



BANK NEGARA MALAYSIA
CENTRAL BANK OF MALAYSIA

Climate Risk Management and Scenario Analysis

Supplemental Guidance

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PART A OVERVIEW

Introduction

- 1.1 This document is a supplemental guidance to the Climate Risk Management and Scenario Analysis policy document issued on 30 November 2022, which outlines the key principles and requirements financial institutions must comply with to manage climate-related risks.
- 1.2 The main objective of this supplemental guidance is to provide non-exhaustive case studies and reference resources that are useful to financial institutions as they continue to strengthen their resilience to climate-related risks.
- 1.3 This guidance is a living document that may be periodically edited and updated, when necessary, in response to maturing industry practices.

PART B CASE STUDIES

Case study 1: An illustrative example of setting climate-related targets by a financial institution

A few financial institutions in Malaysia have established internal climate-related targets that are in line with global and national commitments¹ to strengthen their efforts in building resilience against climate change and supporting the transition towards a low-carbon economy. Examples include medium-term targets such as carbon neutral by 2030 (Scope 1 and 2 emissions) and long-term targets such as net-zero overall greenhouse gas (GHG) emissions by 2050 (Scope 1, 2 and 3 emissions). These internal targets are supported by a long-term transition roadmap articulating action plans and appropriate metrics to monitor performance of targets over the short- and long-term time horizons. The example below provides some practical steps when setting targets for a financial institution.

Process of setting climate-related targets

<p>Set Agenda on Climate Change</p>	<ul style="list-style-type: none"> Establishment of a committee consisting of board members and CEO to set the agenda for climate risk Agenda incorporates strategy, roadmap and monitoring of action plans such that there is alignment and integration of ESG and climate change strategies within the financial institution Make climate change a strategic priority and integrate climate-related risks into decision making and risk management 		
<p>Assessment on Impact of Climate Change to Business Operations</p>	<ul style="list-style-type: none"> Understand key climate-related issues faced by stakeholders and assess impact to the business 		
<p>Metrics</p>	<ul style="list-style-type: none"> Develop climate-related metrics on emissions and risk metrics on physical and transition risks for continuous monitoring to ensure overall climate targets are achieved 		
<p>Targets</p>	<p>Short- and Medium-term targets</p> <ul style="list-style-type: none"> Interim targets and action plans to monitor performance and targets over a few years 	<p>Long-term targets</p> <ul style="list-style-type: none"> Climate risk-related targets are aligned to achieve net-zero GHG emission by 2050 	<p>Key Performance Indicators</p> <ul style="list-style-type: none"> Targets embedded into performance scorecard Targets translated into risk appetite using appropriate risk metrics

¹ For example, the Paris Agreement and the 12th Malaysia Plan.

Source: Adapted from selected financial institutions

Case study 2: The due diligence process of a financial institution which incorporates climate-related risk assessment during onboarding and annual review of material exposures

With the increasing threats of climate change and the broader environmental degradation, the financial institution addresses these issues by incorporating environmental, social and governance (ESG) standards into its day-to-day business operations. The financial institution adopts an inclusionary approach to support its borrowers towards implementing higher ESG standards and practices through customer engagement initiatives and nurturing programs.

The financial institution has in place an ESG Policy & Assessment Framework supported by a rating system to rate and assess borrowers in the Business and Corporate Banking units during the initial credit application or annual credit review process. Borrowers evaluated are subjected to an initial screening as outlined below–

- i. screening of potential borrowers against a general “exclusion list” which includes activities that are illegal, ethically unacceptable, or have an adverse impact on the environment “E”;
- ii. ESG rating of existing and potential borrowers to determine the inherent risk (business activities fall within higher “E” risk sectors/sub-sectors); and
- iii. determining the final risk rating (after considering risk mitigation undertaken by borrower) and recommendations to borrower for orderly transition.

In general, the financial institution would exclude potential new applicants with business activities listed in the “exclusion list” as it is not in line with its climate risk management strategy and risk appetite.

When assessing on “E” under the ESG framework, borrowers that do not fall within the general exclusion list and existing borrowers will be rated by the “E” risk rating system to determine the inherent “E” risks. The list of higher risk sectors and sub-sectors would be identified through the financial institution’s internal “E” risk scoring system, which screens over 60 broad economic sectors and sub-sectors in Malaysia against several inherent “E” risks listed in the table below.

Examples of parameters to assess different economic sectors/sub-sectors’ inherent “E” risks

Toxic emissions	GHG emissions	Other air pollutants (e.g., soot and dust)	Effluent monitoring & control
Hazardous/non-hazardous waste	Loss of habitat/deforestation	Land contamination/erosion	High energy/water usage

Borrowers with high inherent risk ratings are further evaluated to ascertain if risk mitigating actions have been carried out to reduce the inherent risk. Additional verification is carried out to determine the adequacy of a borrower’s policies and practices on “E”,

relevant certifications² and contribution to climate change mitigation and adaptation which serves as evidence and indicators for assigning a final customer-level “E” rating of either “High”, “Medium” or “Low”.

Borrowers with a final rating of “High” ESG risk are encouraged to implement mitigation plans to address the key and residual “E” risks, in line with the financial institution’s inclusive approach to support customers in transitioning towards more sustainable practices.

Source: Adapted from selected financial institutions

² Examples of verification indicators and certifications are the Malaysian Sustainable Palm Oil (MSPO)/Roundtable on Sustainable Palm Oil (RSPO) (for the palm oil sector) and Programme for the Endorsement of Forest Certification (PEFC)/Forest Stewardship Council (FSC) (for the forestry sector). Other general certifications that the financial institution considers include, but are not limited to, the ISO14001 – Environmental management, ISO45001.

Case study 3: Management of physical risk

A. Management of physical risk by insurance and takaful operators (ITOs)

In Malaysia, the primary concern of ITOs in relation to climate-related risks would be the concentration of their insured/covered risks to geographical areas that are prone to flooding. Due to climate change, the geographical location of these high flood risk areas may change over time and utilising reliable geographic risk tools to accurately identify high risk areas is crucial for managing climate-related risks.

Several ITOs have in place tools to identify and monitor the concentration of portfolio in areas susceptible to climate-related risks and enable the ITOs to take prompt corrective actions to reduce any adverse financial impact arising from increased claims that have to be paid out. The following is an example of how an ITO identifies and manages its concentration to flood risk—

Step 1: Identify geographical areas with higher climate-related risks by using geographic risk tools, which are scientifically developed and continuously updated to incorporate new data and information on sustainability as well as climate and environmental change.

Step 2: Define the size and boundary of a geographical area with high climate-related risks and set limits/thresholds for maximum exposures that are permitted for each area.

Step 3: Put in place mitigation plans and underwriting guidelines to manage or re-balance its portfolio in the event that certain limits/thresholds are breached. For example, to exclude certain coverages, increase deductibles, obtain reinsurance/retakaful cover or increase premium/contribution rates on the new risks.

Step 4: Monitor real-time accumulation of all the risks located in geographical areas with high climate-related risks and execute mitigation plans once exposures are approaching the limits that have been set.

B. Identification and measurement of physical risk by reinsurers

Several reinsurers cover a number of perils and lines of business around the world. A reinsurer may measure and monitor material natural catastrophe exposures by country and by peril (known as “Scenarios”). The importance of the different scenarios varies depending on local hazard, insured values and reinsurer’s market share in the region.

The reinsurer uses historical data and forward-looking assumptions as inputs into external or internally developed models to run specific scenarios (e.g., flood, typhoons and drought) to estimate the potential losses arising from claims to be paid out in geographical locations that it is exposed to.

In the event that the expected losses of a specific scenario exceed a certain materiality threshold, the scenario will be identified as “Watchlist” and further analysis such as stochastic simulations will be conducted to determine the likelihood of experiencing losses at various levels. “Watchlist” scenarios that have high likelihood of occurrence would be monitored closely and appropriate measures would be put in place to mitigate the risk.

Source: Adapted from selected financial institutions

Case study 4: Management of transition risk

Transition risk to Malaysian palm oil sector due to imposition of mandatory Malaysian Sustainable Palm Oil (MSPO) certification

Sustainability certification schemes were introduced to the palm oil industry as a response to address the associated negative environmental³ and social impacts. As one of the largest palm oil producers in the world, the government has mandated industry players to be certified on the requirements of the Malaysian Sustainable Palm Oil (MSPO) certification. Organised smallholders, oil palm plantation and millers were required to be MSPO certified from 1 January 2020 while independent smallholders were required to attain the certification from 1 January 2021. Processing facilities and other palm oil downstream activities were required to comply with the voluntary certification of Supply Chain Certification Standard (SCCS) which has been incorporated into the 2022 MSPO revised standard. This certification aims to enhance the credibility of sustainable and responsible management in the palm oil sector.

Event driven stress test to assess exposures

The failure of the financial institution's borrowers involved in the palm oil sector in meeting the mandatory MSPO certification would result in financial penalties and revocation or suspension of their operating licenses. Based on the event driven stress test on the financial institution's risks, this will subsequently affect borrowers' repayment capabilities leading to higher credit risk and increased impairment provisions incurred by the financial institution. The spill-over effect of transition risk may also lead to higher liquidity risk arising from reduction in repayments and increased drawdowns of deposits from this segment.

Nurturing customers to encourage transition to MSPO certification

To ensure an orderly transition and to minimise potential adverse financial impact, the financial institution collaborated with the relevant agencies such as the Malaysian Palm Oil Board (MPOB) and Malaysian Palm Oil Certification Council (MPOCC) to encourage and facilitate relevant borrowers to be MSPO certified in accordance with the compliance timeline. This included developing products and programs centred around sustainability to encourage adoption of best practices to enhance their marketability to sustainable focused buyers. The financial institution also allocated additional funds for financing to borrowers to facilitate the certification efforts.

Source: Adapted from selected financial institutions

³ Which includes reduction of GHG, efficient use of energy and zero burning practices.

Case study 5: Liquidity risk management arising from climate-related risks

Background

Climate change crisis has profound implications to the agriculture sector in the Malaysian economy. Floods caused by illegal deforestation, seasonal monsoons and La Nina, have worsened due to climate change and if not addressed, could severely impact the agriculture sector and economy. A financial institution with large exposures to the agriculture sector had accounted for climate-related risks in its liquidity stress testing.

Scenario/Event driven stress testing

The financial institution's risk management department incorporates climate-related risks in its stress testing/scenario analysis to assess any potential adverse impact to the financial institution's liquidity position. Important climate-related risk drivers such as physical risk and related macroeconomic factors have been considered when generating the stress scenarios that enabled the financial institution to quantify the liquidity risk impact and establish a range of potential risk mitigation strategies.

Liquidity impact to the financial institution

i. Reduction of cash inflows

As a financial institution involved in financing the agricultural sector in Malaysia, the financial institution could face financial losses arising from constant and massive flooding due to the inability of its customers to meet their financing repayments. This would significantly impact the financial institution's future cash inflows.

ii. Impact to cash outflows

The cash outflows of a financial institution may increase due to a surge of deposit withdrawals as affected individuals, farmers and agricultural companies require additional financial resources for repairs arising from damage to crops and assets.

Risk management process in managing liquidity risk

The financial institution has designed a contingent funding plan (CFP) to manage the potential liquidity risk arising from the impact of the financial institution's cash inflow and outflow to ensure adequate sources of liquidity are in place to meet the funding requirement under various liquidity stress events. In the event where there are sudden large deposit withdrawals triggering CFP, the financial institution may utilise the various available contingency funding options that are available to address its liquidity needs.

Source: Adapted from selected financial institutions

Case study 6: End-to-end risk management process of internal operations and outsourced functions

A. Managing internal environmental impact

Risks arising from climate change may materialise through the operation of the financial institution's infrastructure, business and premises which may be exposed to physical risk via climate-related events and/or as a result of the financial institution's own activities that contribute towards climate change. To manage this, the financial institution has put in place risk management processes to integrate climate-related risks into its overall risk management framework.

Risk Identification & Assessment
<p>Identifying potential sources of climate-related risks to internal operations, which include–</p> <ul style="list-style-type: none"> • vulnerability of the financial institution's physical assets to climate related events • business disruption due to climate events causing office buildings to be inaccessible • transition risk to a low-carbon economy due to policy, regulatory and legal changes, technology shifts and changing market demand <p>Conducting assessment to ascertain impact of climate change from the following perspectives–</p> <ul style="list-style-type: none"> • inside-out: assessing the environmental impacts from business operations and service delivery • outside-in: assessing the vulnerability of the business operations, assets and infrastructure to the impact of climate-change events
Risk Measurement & Scenario Analysis
<ul style="list-style-type: none"> • Processes are in place to calculate Scope 1 and 2 emissions for its operations • Methodologies including emissions calculations, metrics and scenarios will gradually be developed over time, including the computation of Scope 3 emissions in the future
Risk Controls & Mitigation
<ul style="list-style-type: none"> • Incorporating climate-related criteria to facilitate decision making when determining a suitable location for new physical building, relocating from a flood-prone location, implementing adaptation measures in areas prone to flooding and putting in place initiatives to reduce energy consumption
Risk Monitoring & Reporting
<ul style="list-style-type: none"> • Mitigation controls that have been put in place are monitored against targets for effectiveness and reported to the relevant committees for oversight

B. Managing the supply chain

The financial institution's commitment to sustainability efforts extends beyond its internal operations and also requires its entire business value chain to be environmentally resilient. The financial institution has plans in place to work with its suppliers by building capabilities through strong partnerships.

Risk Identification & Assessment
<p>Identifying potential sources of climate-related risks, which include–</p> <ul style="list-style-type: none"> • susceptibility of the third-party vendor's location to climate related events • business and supply chain disruption due to climate events that could impact its SLA with bank • legal risks arising from the vendor's activities including its ESG practices <p>Conducting risk assessment on the potential impact of climate change and the likelihood that it will recur via the physical, transition and liability risk, which include –</p> <ul style="list-style-type: none"> • the third-party vendor's time-bound action plan to improve ESG practices • the ranking or risk rating of the third-party vendors (in particular for climate-related risk factors), on top of their performance and operational resiliency
Risk Measurement & Scenario Analysis
<p>Risk measurement for third-party vendors include–</p> <ul style="list-style-type: none"> • carbon emissions from third-party vendors with regards to procurement of goods and services • compliance with applicable regulations related to the protection of the environment • performance of the third-party vendor against the SLA with the bank <p>Other metrics and measures are being developed (including scenario analysis and stress testing) and will evolve over time as more data becomes available.</p>
Risk Controls & Mitigation
<p>All potential third-party vendors will be subjected to the financial institution's Supplier Code of Conduct. The Code sets the minimum standards for environmental impacts including establishing sustainable operational practices, which includes–</p> <ul style="list-style-type: none"> • establishing a sustainability policy appropriate to the size, nature and complexity of the operations and addresses the preventing measures on the impact of the operations • complying with all applicable regulations related to the protection of the environment, particularly climate-related risks • demonstrating commitment to transition to low carbon as well as having an effective internal control environmental management program and staff are adequately trained for managing organizational environmental performances
Risk Monitoring & Reporting
<ul style="list-style-type: none"> • The exposure of climate-related risks forms the third-party vendor's profile and are reported to the appropriate Committees for effective oversight

Source: Adapted from selected financial institutions

PART C REFERENCE RESOURCES

BCBS

- Climate-related Financial Risks: A Survey on Current Initiatives, 2020
- Climate-related Risk Drivers and Their Transmission Channels, 2021
- Climate-related Financial Risks – Measurement Methodologies, 2021
- Principles for the Effective Management and Supervision of Climate-related Financial Risks, 2022

Bursa Malaysia

- Sustainability Reporting Guide (3rd edition), 2022

Climate Financial Risk Forum (CFRF)

- CFRF Guide Disclosures Chapter, 2020
- CFRF Guide Scenario Analysis Chapter, 2020
- CFRF Guide Risk Management Chapter, 2020
- CFRF Guide Risk Appetite Statements, 2021
- CFRF Guide Risk Management Use Cases, 2021
- CFRF Guide Climate Data and Metrics, 2021

IAIS

- Application Paper on the Supervision of Climate-related Risks in the Insurance Sector, 2021

International Sustainability Standards Board (ISSB)

- Exposure Draft on IFRS S1 General Requirements for Disclosure of Sustainability-related Financial Information, 2022
- Exposure Draft on IFRS S2 Climate-related Disclosures, 2022

IPCC

- Sixth Assessment Report Climate Change 2021: The Physical Science Basis, 2021
- Sixth Assessment Report Climate Change 2022: Impacts, Adaptation and Vulnerability, 2022

Joint Committee on Climate Change (JC3)

- TCFD Application Guide for Malaysian Financial Institutions, 2022

NGFS

- Overview of Environmental Risk Analysis by Financial Institutions, 2020
- Guide to Climate Scenario Analysis for Central Banks and Supervisors, 2020
- NGFS Climate Scenarios for Central Banks and Supervisors, 2020
- NGFS Climate Scenarios for Central Banks and Supervisors, 2020
- Status Report on Financial Institutions' Practices with Respect to Risk Differential between Green, Non-green and Brown Financial Assets and a Potential Risk Differential, 2020
- Guide for Supervisors: Integrating Climate-related and Environmental Risks into Prudential Supervision, 2020
- Climate-related Litigation: Raising Awareness About a Growing Source of Risk, 2021
- Progress Report on the Guide for Supervisors, 2021

- Scenarios in Action: A Progress Report on Global Supervisory and Central Bank Climate Scenario Exercises, 2021
- Progress Report on the Guide for Supervisors, 2021
- Progress Report on Bridging Data Gaps, 2022

Partnership for Carbon Accounting Financials (PCAF)

- Global GHG Accounting and Reporting Standard for the Financial Industry, 2020

TCFD

- Recommendations of the TCFD, 2017
- TCFD Status Report, 2021
- Guidance on Metrics, Targets and Transition Plans, 2021
- Annex: Implementing the Recommendations of the Task Force on Climate-related Financial Disclosures, 2021
- TCFD Overview Booklet, 2021

UNEP-FI

- Exploring Metrics to Measure the Climate Progress of Banks, 2018
- Navigating a New Climate: Assessing Credit Risk and Opportunity in a Changing Climate, 2018
- TCFD Report Playbook, 2020
- Charting a New Climate: TCFD Banking Programme Report, 2020
- Guidelines for Climate Target Setting for Banks, 2021
- The Climate Risk Landscape: Mapping Climate-related Financial Risk Assessment Methodologies, 2021

Science Based Targets Initiative

- Financial Sector Science-based Targets Guidance, 2022