates the total emissions of its debtors, which encompass:

1. Scope 1 : Company operations
2. Scope 2 : Energy purchasing

1 Details of the sector are available in Section 2.3: Scope of Analysis

2 The variable data used in the CRST 2024 pilot comprises information adopted from the NiGEM and GCAM NGFS models, with adjustments made to reflect Indonesia's macroeconomic developments in 2023.

STRESS TESTING FRAMEWORK FOR THE IMPACT OF CLIMATE RISK

3. Scope 3 : Other indirect emissions not covered in Scope 2, including emissions occurring in the reporting company's value chain, such as upstream and downstream activities, transportation-related activities with vehicles not owned or controlled by the reporting company, outsourced activities, investment/financing, and waste disposal.

When calculating debtor emissions (Scope 1, 2, and 3), banks must adhere to applicable international standards, as this significantly impacts scope 3 calculations, particularly regarding investment/credit/financing provided. This is a crucial factor in implementing CRST.

During the analysis period, banks need to calculate debtor emissions (Scope 1, 2, and 3) **as of December 2023**. Various approaches can be utilized to obtain emission values from debtors/potential debtors, categorized based on the quality tier of the data produced:

1. **Tier 1**: Obtain emissions data directly from debtors during onboarding or credit assessment processes, or through a designed questionnaire, with or without third-party verification.
2. **Tier 2**: Collect emissions data from publicly available sources such as annual reports, sustainability reports, CSR reports, and environmental information platforms.
3. **Tier 3**: Estimate emissions using internationally available methodologies based on supporting information obtained from debtors, including using carbon calculators from UNFCCC or IPCC.
4. **Tier 4**: Proxy emissions values from similar companies that have published emissions data for companies with comparable characteristics.

Banks must consider the quality of the data obtained (tier) when collecting debtor emissions data and provide an explanation in the report to OJK.

In the transition to Net Zero Emissions (NZE), companies may have established or published transition plans affecting their financial performance, especially regarding carbon costs and potential capital expenditure (Capex) increases. In this stress test, banks need to identify whether debtors have a transition plan. If a debtor lacks a transition plan to reduce emissions by 2050, emissions are assumed constant until 2050. Conversely, if a debtor has a transition plan, banks must ensure its verification and/or public disclosure.

Banks should assume debtor emissions increase on a Business as Usual (BaU) basis annually during the analysis period. To estimate emissions growth, banks refer to the annual average BaU growth as shown in Table 1. Moreover, when projecting the limit

STRESS TESTING FRAMEWORK FOR THE IMPACT OF CLIMATE RISK

for carbon compensation fees per debtor, banks align it with the Indonesian government's emissions reduction target based on the 2022 Enhanced NDC document, set at 31.89% of total debtor emissions by the end of 2023.

Table 1. Projected Growth in Business as Usual (BaU) Emissions and Emission Reduction for NDC Sector Categories

No	Sector	Annual Average Growth BaU*
1	Energy	6.7%
2	Waste	6.3%
3	IPPU	3.4%
4	Agriculture	0.4%
5	Forestry and other land uses	0.5%
	Total	3.9%

*) Enhanced NDC 2022

As an example,

let's consider the total carbon emissions of PT A, operating in the Mining and Quarrying sector, in December 2023, which are measured at 3.67 tonnes CO_2eq/GWh. The bank should assume that total carbon emissions from PT A will increase by 6.7% annually, referencing the annual average BaU growth for the energy sector during the observation period.

Moreover, in alignment with the Indonesian government's emission reduction target stated in the Enhanced NDC document[3] of 31.89% until 2030 and remaining constant until 2050, the bank should bear carbon costs equivalent to the reduction targeted by the government. Here's an example calculation:

Year 2023:

31.89% x 3.67 tonnes CO_2eq/GWh = 1.17 tonnes CO_2eq/GWh

This calculation suggests that PT A must reduce its emissions by 1.17 tonnes CO_2eq/GWh in 2023.

For the subsequent year:

Year 2024:

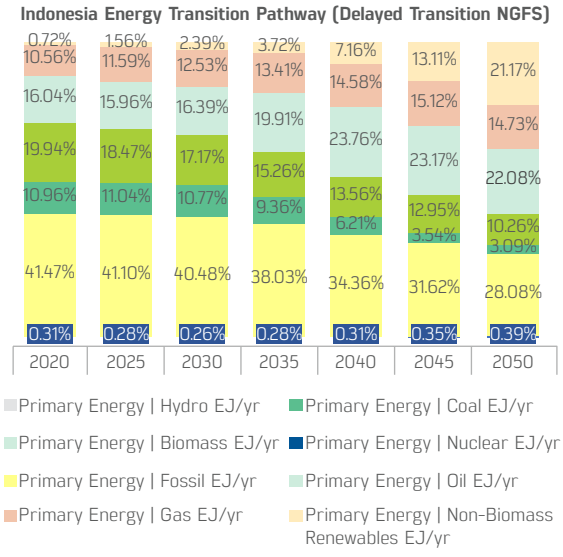
31.89% x (3.67 tonnes CO_2eq/GWh x 106.7%) = 1.24 tonnes CO_2eq/GWh

From the calculation above, it indicates that PT A must further reduce its emissions by 1.24 tonnes CO_2eq/GWh by 2024.

If the debtor has prepared a transition plan for its business over a specific period, the growth in the emission reduction target and the emissions requiring compensation can be adjusted based on the specified target.

Should the bank require a reference for the debtor's energy transition, it can utilize external sources, including those from the NGFS. More detailed information can be found in Book 4 of this guide.

Figure 3. Energy Transition in Indonesia (Delayed Transition)



3 Enhanced NDC Indonesia (UNFCC), 2022 (https://unfccc.int/sites/default/files/NDC/2022-09/23.09.2022_Enhanced%20NDC%20Indonesia.pdf)

STRESS TESTING FRAMEWORK FOR THE IMPACT OF CLIMATE RISK

Based on Figure 3, there is a shift in energy consumption from petroleum, coal, and other fossil fuels towards water, gas, and biomass.

After successfully identifying the amount of emissions from the debtor, the bank must then determine emissions from the financing provided to the debtor (Financed Emissions). To project financed emissions from each debtor, banks can estimate using the following formula:

$$Financed\ Emission = \frac{Total\ loan\ outstanding\ of\ debtor_i}{Total\ asset\ of\ debtor_i} \times Total\ emission\ of\ debtor_i$$

The bank's carbon emissions exposure for scope 3 encompasses the total financed emissions from all identified debtors. In addition, in the assessment of transition risks within credit risk, banks may reference the scope and assumptions of the analysis outlined below:

(1) Analysis Period

Short-term analysis spans a three-year period (n, n+1, and n+2), utilizing dynamic balance sheet assumptions derived from Business as Usual (BaU) data and assumptions outlined in the Bank Business Plan. Should a bank engage in a bottom-up joint stress test, the results can serve as a baseline assumption for **short-term** CRST. For Stressed scenarios, banks can employ fundamental data, variables, and assumptions from the Net Zero 2050 scenario within the available NGFS scenarios. Meanwhile, **medium** and **long-term analyses** occur at three junctures: the medium term in 2030, and the long term in 2040 and 2050, utilizing static balance sheet assumptions based on data from December 2023 (n-1). Within the long-term period, banks are mandated to undertake analysis across three primary NGFS scenarios: Orderly (NZE 2050), Disorderly (Delayed Transition), and Hot House (Current Policy). Nevertheless, banks retain the flexibility to incorporate additional scenarios while adhering to those outlined by the NGFS.

(2) Credit Portfolio Coverage

The portofolio analyzed by the bank comprises productive credit, inclusive of Micro, Small, and Medium Enterprises (MSMEs). Detailed clarification of priority sectors is provided in Section 3.1 of this document.

(3) Analysis Assumptions

During the period of analysis, the Indonesian government's transition policy is assumed to become increasingly assertive, leading to heightened carbon prices that incentivize companies to further mitigate the emissions from its business. Industries with high emissions will experience the most pronounced effects. In addition to shifts in policy direction, banks must monitor other risk drivers such as technological advancements and market sentiment changes. Transition risk catalysts are anticipated to impact carbon footprints, cash flow dynamics, and debtor incomes. It is posited that the transmission of climate risk impacts on debtor business conditions will influence the debtor's ability to fulfill obligations to the bank.

(4). Risk Transmission

According to IFRS 9 (PSAK 71) banks must establish a default definition consistent with the one utilized for internal credit risk management for the relevant financial instrument, while considering qualitative indicators. To assess potential defaults, banks employ the Probability of Default (PD) to depict management's current outlook on future prospects, ensuring neutrality and remain unbiased (i.e., neither conservatives nor optimistic).

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Banks with elevated business complexity may utilize models incorporating: Rating transition matrix, tailored to Indonesian and Asia Pacific macroeconomic factors; (2) Migration analysis, adjusted for various macroeconomic indicators such as gross domestic product (GDP), BI Rate, Government bonds, exports, imports, inflation, among others; (3) Linear regression supplemented with forward-looking information encompassing foreign exchange rates, GDP, inflation, unemployment rate, and other methodologies.

In determining a debtor's PD, one of the methods employed by the bank involves computing financial ratios[4], including profitability ratios, liquidity ratios, leverage ratios, sales/assets amount or growth rate, and activity ratios. These financial ratios categorize debtors into distinct groups (buckets)

Table 2. Bucket and PD

Bucket	Pooled PD (%)
1	0.38
2	1.19
3	2.06
4	2.99
5	4.04
6	5.24
7	6.58
8	8.11
9	9.76
10	11.53
11	13.32
12	14.87
13	16.24
14	17.75
15	19.72

corresponding to their PD values, akin to the methodology outlined in the research by Krink et al. (2008).[5]

Based on the calculation of financial ratios by the bank, PT XYZ will be further classified into Bucket 2, resulting in an initial PD of 1.19%.

Moreover, in order to calculate the **transmission of transition risk to credit risk**, it is assumed that three driving factors need consideration in measuring the impact of changes to the PD value, subsequently influencing the change from the initial PD to the adjusted PD:

i. Increase in carbon costs

Banks are required to compute the carbon costs of each debtor utilizing the debtor emissions data available. The carbon cost is determined using the following formula:

$$Carbon\ Cost = Carbon\ Price_{scenario}\ x\ amount\ of\ emissions_{A\ Company}$$

The carbon price utilized corresponds to each NGFS scenario (Net Zero 2050, Delayed Transition, and Current Policy). It is presumed that carbon costs will affect the debtor's balance sheet position, profit and loss, as well as cash flow, leading to modifications in their financial ratios (such as ROA, ROE, ICR, etc.). Consequently, these adjustments will prompt a modification in the bucket category/ debtor rating, ultimately resulting in the adjustment of the initial PD to the adjusted PD.

4 Fundamentals-Based Estimation of Default Probabilities- A Survey 2006 (https://www.elibrary.imf.org/view/journals/001/2006/149/article-A001-en.xml)

5 Krink, T., Paterlini, S., & Resti, A. (2008). The optimal structure of PD buckets. Journal of Banking & Finance, 32(10), 2275-2286.

STRESS TESTING FRAMEWORK FOR THE IMPACT OF CLIMATE RISK

ii. Increased technology or resource investment costs to transition the business towards the net-zero emission target

Aligned with the company's future business transition direction and its efforts to mitigate carbon costs, the company will invest in new technology and/or recruit expert human resources (HR). This will lead to an increase in Capital Expenditure (Capex) and Operational Expenditure (Opex). The rise in Capex and Opex will affect the cash flow position and financial balance of debtors, necessitating adjustments to their financial ratios. Consequently, this impact will prompt adjustments to the bucket category/debtor rating, thereby resulting in the modification of the old PD to the adjusted PD.

iii. Changes in macro variable assumptions based on the NGFS scenario

Changes in macroeconomic variables will require adjustments to the performance of the debtor in question, consequently impacting the bank's projections for the debtor's future financial performance. Banks must recalibrate the debtor's previous Probability of Default (PD) value to a PD adjusted figure, accounting for shifts in macroeconomic variable assumptions based on the available climate scenario. When computing the Adjusted PD Projection, factoring in the new macroeconomic variables, banks employ a debtor-level calculation approach, tailoring the PD model to suit each bank's requirements.

For instance, based on the Bank's calculations, these three factors have a negative impact on the Borrower's financial ratios. For example, PT XYZ's financial ratios include a Quick Ratio of 0.9, Debt-to-Assets Ratio of 0.9, Asset Turnover Ratio of 0.8, and Interest Coverage Ratio of -0.3, resulting in a decline to bucket 10 as shown in table 2. Based on these circumstances, there is an increase in PD, leading to an adjusted PD of 11.53%.

Banks must take into account the three factors that drive transition risk concerning credit risk when determining $PD_{adjusted}$, which serves as the foundation for further Expected Credit Loss (ECL) calculations. In the computation of ECL for each scenario–Moderate, Pessimistic, and Optimistic–the bank relies on probability assumptions provided by the OJK (Moderate: 60%, Optimistic: 20%, Pessimistic: 20%), as outlined below:

$$ECL = PD_{adjusted} \; x \; LGD \; x \; EAD$$

To enhance the precision of measuring the impact of PD changes, the Bank can develop assumptions for optimistic, moderate, and pessimistic macroeconomic scenarios, which are factored into the adjusted PD calculation model.

For instance:

- The Bank establishes the assumed **values of macroeconomic variables from the NGFS, outlined in Book 4, as a moderate scenario assumption**. Consequently, the $PD_{adjusted}$ value calculated based on these variables is termed $PD_{adjustedmoderate}$.
- The optimistic scenario is derived by **assuming macroeconomic variable values superior to those in the NGFS**. This may include assumptions of **higher economic growth and a lower exchange rate** compared to the values available in the NGFS in Book 4. The $PD_{adjusted}$ value based on the variables in this scenario is designated as $PD_{adjustedoptimistic}$.
- Conversely, the pessimistic scenario involves **assuming macroeconomic variable values worse than those in the NGFS**. This might entail assumptions of **lower economic growth and a higher exchange rate** compared to the values in the NGFS in Book 4. The $PD_{adjusted}$ value based on the variables in this scenario is termed $PD_{adjustedpessimistic}$.

STRESS TESTING FRAMEWORK FOR THE IMPACT OF CLIMATE RISK

- The Bank then computes the total ECL value by aggregating the ECL for each scenario in a weighted manner, with the probability of event value for each scenario set at 60% (moderate), 20% (optimistic), and 20% (pessimistic), respectively:

  (1). Moderate Scenario (BaU):

  $$ECL_{adjustedmoderate} = 60\% \times PD_{adjustedmoderate} \times LGD \times EAD \quad (1)$$

  (2). Pessimistic Scenario:

  $$ECL_{adjustedpessimistic} = 20\% \times PD_{adjustedpessimistic} \times LGD \times EAD \quad (2)$$

  (3). Optimistic Scenario

  $$ECL_{adjustedoptimistic} = 60\% \times PD_{adjustedoptimistic} \times LGD \times EAD \quad (3)$$

  (4). Total ECL:

  $$Total\ ECL = ECL_{adjustedmoderate} + ECL_{adjustedpessimistic} + ECL_{adjustedoptimistic} \quad (4)$$

- Furthermore, the bank calculates the total ECL value for each climate scenario and adjusts the collectability, Loan Loss Provisions (LLP), and the impact of changes in LLP formation on bank capital. Determining changes in LLP formation and their capital impact involves internal calculation standards set by the bank.

(5) Risk-Weighted Assets (RWA)

Apart from ECL formation, banks must also consider the impact of changes in debtor ratings resulting from transition risks on Risk Weighted Assets (RWA). When adjusting risk weights, banks adhere to the risk weights for claims to corporations specified in the OJK Circular letter (SEOJK), as outlined in the following table:

Table 3. Credit Risk RWA Weight

Exposure Type	Equivalent Rank				
	AAA up to. AA	A+ up to. A-	BBB+ up to BBB-	BB+ up to BB-	Less than BB-
General Corporate Exposure and Special Financing Exposure	20%	50%	75%	100%	150%

Without Ranking			
General Exposure	Corporate	Special Financing Exposure	
	Project Financing	Project Financing	Commodity Financing
• 100%; or • 85% for small and medium corporation	• Pre-Operational Stage: 130%; • Operational Stage: 100%; or • Operational Stage (high quality): 80%	100%	100%

STRESS TESTING FRAMEWORK FOR THE IMPACT OF CLIMATE RISK

The RWA adjustment will be factored into the bank's new CAR value. Detailed data[6] assumptions for carbon emission and carbon price variables, applicable for both short-term and long-term scenarios, have been adopted from the NGFS Phase 4 model. This comprehensive data is accessible in Book 4.

2) Physical Risk

The physical risk scenario evaluates the impact of a severe disaster event causing damage to the debtor's physical assets and reducing their business productivity. The analysis scope and assumptions are detailed as follows:

(1) Analysis Period

The analysis period for assessing physical risk on credit spans one year

(2) Portfolio Coverage

The bank's portfolio coverage includes consumer credit for property ownership (flood scenario) and productive credit in the agricultural, plantation, and forestry sectors (Forest Fire Scenario). Banks have the option to extend their analysis to sectors deemed susceptible to physical risk by providing the underlying assumptions.

(3) Analysis Assumptions

During the analysis period, floods and forest fires occurred in Indonesia due to drought, resulting in damage to debtors' physical assets and impacting their ability to fulfill obligations to the bank.

(4) Risk Transmission

Regarding the transmission of physical risk to credit risk for each disaster scenario:

Flood Scenario

Property Ownership Loan

To assess the decline in asset value of debtor collateral, the bank conducts a detailed analysis of the portfolio down to the debtor level. This involves categorizing collateral types based on building area as follows:

a)	Small	:	building area ≤ 21m²
b)	Medium	:	building area > 21m² to 70m²
c)	Large	:	building area > 70m²

It is assumed that flooding events in cities/districts classified as high-risk according to the IRBI BNPB will significantly impact property prices. A decrease in property prices is expected to affect the Loss Given Default (LGD) calculation by reducing collateral value, as per the following formula::

a). $LGD = 1 - Recovery\ Rate$ where

$$Recovery\ rate = \left(\frac{Collateral}{Loan\ exposure}\right)$$

Nevertheless, LGD can be formulated as follows:

b). $$LGD = \frac{Outstanding\ Loan - Collateral}{Outstanding\ loan}$$

It is important to note that relying solely on the collateral value for calculating the Recovery Rate may not always reflect reality accurately, given the potential variation in selling prices at the time of default. However, in case where recovery rate data is unavailable due to a disaster, banks can utilize the calculation formula outlined in point b).

6 The data variables utilized for the pilot CRST 2024 comprise information adopted from the NiGEM and GCAM NGFS models, with adjustments made to suit Indonesian macroeconomic conditions

STRESS TESTING FRAMEWORK FOR THE IMPACT OF CLIMATE RISK

In addition, the percentage reduction in collateral value attributable to flood disasters, categorized by building area, is as follows:

a) Small : Collateral value decreases by 7.64% in high-risk debtor areas.

b) Medium : Collateral value decreases by 4.78% in high-risk debtor areas.

c) Large : Collateral value decreases by 2.41% in high-risk debtor areas.

Banks should carefully assess the collateral's value affected by flooding and consider the impact of climate risk when evaluating collateral value.

The variable data utilized in the CRST 2024 pilot comprises information derived from the NiGEM and GCAM NGFS models, with modifications made by the OJK. Adjusted collateral values can serve as an additional foundation for calculating the $LGD_{adjusted}$ value of the debtor, potentially resulting in an increased value. However, in scenarios where the bank's last assessment was conducted in 2018 and subsequent flooding occurred in 2023 according to BNPB data, it's imperative to readjust the collateral value by referencing the percentages provided by the OJK.

Forest Fire Scenario

In the short-term scenario, it is assumed that the drought in Indonesia has led to fires in multiple areas. This fire disaster is expected to damage physical assets, incurring costs for asset revitalization, and causing a reduction in productivity. The assumption is that the fire disaster will affect the assets of business entities in cities/districts categorized as high-risk areas.

In 2019, data from the National Disaster Management Agency (BNPB) recorded that a total of 942,484 hectares were affected by forest fires, with losses amounting to Rp 75 trillion. Referring to this data, it is assumed for debtors in the agriculture, plantation, and forestry sectors that for every one hectare (1 ha) of land damaged by fire, revitalization costs will amount to approximately Rp 80 million. These incurred costs must be accounted for by the bank when considering the potential increase in Loss Given Default (LGD).

Banks are encouraged to conduct an analysis of the impact of fire disasters on other sectors by incorporating assumptions regarding potential losses that will affect the LGD value of the debtor. Subsequently, the bank can evaluate the impact of the fire disaster on the debtor's Probability of Default (PD) by assessing whether the fire-induced damage to the company's assets will reduce production productivity, thereby disrupting the debtor's cash flow and profit and loss position. To determine the extent of the decline in debtor productivity, banks can refer to historical data from existing debtors and estimates of assumed events affecting debtors obtained from surveys conducted by the bank.

a) Market Risk

The banks are required to consider the impact of climate change on market risk in relation to its capital adequacy. In this stage of CRST implementation, the transmission of this impact on the bank's capital results in changes in nominal capital value and risk-weighted assets (RWA) for market risk. Several assumptions used in the calculation of market risk within this stage of CRST include:

1. The financial instruments considered to be risk drivers are the bank's financial assets in the form of securities issued by the government and corporations in Rupiah. This consideration takes into account the significant holdings the bank has in these assets, aside from credit assets, which are also indicated to be exposed to climate change risk. Similar to the transmission in credit risk, the issuers of these securities will also be exposed to transition risks and physical risks, which will subsequently affect their performance and repayment ability, aligned

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with the macroeconomic variables of the NGFS scenario. The value of financial instruments not assumed above is considered unaffected by climate risk. For the short term (n, n+1, n+2), a dynamic balance sheet is assumed according to the targets presented in the RBB, while for the medium and long term (2030, 2040, 2050), a static balance sheet is used according to the n-1 position..

2. The scope of financial instrument activities encompasses solely securities, both government and corporate, as referenced in the applicable OJK Circular Letter concerning Market RWA. For the short term (n, n+1, n+2), a dynamic balance sheet is assumed in accordance with the targets presented in the Bank's Business Plan, while for the medium and long term (2030, 2040, 2050), a static balance sheet is maintained, following the n-1 position.

3. The time frame utilized is aligns with the stress test period employed for credit risk, employing static balance sheet assumptions for the short term, medium term, and long term (n, n+1, and n+2), and long term (2030, 2040, and 2050), referencing the period of December 2023 (n-1) as the baseline. For instance, for reporting in 2024, banks are expected to project the financial performance conditions impacted by climate-related shocks, resulting in changes to capital calculations and market risk RWA in 2024, 2025, and 2026. Meanwhile, the Long-Term Scenario spans a 30-year analysis period at three time points: 2030, 2040, and 2050.

i. Transmission of Capital

In this context, the bank forecasts changes in capital value due to assumptions such as potential increase in policy interest rates or shift in other macroeconomic variables, as per the NGFS scenario (refer to Book 4). These assumptions lead to an uptick in yield on Government and Corporate Securities and subsequently lower their current market prices, as they are marked-to-market. Consequently, this results in unrealized losses in profit/loss, ultimately diminishing bank's capital.

ii. Transmission of RWA Market Risk

In executing CRST, banks are required to evaluate significant climate-related risk drivers to gauge potential impacts on market risk positions, including sudden shocks on financial values, correlation among risk factors, and the valuation of financial assets. The instruments considered in market risk calculations are governed by OJK Circular Letter No.23/SEOJK.03/2022 regarding the Calculation of Risk-Weighted Assets for Market Risk for Commercial Banks. These instruments encompass financial instruments, exchange rate instruments, and commodities. Financial instruments encompass any contracts generating financial assets in one entity and financial liabilities or equity instruments in another. They include non-derivative financial instruments (cash instruments) and derivative financial instruments. Financial assets denote assets in the form of cash, rights to receive cash or other financial assets or commodities, or equity instruments. Financial liabilities refer to contractual obligations to provide cash or other financial assets or commodities.

At this stage of CRST, market risk calculation employs a standard approach comprising three components: calculating capital charges using the sensitivity-based method, calculating capital charges for default risk capital (DRC), and additional residual risk/add-on (RRAO). Generally, the calculation of market risk RWA in CRST adheres to applicable regulations. However, adjustments to risk class parameters

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in the calculation are assumed to occur due to climate risk. Conversely, risk classes not considered in CRST are assumed to remain static at position n-1 for long-term calculations (2030, 2040, 2050) and presumed to change in accordance with the position of the instrument value in periods n, n+1, and n+2 (as per the target value on Bank's business plan).

Meanwhile, several adjustments to the components and parameters assumed in this CRST include:

1) Sensitivities-Based Method

i) General Interest Rate Risk (GIRR) Risk Class: Here, the bank assumes that the macroeconomic scenario, referring to the NGFS, exemplifies changes in policy interest rates, altering the dimensions of the risk-free rate curve. However, the tenor dimension is assumed to remain unchanged, even in long-term CRST, with the maturity period for securities referencing the implementation point of CRST (n-1). For instance, if the bank holds Government securities with a 20-year tenor in 2023 maturing in 2043, in 2030, the tenor of these securities is assumed to stay at 20 years. In contrast, for the short term (n, n+1, n+2), the composition of securities values based on tenor adjusts to the targets outlined in the Bank's business plan.

a) Within this scenario, only delta risk is assessed. It is assumed that the scenario's variables solely affect changes in the value of financial instruments due to shifts in the value of the risk factor aligned with the risk-free interest rate curve, utilizing policy interest rates in accordance with the NGFS scenario. The sensitivity calculation adheres to relevant OJK Circular Letter concerning RWA Market, with interest rates derived from macroeconomic assumptions outlined in the NGFS scenario (Referenced in Book 4)

b) Bucket, Risk Weight, and Delta Correlation: Buckets are utilized solely for securities denominated in Rupiah, with risk weight and correlation referring to applicable regulations. The utilization of bucket and risk weight aligns with the time frame in CRST for short-term and long-term scenarios. The position of long-term securities values remains static, reflecting the CRST implementation period (n-1). Meanwhile, for the short term (n, n+1, n+2), the composition of securities values based on tenor adjusts in accordance with the targets set forth in Bank's business plan.

Table 4. Bucket and Risk Weights for Delta GIRR

Tenor (in years)	0.25%	0.5	1	2	3
Risk Weight	1.7%	1.7%	1.6%	1.3%	1.2%
Tenor (in years)	5	10	15	20	30
Risk Weight	1.1%	1.1%	1.1%	1.1%	1.1%

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ii) **Non-Securitized Credit Spread Risk (CSR) Risk Class:** In this scenario, the securities considered include **Government and Corporate Securities** that are not part of a securitization. This risk class is presumed to emerge when there's a shift in the financial standing and repayment capability of the issuer owing to climate change risks.

(a) **Delta Risk Sensitivity Calculation** The sensitivity for delta risk sensitivity is computed based on relevant regulations. Should there be an interest rate adjustment, the Bank can utilize assumptions in macroeconomic variables aligned with the NGFS scenario (as per Book 4).

(b) **Buckets, Risk Weights, and Delta Correlation:** Buckets and correlations adhere to applicable provisions. Meanwhile, to gauge the impact of climate change risks on this risk class, the bank conducted calculations

Table 5. Bucket for Delta CSR Non-Securitization

Bucket	Asset Quality	Sector
1	Investment grade (IG)	Central governments include central banks and multilateral development banks
2		Regional government, non-financial companies including BUMN, education and public administration
3		Financial companies (including state-owned financial companies)
4		Mineral basic materials companies, energy, industry, agriculture, manufacturing, mining
5		Consumer goods, transportation and warehousing, administrative activities and supporting services
6		Technology and telecommunications
7		Health companies, utilities, as well as professional and technical services and activities
8		Covered bonds
9	High yield (HY) & nonrated (NR)	Central governments include central banks and multilateral development banks
10		Regional government, non-financial companies including SOEs, education and public administration
11		Financial companies (including state-owned financial companies)
12		Mineral basic materials companies, energy, industry, agriculture, manufacturing, mining
13		Consumer goods, transportation and warehousing, administrative activities and supporting services
14		Technology and telecommunications
15		Health companies, utilities, as well as professional and technical services and activities
16	Other sectors	
17	IG Indices	
18	HY Indices	

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Table 6. Bucket Risk Weights for Delta CSR Non-Securitizations

Bucket	Risk Weight
1	0.50%
2	1.00%
3	5.00%
4	3.00%
5	3.00%
6	2.00%
7	1.50%
8	2.50%
9	2.00%
10	4.00%
11	12.00%
12	7.00%
13	8.50%
14	5.50%
15	5.00%
16	12.00%
17	1.50%
18	5.00%

assuming a reduction in the bucket size and adjustment of risk weights based on climate scenario assumptions. Here, the Bank anticipates a shift in asset quality from **Investment Grade** (IG) (across any bucket) to ***High Yield*** (HY) **& Non-Rated** (bucket as per the sector) and from **High Yield** (HY) **& Non-Rated to Other Sectors**, requiring risk weight adjustments.

2) Calculation of Capital Charges for Default Risk Capital (DRC):

In assessing the impact of climate risk on market risk calculations, the consideration of Securities as instruments needs the calculation of capital charges to gauge jump to default (JTD) risk. Here, the Bank evaluates the market value of securities based on established climate scenario assumptions. Meanwhile, capital costs for DRC stemming from other instruments entail two approaches: a static balance sheet (n-1 value position) for long-term projections (2030, 2040, 2050) and a dynamic balance sheet aligned with the instrument value in the Bank's business plan target for short-term calculations (n, n+1, n+2).

The methodology for rating migration calculations is tailored to the Bank's procedures and may refer to the Bank's internal rating system. Banks may also incorporate debtor transition pathway plans within the framework of decarbonization initiatives. For instance, the downgrade in ratings for debtors actively pursuing emission reduction targets until 2050 is anticipated to be less pronounced compared to those not engaging in such efforts.

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Table 7. Example of Components for Long-Term Credit in JTD Calculation with Reference to OJK Circular Letter No. 23/SEOJK.03/2022

Instrumen	Notional	Market and Bond Values	Profit/Loss
Bond	Face value from bond	Market value from bonds	Market value – face value
CDS	Notional value from CDS	Notional value of CDS + MtM value of CDS	MtM value of CDS
Sale of put options on bonds	Notional value of option rights	Strike value - | MtM value of option rights |	(Strike value - | MtM value of the option right |) - Notional value
Granting call option rights on bonds	0	MtM value of option rights	MtM value of option rights
Profit/Loss = Bond equivalent market value - notional. With this Profit/Loss representing the sale of a put option, a lower strike value results in a lower JTD loss.			

Table 8. Default Risk Weight for Non-securitization Based on Credit Rating Category

Credit Rating Category	Default Risk Weight
AAA	0.5%
AA	2%
A	3%
BBB	6%
BB	15%
B	30%
CCC	50%
Having no rating	15%
Default	100%

3) Calculation of Capital Charges for Residual Risk Add-On (RRAO)

In implementing the CRST, the capital charge calculation result for RRAO is assumed to be zero, considering that there are no exotic underlying instrument criteria meeting the RRAO calculation criteria. However, in the event that the bank identifies a capital charge for RRAO under normal conditions, it can utilize the static capital charge calculation for long-term projections and the capital charge for RRAO based on the instrument value at the Bank's business plan target for short-term CRST calculations..

4) Credit Valuation Adjustment (CVA)

The Bank adjusts CVA with the assumption of changes in credit quality from counterparties due to the impact of climate risk. Similar to the assumed change in the credit spread risk class bucket, the Bank anticipates a shift in asset quality from **Investment Grade** (IG) (across any bucket) **to High Yield** (HY) **& Non-Rated** (bucket according to the sector) and **High Yield** (HY) **& Non-Rated**, thereby altering the CVA calculation. Banks can utilize the CVA calculation with a static balance sheet for long-term projections and adjust capital

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charges for RRAO using a dynamic balance sheet according to the instrument value in the Bank's business plan target for short-term CRST calculations.

c) Liquidity Risk

1) Transition Risk

Climate change could significantly impact financial sector liquidity through various avenues that require consideration. Physical risks such as forest fires or floods may prompt unexpected withdrawals, leading to larger-than-anticipated outflows. With regard to transition risks, regulations tied to prudential principles might tighten, constraining funding sources from both domestic and international money markets for companies with a high carbon footprint.

Given the non-linear nature of climate change, abrupt impacts could intensify regulatory pressure, potentially profoundly affecting the banking sector. Moreover, debtors' repayment capacity may shift due to added costs linked to climate-related policy alterations, potentially impacting the bank's counterparty viability, especially if it holds investments in securities. Hence, banks must comprehensively identify how climate risks stemming from transition risks can intricately influence bank liquidity qualitatively.

At this stage, bank analysis primarily revolves around the Liquidity Coverage Ratio (LCR), necessitating banks to map the number of High-Quality Liquid Assets (HQLA) susceptible to transition risk. This encompasses valuations of government securities, non-financial corporate securities, and others, all calculated based on past positions. In conducting further quantitative exploration, banks can utilize market values aligned with assumptions employed in Market Risk calculations, employing a dynamic balance sheet and in accordance with the Bank's business plan.

By referencing projected changes in the Net Cash Outflow (NCO) value to assess the impact of physical risk on liquidity, banks can forecast alterations in the LCR ratio, both short and long term. This entails assuming the value of the NCO for the long term using a static balance sheet based on previous positions.

The climate risk can directly impact the liquidity of banks through its effects on their credit portfolios. Banks engaged in climate-vulnerable sectors such as agriculture, tourism, and energy may experience increased defaults and losses due to climate-related events like droughts, storms, or rising sea levels. This could lead to a decrease in bank liquidity, making it difficult for them to meet their short-term obligations. Broader economic impacts may also occur, disrupting supply chains, increasing business costs, and reducing consumer spending, all of which can result in a decline in economic activity and business profits. These impacts could devalue bank loan portfolios, subsequently affecting their liquidity.

The aforementioned transmission of climate risk impact on bank financial risk pertains to Conventional Commercial Banks. Should the bank operate as a Sharia Bank, adjustments to the impact on inherent risks are made based on Sharia Banks' applicable provisions and standards.

Analysis:

1. The current phase of bank analysis focuses on the Liquidity Coverage Ratio (LCR), where the Bank is tasked with mapping the potential impact of

STRESS TESTING FRAMEWORK FOR THE IMPACT OF CLIMATE RISK

transition risk drivers on High-Quality Liquid Assets (HQLA). This includes evaluating the outstanding or market value of Government Securities categorized under HQLA Level 1, as well as Non-Financial Corporate Securities categorized under HQLA Level 2A and Level 2B based on n-1 position. Should the bank pursue further quantitative analysis, it may utilize market values aligned with assumptions used in calculating Market Risk RWA, along with market values for short-term periods (n, n+1, n+2) employing a dynamic balance sheet according to the Bank's business plan.

2. By referencing the anticipated change in Net Cash Outflow (NCO) value, banks can project alterations in the Liquidity Coverage Ratio (LCR) for both short and long terms. For long-term projections, NCO values are assumed using a static balance sheet based on position n.

3. In addition to the LCR, banks may consider analyzing other liquidity ratios such as the Net Stable Funding Ratio (NSFR).

2). Physical Risk

Changes in market conditions triggered by climate change can impact the flow of bank funding sources. Climate-related events, such as natural disasters, may prompt customers to withdraw savings and seek credit for recovery financing. Studies indicate that natural disasters can introduce liquidity risks in banks, affecting their ability to fund asset increases and meet obligations as they come due. At this stage of the CRST, banks are expected to qualitatively assess the impact of climate risks stemming from physical risks on bank liquidity conditions.

The analysis scope includes the Liquidity Coverage Ratio (LCR) and Loan to Deposit Ratio (LDR), where the Bank evaluates potential Net Cash Outflow and Third Party Funds positions influenced by physical risk drivers such as floods and forest fires during stressful conditions:

(1) Projected increases in Total Cash Outflow due to customer needs during disasters are assessed. For instance, the bank can map potential customer withdrawals in high-risk flood and forest fire areas.

(2) Projected decreases in Total Cash Inflow due to disruptions in debtor repayment capacity in affected sectors or regions are considered. In extreme scenarios, the bank can assume a halt in debtor installment payments in the affected sector or region for a specified period.

(3) In the event that the bank intends to delve deeper into quantitative analysis, it may refer to the projection of changes in High-Quality Liquid Assets (HQLA) as outlined in the transition risk impact calculation guide on liquidity risk for position n (the CRST implementation position) in the previous section.

(4) Changes in Net Cash Outflow positions stemming from increased Cash Outflow and decreased Cash Inflow are used, as in points (1) and (2), to project alterations in deposit and loan positions. Banks may supplement their analysis with other liquidity ratios such as NSFR. Besides being used for LCR projection calculations, these projections of Deposits and Loans can also be utilized in calculating the Loan to Deposit Ratio (LDR) for the one-year period at time n.

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(5) Banks may supplement their analysis with other liquidity ratios such as NSFR.

d) Operational Risk

1) Transition Risk

In assessing the transmission of transition risk to operational risk, it is assumed that shifts in policy, technology, and consumer and investor preferences and behaviors will prompt banks to adapt their products, organizational structures, and infrastructure to support their operations. This adaptation will impact:

1. Bank business scale and organizational structure.
2. Increased complexity of business processes.
3. Complexity of information technology.
4. Investments in IT infrastructure and buildings to reduce carbon emissions.
5. Increased costs associated with training and development of relevant human resources.

The costs stemming from these operational adjustments will affect cash flow positions, profit and loss statements, income statements, and the bank's balance sheet. In conducting the transition risk analysis, banks must consider the transition plan towards net zero emissions (NZE) determined by bank management. This entails paying attention to emission reduction targets and the steps taken to achieve them (based on details of emission reduction scope 1, 2, or 3 for banks). Actions include participation in carbon exchanges, plans to adjust bank financing targets for sectors with high emissions, verified Corporate Social Responsibility (CSR) efforts aimed at reducing emissions, and other commitments supporting the Indonesian Government's NZE target by 2060.

Should the bank not have set an NZE target, it refers to the reduction plan carbon emissions outlined in the Sustainable Finance Action Plan, submitted to the OJK. This includes specifics on initiatives planned to achieve the target and their potential impact on operational costs and the bank's financial performance.

2) Physical Risk

Flood Scenario

For the physical risk associated with a flood disaster, the assumption is that such an event can directly or indirectly impact bank assets and operational activities, resulting in additional costs for the bank. The analysis stages banks need to undertake include:

(1) Mapping bank assets located in areas with a high flood risk.

(2) Estimating losses experienced by the bank based on historical data on flood-related losses impacting asset damage and operational disruptions.

(3) Projecting losses for each asset situated in high flood risk areas, assuming simultaneous flooding within a one-year observation period.

(4) Projecting additional insurance costs for buildings potentially affected by flooding.

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Banks are expected to develop follow-up plans to address these risks as part of this analysis. It's assumed that a certain number of extreme climate events occur annually in cities and regencies categorized as high-risk flood areas, as per data from the Indonesian Disaster Risk Index (IRBI) issued by the Disaster Management Agency (BNPB) outlined in Book 5 of the guidebook.

Forest Fire Scenario

Regarding the physical risk of a forest fire disaster, the assumption used is that such events can directly or indirectly impact to bank's assets or disrupt its operations, leading to additional operational costs incurred by the bank. The analysis stages include:

(1) Mapping out bank branch offices located in areas with a high risk of forest fire due to climate change.

(2) Estimating losses experienced by the bank based on historical data on forest fire-related losses impacting asset damage and operational disruptions.

(3) Projecting losses for each asset situated in high forest fire risk areas, assuming the disasters occur simultaneously within a one-year observation period.

(4) Projecting additional insurance costs for buildings potentially affected by forest fire.

As with the forest fire scenario, banks are expected to develop follow-up plans to mitigate these risks. It's assumed that a certain number of extreme climate events occur annually in cities and regencies categorized as high-risk areas, based on data from the Indonesian Disaster Risk Index (IRBI) issued by the Disaster Management Agency (BNPB) as outlined in Book 5 of the guidebook.

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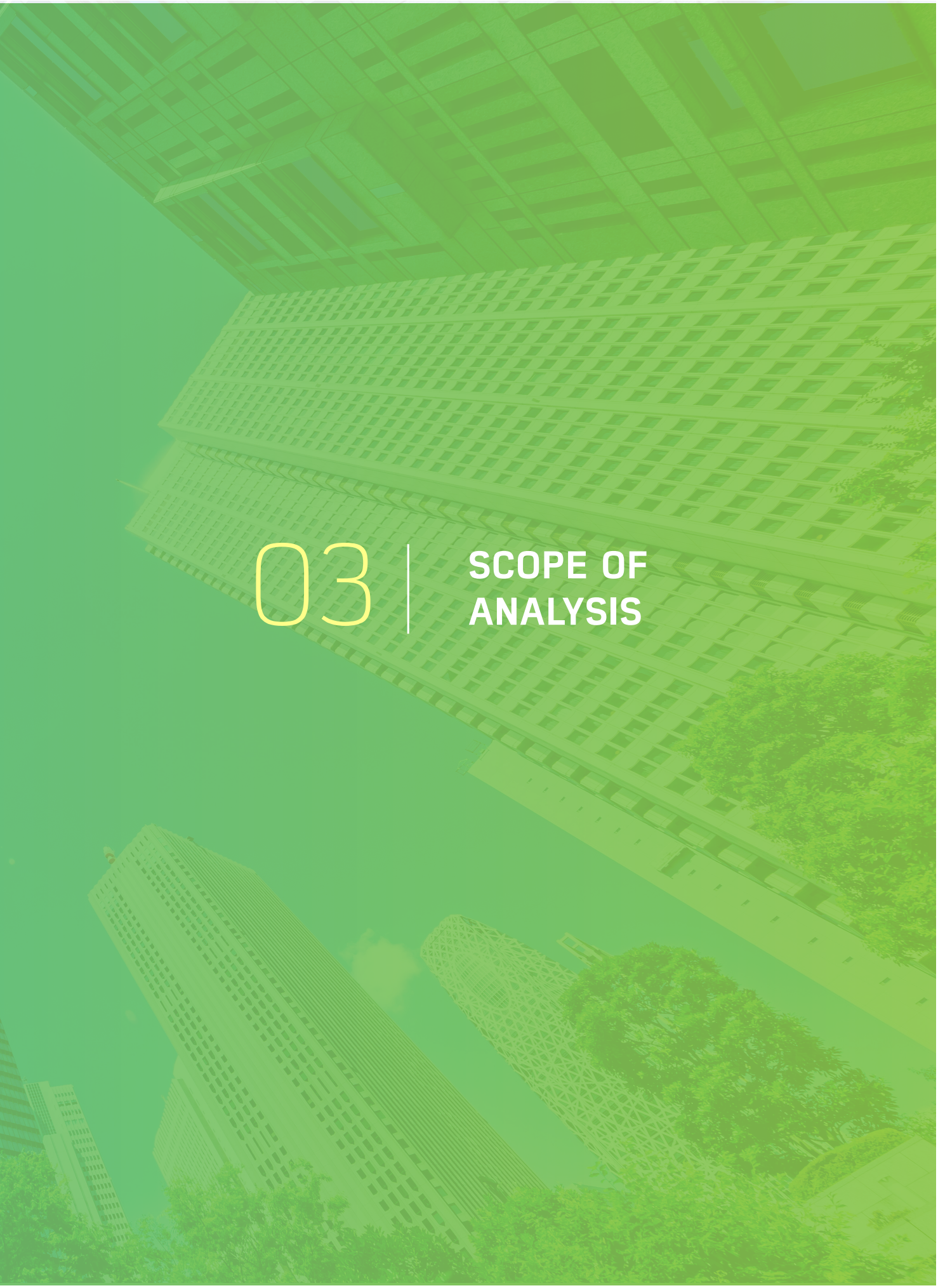
BANKING CLIMATE RISK MANAGEMENT AND SCENARIO ANALYSIS 2024



03 | SCOPE OF ANALYSIS

3.1 PRIORITY SECTORS

SCOPE OF ANALYSIS

When conducting a CRST analysis, certain priority sectors serve as reference points. These sectors may face heightened transition risks due to varying characteristics of their transition pathways. These pathways are influenced by factors such as demand for output, availability of lower carbon substitutes, and the presence of emission-reducing technologies.

The government has identified five main sectors for reducing greenhouse gas (GHG) emissions in line with the Nationally Determined Contributions (NDC) targets. These sectors are Energy, Waste Disposal, Industrial Processes and Product Use (IPPU), Agriculture, and Forestry. Correspondingly, priority sectors with the highest GHG emission intensity have been identified for portfolio analysis in the 2024 CRST Pilot. These sectors include:

1. Mining and Quarrying
2. Electricity, Gas, Steam/Hot Water, and Cold Air Procurement
3. Construction
4. Transportation and Warehousing
5. Agriculture, Forestry, and Fisheries
6. Manufacturing Industry Sector (with a preference for sub-sectors such as metal industry, paper industry, chemical industry, and textile industry)
7. Property Ownership Consumer Loan

SCOPE OF ANALYSIS

In the event that the total credit allocated to the priority sectors listed above does not reach 50%, the bank is required to include analysis for additional sectors. However, it remains mandatory for banks to analyze all the aforementioned priority sectors.

Banks must adhere to financial balance sheet assumptions specified by the OJK. For the CRST analysis period spanning 2024-2026, banks must utilize dynamic balance sheet assumptions based on the balance sheet data for December 2023, 2024, and 2025 as outlined in the Bank's business plan submitted to the OJK. Meanwhile, for the long-term observation period encompassing 2030, 2040, and 2050, banks can employ static balance sheet assumptions reflecting the financial balance sheet position at the end of December 2023 as the initial position for analysis. For the long term, it is assumed that there will be no loans and maturing positions, and the entire existing loan portfolio is anticipated to be rolled over throughout the assessment period.

If the bank has established a clear climate strategy with measurable commitments or goals outlined in its transition plan per the Sustainable Finance Action Plan submitted to the OJK, banks can consider adjusting the portfolio mix for the two long-term scenarios (Net Zero 2050 and Delayed Transition). This commitment may include an NZE target for a specific year or a plan to gradually exit a particular business sector after a designated period.

It's important to note that banks are not allowed to assume growth or reduction in the balance sheet value for long-term scenarios, irrespective of any projected changes in the portfolio mix.

SCOPE OF ANALYSIS

Banks have the flexibility to adopt various modeling methodologies and assumptions that are deemed more advanced and suitable for their business operations when conducting both short-term and long-term CRST analyses. However, banks are required to provide a detailed explanation of the methodologies and assumptions utilized and report them in a document to the OJK. This ensures transparency and enables regulatory oversight of the analysis conducted by banks

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BANKING CLIMATE RISK MANAGEMENT AND SCENARIO ANALYSIS 2024

04 | CRMS REPORTING TEMPLATE

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CRMS REPORTING TEMPLATE

KBMI 3 and 4 banks, along with banks that are members of the Initial Phase, are mandated to submit reports along with executive summaries, following the format provided by OJK in Book 6 of the guidebook, **no later than July 31, 2024**. Subsequently, the bank must include relevant supporting documents pertaining to the CRST process for further review by OJK. These reported documents must obtain approval from the respective Bank Director. If deemed necessary, OJK reserves the right to request additional information or documents to conduct a thorough review of the reporting results submitted by the bank..

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