



BANK NEGARA MALAYSIA
CENTRAL BANK OF MALAYSIA

Climate Risk Management and Scenario Analysis

Exposure Draft

Applicable to:

1. Licensed banks
2. Licensed investment banks
3. Licensed Islamic banks
4. Prescribed development financial institutions
5. Licensed insurers, including professional reinsurers
6. Licensed takaful operators, including professional retakaful operators
7. Financial holding companies

This exposure draft sets out the proposed requirements and guidance on climate risk management and scenario analysis. The proposed specific requirements and expectations are to ensure that financial institutions strengthen the management of financial risks stemming from climate change to enhance the resilience of the financial sector against climate-related risks and to facilitate an orderly transition to a low-carbon economy.

This exposure draft complements the Climate Change and Principle-based Taxonomy (CCPT), the Value-based Intermediation Financing and Investment Impact Assessment Framework (VBIAF) and the VBIAF Sectoral Guides.

Submission of feedback for the exposure draft –

- a. The Bank invites written feedback on the proposals in this exposure draft, including suggestions for specific issues or areas to be clarified or elaborated further and alternative proposals that the Bank should consider. The responses should be constructive and supported with clear rationale and appropriate evidence. Where appropriate, please specify the applicable paragraph and provide examples and illustrations.
- b. Feedback received may be made public unless confidentiality is specifically requested for the whole or part of the submission.
- c. In addition to providing general feedback, all financial institutions are expected to respond to the specific questions set out throughout this exposure draft.
- d. Feedback must be submitted electronically by **31 March 2022** and must be in the prescribed format. Please use accompanying excel file.
- e. Feedback must be submitted by emailing climatechange@bnm.gov.my and addressed to Encik See Thuan Eu and Encik Nik Faris Nik Sallahuddin.

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ABBREVIATIONS

BCBS	Basel Committee on Banking Supervision
CAF	Capital Adequacy Framework
CCPT	Climate Change and Principle-based Taxonomy
CoP	VBI Community of Practitioners
ESG	Environmental, Social and Governance
GHG	Greenhouse Gas
IAIS	International Association of Insurance Supervisors
ICAAP	Internal Capital Adequacy Assessment Process
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
ITOs	Insurers and takaful operators, including professional reinsurers and professional retakaful operators
JC3	Joint Committee on Climate Change
NGFS	Network of Central Banks and Supervisors for Greening the Financial System
NDC	Nationally Determined Contributions
TCFD	Task Force on Climate-Related Financial Disclosures
UNEP-FI	United Nations Environment Programme Finance Initiative
VBI AF	Value-based Intermediation Financing and Investment Impact Assessment Framework

PART A OVERVIEW

1. Introduction

- 1.1 Climate change is a complex collective action problem that may create material financial risks to impact the safety and soundness of financial institutions, giving rise to broader implications on the stability of the financial system and sustainable economic growth.
- 1.2 In view of the risks that climate change poses for financial stability in the long run, the Bank expects financial institutions to respond –
- (a) urgently¹, through taking early actions to implement changes towards building climate resilience;
 - (b) strategically, by accounting for how actions today affect future outcomes under a range of scenarios and time horizons over the long term;
 - (c) comprehensively, when strengthening the risk management frameworks to address these financial risks from climate change (hereinafter climate-related risks). In particular, financial institutions are to manage these risks by recognising the distinctive² elements of climate-related risks: far-reaching in breadth and magnitude, foreseeable but highly complex due to uncertainty, nonlinearity, irreversibility and dependency on short-term actions; and
 - (d) holistically, through greater collaboration across a wider spectrum of stakeholders³ when managing the systemic impact of climate-related risks. Financial institutions stand to gain from greater collective coordination and harmonisation, notably through industry-wide platforms⁴, including that facilitated by the Joint Committee on Climate Change (JC3) and VBI Community of Practitioners.
- 1.3 Recognising the characteristics of climate-related risks, this policy document sets out the principles and specific requirements on the management of climate-related risks by financial institutions, with the aim to enhance the resilience of the financial sector against climate-related risks. The principles are tabulated in Appendix 1.
- 1.4 The Bank expects financial institutions to have an effective risk management framework that integrates all material risks, which extends to climate-related risks, including the interactions with other risk types. In this regard, the specific requirements in relation to climate-related risks complement the Bank's existing requirements for financial institutions to manage material risks and provide further insights on the consideration of climate-related risks as an integral part of financial institutions' governance, risk management, ICAAP, stress testing and disclosure practices.
- 1.5 Financial institutions also play a pivotal role in driving an orderly transition towards a low-carbon economy. This in turn contributes to longer-term climate resilience of financial institutions and the financial sector. During the transition process, the Bank expects financial institutions to have due regard to actions that they should take to –
- (a) mitigate risks surrounding economic dislocation that may arise from the abrupt withdrawal of financing from economic sectors or activities that are vulnerable to climate-related risks, which may have potential adverse feedback loops to the wider economy and financial stability;

¹ In view of the intensifying pace of climate change that is markedly narrowing the finite window for limiting global warming (IPCC).

² For additional information, refer to CCPT as well as the reference list in Part E of this policy document.

³ A diverse set of global and domestic stakeholders including households, firms, governments, regulators, the financial sector, civil society, investors, multilateral institutions, standard-setting bodies, industry associations and scientific communities.

⁴ Industry-wide platforms can foster sharing of information and a range of practices, collecting data and developing common models. An example is the CCPT Implementation Group.

- (b) support transition⁵ by customers towards more sustainable practices;
- (c) expand the financing of climate-related opportunities and sustainable economic activities, including offering new solutions, markets and products to support a low-carbon economy; and
- (d) better align business strategies and climate-related targets in supporting global and national commitments⁶ to address climate change.

2. Applicability

- 2.1 This policy document is applicable to financial institutions as defined in paragraph 5.2.

3. Legal Provisions

- 3.1 This policy document is issued pursuant to –
- (a) sections 47, 143 and 266 of the Financial Services Act 2013 (FSA);
 - (b) sections 57, 155 and 277 of the Islamic Financial Services Act 2013 (IFSA); and
 - (c) sections 41, 116 and 126 of the Development Financial Institutions Act 2002 (DFIA).

4. Effective Date

- 4.1 This policy document comes into effect on 1 June 2022 subject to the following transitional specifications:
- (a) paragraphs 7, 8, 9, 10 and 11, with respect to governance, strategy, risk appetite and risk management shall come into effect on 31 December 2023; and
 - (b) paragraphs 9, 10, 11, 12 and 13, with respect to scenario analysis, metrics and targets and disclosure shall come into effect on 31 December 2024.

Question ED-1

Would your institution face any specific challenges to comply with the effective dates in paragraph 4.1? Please indicate a reasonable timeline and elaborate on the specific challenges as well as provide suggestions that could be considered for your institution to comply with the requirements. Please indicate any additional aspects that the Bank should consider when setting transitional arrangements.

Additional questions for Development Financial Institutions (DFIs)

Question ED-DFIs-1

Are there specific challenges in meeting requirements of certain paragraphs of this policy document (e.g., climate-related risks impact on ability to discharge mandate, challenges in developing strategies to integrate climate-related factors into business operations such as product design, staff performance and customer onboarding)? If yes, please provide more information on the challenges and corresponding mitigation measures, as well as the transition strategy, including a proposed transition period.

⁵ In the CCPT, classification of Categories 'C2' and 'C3' represent progressive stages of transitioning as customers take remedial measures under Guiding Principle 4 (GP4) to transition towards a low-carbon and climate-resilient economy by adopting sustainable practices. These remedial efforts should contribute towards the outcomes in which unacceptable risks to the climate and/or environment can be eliminated or significantly reduced.

⁶ For example, the Paris Agreement and the 12th Malaysia Plan.

5. Interpretation

- 5.1 The terms and expressions used in this policy document shall have the same meanings assigned to them in the FSA, IFSA or DFIA, as the case may be, unless otherwise defined in this policy document.
- 5.2 For the purposes of this policy document –
- “**S**” denotes a standard, an obligation, a requirement, specification, direction, condition and any interpretative, supplemental and transitional provisions that must be complied with. Non-compliance may result in enforcement action;
- “**G**” denotes guidance which may consist of statements or information intended to promote common understanding and advice or recommendations that are encouraged to be adopted;
- “**financial institution**” refers to –
- a licensed bank, a licensed investment bank and a licensed insurer, including a licensed professional reinsurer under the FSA;
 - a licensed Islamic bank and a licensed takaful operator, including a licensed professional retakaful operator under the IFSA;
 - a prescribed development financial institution under the DFIA; and
 - a financial holding company approved under the FSA and IFSA.
- “**climate-related risks**” refers to financial risks from climate change, which includes physical, transition and liability risks;
- “**board**” refers to the board of directors of a financial institution; and
- “**senior management**” refers to the chief executive officer (CEO) and senior officers of a financial institution.
- 5.3 The glossary set out in Part D describes selected terms used in this policy document and the reference list set out in Part E provides additional resources for financial institutions.

6. Related Legal Instruments and Policy Documents

- 6.1 This policy document must be read together with other relevant legal instruments, policy documents and guidelines that have been issued by the Bank, in particular –
- Climate Change and Principle-based Taxonomy (CCPT)*;
 - Value-based Intermediation Financing and Investment Impact Assessment Framework (VBIAF)*;
 - Corporate Governance*;
 - Risk Governance*;
 - Risk-Weighted CAF (Basel II) – ICAAP (Pillar 2)*;
 - CAF for Islamic Banks – ICAAP (Pillar 2)*;
 - Guidelines on ICAAP for Insurers*;
 - ICAAP for Takaful Operators*;
 - Risk-Weighted CAF (Basel II) – Disclosure Requirements (Pillar 3)*;
 - CAF for Islamic Banks – Disclosure Requirements (Pillar 3)*;
 - Stress Testing*;
 - Credit Risk*;
 - Operational Risk*;
 - Liquidity Coverage Ratio*;
 - Net Stable Funding Ratio*;
 - Outsourcing*; and
 - Guidelines on Business Continuity Management*.

PART B REQUIREMENTS AND GUIDANCE**7. Level of Application**

- S** 7.1 Financial institutions (excluding financial holding companies) shall comply with the requirements in this policy document at the following levels:
- (a) entity level, which refers to the global operations of the financial institutions, including overseas branch operations; and
 - (b) consolidated level, which includes all financial and non-financial subsidiaries.
- S** 7.2 Financial holding companies shall comply with the requirements in this policy document on a consolidated level basis.
- G** 7.3 For the purpose of paragraph 7.1, locally incorporated foreign financial institutions and branches of foreign financial institutions operating in Malaysia may leverage their group or parent company's climate-related policies and procedures to meet the requirements of this policy document.
- S** 7.4 For branches of foreign financial institutions operating in Malaysia, the requirements in this policy document shall apply to the Malaysian operations of the branch with the following modification:
- (a) any reference to the board in this policy document shall refer to the governing body of the branch of the foreign financial institution operating in Malaysia or any of its committees; and
 - (b) any reference to senior management in this policy document shall include a reference to the CEO of the branch and officers performing a senior management function in respect of the branch operations.

Question LA-1

Please highlight areas in this policy document that may depart significantly from the regulations of –

- (a) home regulators or supervisors (for locally incorporated financial institutions and branches of foreign financial institutions operating in Malaysia); or
- (b) host regulators or supervisors (for financial institution's subsidiaries or branches in foreign jurisdictions).

8. Governance

- S Principle 1: The board and senior management shall exercise effective oversight of climate-related risks to safeguard the financial institution's resilience against the adverse impacts of climate change. Financial institutions shall clearly identify the relevant responsibilities for managing climate-related risks and assign these responsibilities throughout the organisation structure. Financial institutions shall manage climate-related risks proportionate to the materiality of climate-related risks, taking into consideration the size, nature and complexity of the financial institution's business model.**
- S** 8.1 The board shall have the overall responsibility and accountability to safeguard the financial institution's resilience against the adverse impacts of climate change. In fulfilling this role, the board shall evaluate the risks and opportunities arising from climate change on a periodic basis and consider these risks and opportunities in assessing and approving the financial institution's strategies and business plan.
- S** 8.2 The board shall clearly assign roles and responsibilities for the management of climate-related risks to senior management and address interactions with existing governance arrangements to ensure an integrated view of risks. The board shall designate a senior management officer to oversee the effective management of climate-related risks. For example, the board may appoint a chief sustainability officer (CSO) or expand the current responsibilities of an existing senior management officer for this purpose.
- G** 8.3 A large financial institution⁷ is encouraged to appoint a dedicated CSO to provide necessary focus on the management of climate-related risks, in view of the inherent complexity and scale of operations of large financial institutions.
- S** 8.4 The senior management of a financial institution shall implement policies and procedures to build and support climate resilience and shall be responsible for the day-to-day management of climate-related risks and opportunities.
- S** 8.5 The senior management shall review the effectiveness of the financial institution's organisational structure and appropriately define the roles and responsibilities of key business and risk functions in supporting the financial institution's strategies to build climate resilience and manage climate-related risks. For example, as part of the process of integrating climate risk considerations in the management of material risks, financial institutions may consider establishing dedicated committees or sub-committees in the early stages to ensure sufficient consideration and oversight are given to the management of climate-related risks and opportunities.
- S Principle 2: The board and senior management shall ensure that they have a sound understanding of climate-related risks to inform the financial institution's business and risk management strategies.**
- S** 8.6 The board shall actively discuss and remain up to date on climate-related developments. This includes developing a clear understanding of the distinctive elements and transmission channels of climate-related risks.

⁷ Large financial institution means –

- (a) a financial institution with one or more business lines that are significant in terms of market share in the relevant industry; or
- (b) a financial institution with a large network of offices within or outside the country through operations of branches and subsidiaries.

- S** 8.7 Senior management shall provide regular and timely updates to the board with material information on climate-related risks and opportunities to facilitate the board in carrying out its oversight activities.
- S** 8.8 Financial institutions shall strengthen their capabilities in managing climate-related risks and implementing the strategies to build climate resilience. This is supported by appropriate capacity building and training plans for the board, senior management and all relevant staff.
- S** **Principle 3: Financial institutions shall embed climate-related risks into their internal control frameworks across the three lines of defence to ensure the robust management of material climate-related risks.**
- S** 8.9 Financial institutions shall ensure that the roles, responsibilities and accountabilities in managing climate-related risks shall be clearly allocated across the three lines of defence. Appendix 2 describes the examples on incorporating climate-related risks across the three lines of defence.

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9. Strategy

- S Principle 4: Financial institutions shall incorporate the potential impact of material climate-related risks into their business strategies to strengthen resilience against climate-related risks and support orderly transitions.**
- S** 9.1 Financial institutions shall appropriately identify and assess the potential impact of climate-related risks and opportunities when developing the business strategies in order to make informed forward-looking decisions when navigating structural changes in the business environment during the transition towards a low-carbon economy.
- S** 9.2 In addressing climate resilience over the long term, financial institutions shall use scenario analysis to assess the impact of climate-related factors on the business strategies under a range of time horizons and plausible climate pathways. The scenario analysis is useful in the context of climate-related risks given the uncertainty and complexity associated with the future outcomes of climate change and challenges to the financial sector that have not yet materialised. Paragraph 12 provides details on the expectations for financial institutions when using scenario analysis.
- G** 9.3 Given the uncertainty surrounding the timing of the impact of climate-related risks and the dependency on short-term actions, a strategic and prudent approach is for financial institutions to embed relevant time horizons in relation to the requirements in this policy document, where appropriate. Financial institutions may consider the following time horizons:
- (a) short-term horizon (1 to 3 years) to capture impacts over the ordinary business plan horizon; and
 - (b) medium-term horizon (4 to 10 years) and long-term horizon (beyond 10 years and reaching at least 30 years) to provide insights on impacts from the evolution and direction of climate-related risks as they materialise over time.
- S** 9.4 To ensure alignment in the consideration of climate-related risks within financial institutions' business strategies, financial institutions shall identify and monitor appropriate internal climate-related targets⁸. Financial institutions' progress against its climate-related targets serves to inform and validate the financial institution's assessment of climate-related risks.
- G** 9.5 Climate-related targets are important to steer financial institutions into taking early actions in managing transition risks, including proactive and continuous efforts to manage the risk of economic dislocation. This may include developing transition strategies for customers over the long term, including the use of scenario analysis to assess the pathways of future emissions that would be financed by financial institutions.
- G** 9.6 For example, as the transition towards a low-carbon economy impacts structural changes surrounding the business environment, a forward-looking financial institution would consider how climate-related factors would impact the strategies of key business lines and portfolios, including the products and services it is currently offering or planning to offer and develop appropriate climate-related targets and action plans to manage the relevant risks. Significant deviations from the targets would prompt a review of the assumptions underpinning a financial institution's assessment of climate-related risks. See Appendix 3 for an illustrative example of setting climate-related targets.

⁸ A climate-related target refers to a specific level or metric such as temperature limits or reduction in GHG emissions to avoid dangerous interference with the climate system and achieve climate-related goals and strategies of the financial institution. For example, financial institutions can target to reduce emissions of own operations and financed emissions to achieve net-zero emissions by 2050.

- S** 9.7 Financial institutions shall clearly communicate and cascade the strategy and internal climate-related targets within the financial institution. This is important to promote effective understanding and coordination with appropriate levels of accountability and oversight across functions.
- S** 9.8 Financial institutions must review its business strategy in a timely manner to take into account material developments in its management of climate-related risks. For example, realised impacts of climate-related risks or controversies that give rise to reputational risk may warrant a change in the long-term strategy of the financial institution. This is to ensure that business strategies are responsive and resilient to the evolving developments of climate change and also commensurate with the financial institution's internal progressive understanding of and capability in managing the impact of climate change.

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10. Risk Appetite

- S** **Principle 5: Financial institutions shall embed climate-related risks into the risk appetite framework, including the potential long-term impact of these risks as drivers of existing types of material risks. Financial institutions shall reflect these material risks in the internal capital adequacy assessment process.**
- S** 10.1 Financial institutions shall manage climate-related risks in line with the risk appetite approved by the board.
- S** 10.2 Financial institutions shall clearly address climate-related risks within the risk appetite statement (RAS). When using the RAS to guide the implementation of ICAAP, financial institutions shall consider material climate-related risks when assessing the internal capital adequacy over relevant time horizons.
- S** 10.3 To support and monitor the RAS, financial institutions shall develop appropriate risk metrics to manage climate-related risks, including risk limits and thresholds for management action.
- G** 10.4 For example, the assessment of climate metrics such as GHG emissions under different climate scenarios and climate targets can be translated into financial impact using risk metrics. Risk metrics in turn are used to set limits when managing the share of financial exposure to transition risks and the concentration to climate-related risks within the risk appetite of the financial institution.

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11. Risk Management

General Requirements

- S Principle 6: Financial institutions shall integrate material climate-related risk considerations into their existing enterprise-wide risk management framework. This must be supported by a reliable approach to identifying, measuring, monitoring and controlling material risks.**
- S 11.1** Financial institutions shall –
- (a) develop a comprehensive understanding on climate change to enable the mapping of transmission channels and impact of climate-related risks to existing risk types such as credit, market, liquidity, operational, insurance/takaful underwriting and reserving, strategic, reputational and regulatory compliance risks;
 - (b) enhance and update existing risk taxonomy⁹, risk management policies and procedures, as well as risk functions and capabilities to reflect the distinctive elements of climate change. For example, financial institutions shall ensure that the risk management practices cover the different time horizons reflected in paragraph 9.3; and
 - (c) review risk management practices, including related data, metrics and tools, in a timely manner to reflect continuous improvements in internal risk management capabilities and embed the latest global and domestic developments on climate change. To ensure progress over time, financial institutions shall implement a long-term roadmap when developing the metrics and tools, which shall be a key component of the implementation plan required in paragraph 14.
- S 11.2** Financial institutions shall integrate climate-related risk considerations into the existing risk management cycle through the following functions: risk identification, risk measurement, risk monitoring and risk controls. Appendix 4 illustrates the climate-related risk management cycle.
- S 11.3** Financial institutions shall have in place processes to evaluate the impact of climate-related risks that may negatively affect their capital position as part of ICAAP.
- S Principle 7: Financial institutions shall continuously develop data capabilities, tools and methodologies to effectively aggregate and report material climate-related risks.**
- S 11.4** Financial institutions shall continuously enhance their internal capabilities to effectively manage climate-related risks, which includes the following:
- (a) identifying, collecting and improving the quality and granularity of climate and climate-risk related data and metrics by using an increasingly wider range of global and domestic sources, including public sources, scientific reports, third-party products and services and proprietary data collected from customers and counterparties;
 - (b) using appropriate qualitative and quantitative risk management tools to measure and manage climate-related risks under business-as-usual and stress conditions;
 - (c) ensuring risk management approaches are forward looking when managing climate-related risks under different time horizons over the long term, which includes enhancing capabilities on scenario analysis; and
 - (d) strengthening practices on model risk management in line with an increasing use of models to manage climate-related risks.

⁹ The classification of different risk types and risk drivers to enable assessment, aggregation and management of risks in a consistent manner using a common risk dictionary and mapping.

- S** 11.5 Where financial institutions are leveraging external sources to enhance the data, metrics and risk management tools to manage climate-related risks, including third-party certification and verification¹⁰, financial institutions shall ensure that there is adequate understanding of the procured external data, metrics and risk management tools. This includes a sound understanding of the capabilities of the external providers, associated methodologies, validation process, limitations as well as relevance and appropriateness to the financial institution's own portfolio characteristics.
- G** 11.6 As data, metrics and risk management tools mature over time, financial institutions that face material climate-related-risks may consider using models to quantify the climate-related risks of key portfolios and counterparties. For example, this could include incorporating factors to assess climate-to-credit related risks within existing credit risk rating models.

Risk Identification and Measurement

- S** **Principle 8: Financial institutions shall consider climate-related risks as part of comprehensive risk assessments to identify and measure all material risks.**
- S** 11.7 In identifying¹¹ and measuring climate-related risks, financial institutions shall –
- (a) map the transmission from climate-related risks such as physical, transition and liability risks to financial and non-financial risks to assess materiality, likelihood as well as concentration of risks;
 - (b) compute climate-related metrics, such as GHG emissions (comprising own emissions and financed emissions) and translate these metrics into financial impact to develop climate-related risk metrics. Financial institutions shall understand these different types of metrics, be clear of their limitations and select credible and robust methodologies when computing these metrics;
 - (c) use scenario analysis to inform the risk identification and measurement process under different time horizons. Paragraph 12 provides details on the specifications and guidance for financial institutions when using scenario analysis;
 - (d) assess climate-related risks along multiple key dimensions to identify current and potential concentration of risks such as asset classes, liabilities, duration of insurance/takaful contracts, operations, business lines, significant activities, portfolios, sectors, types of policy/certificate/product, counterparties and geographies;
 - (e) enhance the existing due diligence policy and process to adequately identify and evaluate climate-related risks at the inception of a contractual relationship and on an on-going basis, at the portfolio, counterparty and transaction levels. See example provided in Appendix 5;
 - (f) engage with material customers and counterparties to develop a better understanding of their exposures to climate-related risks, track record, as well as their commitment and transition strategies in managing these risks. This shall facilitate the collection of internal data and information including the corresponding mitigation and adaptation measures; and
 - (g) have processes in place to collect and aggregate climate-related financial risk data across the financial institution while ensuring that the aggregated data is accurate and reliable.

¹⁰ See examples provided in CCPT, VBIAF and VBIAF Sectoral Guides.

¹¹ See examples provided in VBIAF and VBIAF Sectoral Guides.

- G** 11.8 Financial institutions may consider either one or a combination of the following approaches to identify and measure climate-related risks:
- (a) top-down approach: Mapping of exposures at an aggregated level using key drivers, such as material risk by geographical location, specific economic sectors with higher GHG emissions, types of insurance/takaful products; and
 - (b) bottom-up approach: Identifying risks at the asset, investment or counterparty level and summing up the risk to provide a portfolio-level risk assessment, which is typically performed on material exposures. For example, the CCPT can be used as one starting point to support the risk assessment process, especially for customers and counterparties classified under the watchlist category that are harming the environment and are not taking remedial measures. Identification of customers and counterparties under this CCPT category could warrant further assessment and monitoring.

Risk Monitoring and Controls

- S** **Principle 9: Financial institutions shall actively monitor and escalate material and potential climate-related risks in a timely manner. This is supported by appropriate data, risk analysis and clear reporting procedures.**
- S** 11.9 In developing a holistic approach for effective and timely monitoring of climate-related risks, financial institutions shall –
- (a) use a range of quantitative and qualitative metrics, which at minimum shall include climate-related metrics such as GHG emission and climate-related risk metrics such as exposure to physical and transition risks;
 - (b) integrate climate-related metrics and corresponding risks metrics into the existing risk monitoring, reporting and escalation framework to support effective decision making when managing climate-related risks, which shall include monitoring the approved risk appetite, business strategy, business plans and climate-related targets;
 - (c) include metrics that are forward looking in order to pre-emptively detect and respond to current and potential climate-related risks. For example, including results from scenario analysis to monitor the climate resilience of a portfolio and the potential losses of a portfolio under different climate scenarios;
 - (d) reflect the appropriate dimension and granularity, by considering at minimum, the concentration of climate-related risks by portfolios, economic sectors, geographical locations and material customers and counterparties;
 - (e) include vulnerabilities of internal operations to climate-related risks such as locations of data centres that are exposed to physical risks;
 - (f) set a timely reporting frequency to ensure updates to the board and senior management account for the evolution of climate change, with continuous detection of future potential risk drivers. For example, the on-going transition towards a low-carbon economy; adverse climate change activities and controversies and physical climate hazards that impact the internal operations or business lines;
 - (g) provide early-warning signals and thresholds in order to take remedial actions to manage climate-related risks in a pre-emptive manner; and
 - (h) monitor the implementation remedial actions and potential non-compliance with the financial institution's policies on climate-related risks.

- S Principle 10: Financial institutions shall put in place appropriate risk controls when managing current and potential impact of material climate-related risks. Financial institutions shall implement controls in a timely manner to mitigate the potential build-up in concentration to climate-related risks, in line with the risk appetite and business strategy.**
- G** 11.10 Given the sectoral factors associated with climate change, namely the evolution of transition risk, financial institutions may develop sector-specific policies to manage climate-related risks. For example, these sectoral policies may include setting a risk appetite for existing or prospective customer profiles; adopting specific limits or exclusion criteria; applying additional conditions on insurance/takaful coverage and reinsurance/retakaful arrangements; as well as appropriate coordination of climate mitigation and adaptation measures.
- G** 11.11 Financial institutions may consider the following mitigation measures for customers and counterparties who do not demonstrate adequate management of climate-related risks within the financial institution's risk appetite:
- (a) risk mitigants to reduce climate-related risk exposures such as guarantees, collateral and insurance/takaful cover;
 - (b) conditions for approval or further financing such as development of time-bound action plans for the customers/counterparties to improve their climate risk management practices;
 - (c) imposing shorter tenors, higher discounts to asset valuations for financing, lower limits on financing, investment and insurance/takaful underwriting;
 - (d) reassessing the terms and conditions of covenants for financing, investment and insurance/takaful contracts and reinsurance/retakaful arrangement;
 - (e) repricing of lending/financing rate, insurance premiums/takaful contributions and reinsurance/retakaful rates; or
 - (f) increasing frequency of reporting requirements.
- G** 11.12 It is important for financial institutions to manage the risks of economic dislocation that may arise from a disorderly transition, which creates a feedback loop that increases the overall risks to financial institutions. In this regard, financial institutions may consider its important role in supporting and facilitating the transition of customers and counterparties towards more sustainable and climate-resilient practices. This includes committing to a timeline that is transparent, gradual and progressive when rebalancing the exposures that are vulnerable to climate-related risks.
- G** 11.13 Actions that financial institutions can take to facilitate an orderly transition include the following:
- (a) allocate funds to assist customers in building resilience against climate change;
 - (b) incentivise customers with lower pricing or insurance premiums/takaful contributions when transition milestones are achieved; and
 - (c) engage and support customers and counterparties to develop a transition strategy including establishing specific and credible climate targets and adopting international sustainable certification, practices and standards.
- G** 11.14 Financial institutions may mitigate the risks associated with greenwashing of its portfolio. Financial institutions may use established standards and taxonomies, as well as leveraging on certifications and third-party assurance, to verify that the disclosures made by customers comply with relevant standards, metrics and methodologies. Appropriate oversight and periodic reviews may be conducted to ensure the use of these standards, taxonomies and certifications remain relevant, current and valid.
- G** 11.15 Case studies on the management of physical risk and transition risk are provided in Appendix 6 and Appendix 7, respectively.

Risk Management for Specific Risk Types

- S** **Principle 11: Climate-related risks can have a significant impact on other major risk types. In this regard, financial institutions shall understand the transmission and impact of climate-related risks on existing risk types and ensure their risk management systems and processes account for material climate-related risks.**
- S** 11.16 While climate-related risks have distinctive elements, they can be reflected as risk drivers of existing risk types. In this regard, financial institutions shall understand and assess the transmission of climate-related risks to existing types of risks, with examples illustrated in Appendix 8.

Credit Risk

- S** 11.17 Financial institutions' credit risk assessment shall incorporate the consideration of the effects of climate-related risks and their financial impact on the ability and willingness of customers/counterparties to honour their credit obligations at the inception of contractual relationships and on an on-going basis¹².
- G** 11.18 For a customer or counterparty's quantitative credit risk assessment, a financial institution may recalibrate its traditional credit risk indicators, such as probability of default (PD), loss given default (LGD) and exposure at default (EAD), to take into account the time horizons relevant to the materialisation of climate-related risks, whether in the short, medium or long term, such that the indicators are forward looking. The potential recalibrations are illustrated below –
- (a) PD: An increase of the PD of counterparties can be triggered by shifts in consumer preference to reduce demand for products from carbon-intensive industries, imposition of carbon taxes on emissions or impacts of severe weather conditions on agriculture business, which may increase the downward pressure on counterparties' profitability resulting in higher probability of default;
 - (b) LGD: Value of stranded assets will decrease, resulting in lower collateral values and, in a default scenario, lower recovery values. Flood prone areas as a result of climate change may also affect the valuation of properties resulting in lower collateral and recovery value; and
 - (c) EAD: Counterparties subject to physical risk might need to draw more from their committed credit lines to respond to sudden shocks, such as floods.

Market Risk

- S** 11.19 Financial institutions shall periodically review and incorporate climate-related risk considerations in their investment strategy and portfolio allocation. Uncertainty about 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 sentiment as well as technological advances could also lead to abrupt repricing of financial assets.
- G** 11.20 To develop an understanding on their portfolio sensitivity to the impact of climate-related risks, financial institutions may consider the following risk drivers in the assessment:
- (a) potential rating downgrades and devaluation of assets attributed to lower corporate profitability, increased litigation, shifts in consumer preference and imposition of new climate related policies; and
 - (b) breakdown in correlations between assets due to climate-related risks that reduces effectiveness of hedges.

¹² This shall include the annual review process.

Liquidity Risk

- S** 11.21 Financial institutions shall incorporate climate-related risk considerations in asset and liability management to assess their ability to meet obligations on a timely basis under both business-as-usual and stressed conditions as climate-related risk can adversely affect the matching of assets and liabilities.
- S** 11.22 ITOs with long-duration products or long-tailed business utilise longer-term assets such as bonds or sukuk to match the long duration of their liabilities. As climate-related risks may materialise over an extended period of time, ITOs shall consider the potential effects of any financial losses in their long-term assets or investments arising from climate-related risks that could adversely affect the matching of liabilities.
- S** 11.23 Financial institutions shall also consider the potential correlation in risk between different asset classes as well as between assets and liabilities when financing or investing in an entity while taking deposits or providing insurance/takaful cover to that same entity for risks related to climate change.
- S** 11.24 Financial institutions shall periodically assess the impact that climate-related risks have on stability of funding, potential outflows and adequacy of liquidity buffers by considering the possibility of the materialisation of climate-related risks. Where material, financial institutions shall incorporate these impacts into the calibration of liquidity buffers.
- G** 11.25 Financial institutions may consider the following aspects in liquidity risk assessment:
- (a) profile of asset holdings in respect of susceptibility to climate-related risks which may affect the credit rating, asset price and marketability of liquid assets;
 - (b) shifts in investors' preference towards sustainable instruments which may affect the market breadth and depth of existing assets; and
 - (c) composition and profile of depositors and policy holders or participants in economic sectors and geographic locations that may be susceptible to climate-related risk, which may result in large and sudden deposit withdrawals or insurance claims.

A case study on managing liquidity risk arising from climate-related risk is included in Appendix 9.

- G** 11.26 Financial institutions may collect data such as rollovers, withdrawals, claims and pricing behaviour of investors in response to a climate-related risk event for the modelling of potential liquidity impact.
- G** 11.27 Financial institutions may consider the impact of climate-related risks on regional liquidity positions and related contingency plans, for example potential operational and other impediments to providing liquidity to branches where climate-related risks materialise.

Operational Risk

- S** 11.28 Financial institutions shall assess the impact of climate-related events on internal operations as a whole, including material outsourcing activities and its ability to quickly recover their capacity to continue providing critical services at an optimum level. The outcome of the assessment, if significant to the critical business functions, shall be reflected in the business continuity plan (BCP) accordingly.

- G** 11.29 Financial institutions may assess the following potential sources of operational risk, which could lead to direct and indirect losses including reputational damage:
- (a) susceptibility of the financial institutions' and critical third-party service providers'¹³ office and data centre locations to severe weather events;
 - (b) impact of climate-related events affecting ability of the employees to commute to the workplace;
 - (c) regulatory and compliance implications as a result of stricter climate-related requirements;
 - (d) potential liability arising from legal actions brought against financial institutions for business practices that are perceived to be directly or indirectly harmful to the environment; and
 - (e) severe weather events such as flood or drought that may have a material impact on the supply of underlying assets for commodity murabahah/tawarruq and/or delivery of the commodity¹⁴. This may increase Islamic financial institutions' Shariah non-compliance risk exposure when offering Islamic financial products.
- G** 11.30 In managing physical risk affecting internal operations, financial institutions may –
- (a) perform on-going assessments on the resilience of their internal operations including the need to relocate financial institutions' critical business functions such as key offices, servers and data centres to less vulnerable areas across different geographic locations to reduce potential disruption due to region-specific extreme weather events; and
 - (b) adopt climate adaptation strategies to reduce exposure to physical risks such as building protective barriers to reduce flood-related damage and impacts to financial institutions' operations. Appendix 10 illustrates a case study on the end-to-end operational risk management process of internal operations and outsourced parties by a financial institution.

Insurance/Takaful Underwriting and Reserving Risks

- S** 11.31 ITOs shall identify and assess the impact of climate-related risks on their insurance/takaful underwriting and reserving to avoid any underestimation of risks.
- G** 11.32 Climate-related risks could affect different lines of insurance/takaful business. Therefore, ITOs may consider the following impact of climate-related risks on each line of business accordingly:
- (a) changes in weather patterns might affect claim incidences for general insurance/takaful products due to the increase in physical risk for certain geographical areas. To assess physical risks, ITOs may consider the impact of climate change (e.g., wind and storm pattern shifts, hot weather, strong wind, drought and flood), the probability of occurrence, level of severity and concentration of climate-related risks;
 - (b) certain general insurance/takaful products such as professional indemnity and directors and officers liability covers may have higher liability risks as legal action may be initiated for certain losses emanating from climate-related risks. As such, ITOs may consider and monitor the legal development and increased litigation linked to climate-related risks; and
 - (c) climate change could also affect life insurance/family takaful products as well as medical and health insurance/takaful products through the increase in mortality and morbidity risks. In this regard, ITOs may identify and monitor health conditions arising from climate-driven events, such as extreme temperatures, air pollution levels and weather events that would contribute significantly to overall claims experience.

¹³ This may include commodity trading platform providers for Islamic financial institutions.

¹⁴ In the case where a customer requested for physical delivery.

- S** 11.33 When pricing insurance/takaful products and reserving for insurance/takaful liabilities, ITOs shall consider the quality and completeness of the underlying data and incorporate forward-looking assumptions in the existing models to reflect climate-related risks in the calculation of insurance premiums/takaful contributions and reserves.

Question RM-1

Does your institution foresee challenges in implementing the end-to-end risk management requirements in paragraph 11 and for the following risk types? Please specify the paragraph and elaborate.

- i. Credit Risk
- ii. Market Risk
- iii. Liquidity Risk
- iv. Operational Risk
- v. Insurance/Takaful Underwriting and Reserving

Question RM-2

For your institution, what is the level of materiality of climate-related risks for the following risk types? Please explain.

- i. Credit Risk
- ii. Market Risk
- iii. Liquidity Risk
- iv. Operational Risk
- v. Insurance/Takaful Underwriting and Reserving

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12. Scenario Analysis

- S** **Principle 12: Financial institutions must employ scenario analysis to determine the resilience of their business strategies to material climate-related risks. Given the complexity and evolving nature of these risks, insights from the scenario analyses shall inform the risk profile, risk appetite and risk management framework.**
- S** 12.1 Financial institutions shall incorporate scenario analysis as one of its main tools to manage climate-related risks and opportunities.
- G** 12.2 Scenario analysis is a stress testing technique frequently deployed by financial institutions to identify and assess the potential implications of a range of events on financial resilience. In the context of climate change, scenario analysis enables financial institutions to examine their business resilience to climate-related risks and to measure portfolio alignment¹⁵ under a range of scenarios, including those related to extreme climate events.
- S** 12.3 Financial institutions shall conduct climate-related scenario analysis when developing business strategies and as part of risk management. This includes –
- (a) identifying and defining a range of climate-related scenarios, which considers climate-related risks over both short- and long-term horizons;
 - (b) reviewing the appropriateness of business strategies and business models under a range of climate scenarios;
 - (c) accounting for the risk of economic dislocation that may arise from the gradual transition away from selected high-carbon sectors or segments that are vulnerable to climate-related risks. Financial institutions shall also refer to paragraphs 11.12 to 11.13 of this policy document for further guidance; and
 - (d) using insights from scenario analysis to inform adjustments to their business strategies where appropriate, identify feasible options to enhance resilience to climate-related risks and mitigate climate-related disruptions to their businesses and operations.
- S** 12.4 In response to outcomes from the scenario analysis, financial institutions shall develop management actions to mitigate the impact from climate-related risks.
- G** 12.5 Management actions under paragraph 12.4 may include plans to strengthen the balance sheet, including adaptation or mitigation measures that could be implemented and completed within a reasonable period.
- G** 12.6 Given the complexity¹⁶ and continued evolution of climate change with multiple facets and stakeholders involved, financial institutions may adopt a phased approach when developing better internal scenario analysis capabilities. As a starting point, financial institutions may consider the use of simpler, qualitative models and narratives to explore various climate pathways, outcomes and mitigation plans.
- G** 12.7 An example of paragraph 12.6 is exploring standalone climate-related risk variables including GHG emissions and carbon price pathways could serve as a good foundation. As experience and capabilities becomes more developed in this area, financial institutions are encouraged to adopt greater rigour and sophistication. This could include,

¹⁵ Refers to steps taken by financial institutions to evaluate business decisions (e.g., lending and investment) that will contribute to achieving their ambition to become climate resilient. This could include measuring the percentage of portfolio with net-zero targets, deviation of a portfolio from its climate target and degree of warming/impact metrics. See TCFD “Technical Supplement: Measuring Portfolio Alignment” 2021.

¹⁶ This includes uncertainties surrounding the pathways and outcomes of climate change, evolution of greener technology for energy production (e.g., green hydrogen) and transportation (e.g., electric vehicles), carbon capture technology and global climate-related development (e.g., endorsement of carbon pricing as a solution to tackling climate change and biodiversity loss by G20 countries).

for example, incorporating results from Integrated Assessment Models (IAMs) of the IPCC into financial institutions' climate scenarios to provide better insights on the evolution and interactions between human population and earth systems or develop in-house climate scenarios that are more suited to the financial institutions' business and operations.

- S Principle 13: Financial institutions must ensure scenario analysis exercises are relevant, follow certain prescribed and well-known standards, are conducted at appropriate time horizons and contain sufficient level of granularity. This is proportionate to the materiality of climate-related risks associated with the financial institutions' business and operations.**
- S 12.8** When designing appropriate climate scenarios, financial institutions must be clear on the purpose and intended outcomes of choosing certain climate scenarios for analysis. At minimum, climate-related scenarios selected by financial institutions must reflect the following characteristics:
- (a) **Plausible, but challenging.**
The events in the climate scenario must be possible and the narrative credible (e.g., the descriptions of what happens and why and how it happens, must be realistic). Events must include baseline and extreme outcomes to give a reasonable diversity of potential future climate states. When thinking about major sources of uncertainty, scenarios help to explore alternatives that will significantly change the grounds for 'business-as-usual' assumptions.
 - (b) **Relevant.**
Each climate scenario and the set of scenarios taken as a whole, must contribute specific insights on the strategic and financial implications of climate-related risks and opportunities. Financial institutions shall use scenario analysis to self-evaluate their ability to cope with climate-related risks and explore options to strengthen resilience against these risks.
 - (c) **Distinctive.**
Each climate scenario must focus on different key factors. Scenarios must be clearly differentiated in structure and in narrative. For a given key factor, multiple scenarios shall be used to explore how different permutations and different temporal developments can yield dissimilar outcomes. For example, the impact of introducing a carbon pricing mechanism in an economy might vary with the timing of the implementation.
 - (d) **Consistent.**
Each climate scenario must have a strong internal logic. The goal of scenario analysis is to explore the interactions of factors and how each action produces a reaction. Neither agents nor external factors should completely overturn the evidence of current trends and outcomes unless logical explanations for those changes are a central part of the scenario. For example, the use of fossil fuel must not be assumed to come to a sudden halt without linking the development to the current state of play for alternative energy sources.
 - (e) **Tailored to material risks of financial institutions.**
Each climate scenario must incorporate material elements that could influence the outcomes of the scenario analysis. This includes the nature of an operation, its location, types of assets and sources of income flows, expected changes to the demand and supply of its financial products and services and how climate change is affecting the financial institution's clients and stakeholders from a behavioural perspective.
- G 12.9** When conducting scenario analysis, financial institutions may be guided by the questions tabulated in Appendix 11. Financial institutions are also encouraged to expand the list to reflect the circumstances that are unique to them.

- G** 12.10 In developing the climate scenarios, financial institutions may consider starting with existing global climate scenarios, with examples from the NGFS, IPCC and IEA. These climate scenarios provide financial institutions with an overall narrative, climate pathways, context and macro trends for future population levels, technological change, economic activity, social values, mitigation and adaptation challenges. For example, the IPCC scenarios represent probable future evolution of GHG concentrations and various associated mitigation and adaptation strategies. Meanwhile, the IEA scenarios present plausible transition narratives centred on the energy sector. Appendix 12 offers an introduction to the key components of shared socioeconomic pathways (SSPs) by the IPCC.
- G** 12.11 Financial institutions are encouraged to explore the use of NGFS scenarios described in Appendix 13, which are adapted to the Malaysian context where relevant. For example, the NGFS scenarios may be supplemented with additional assumptions relating to Malaysia's existing and forthcoming climate policies such as the NDC and national plans for the energy sector. Financial institutions may also consider a scenario that lengthens the time horizon up to 2050, which is a common global practice and also in line with the timeline for Malaysia's net-zero aspiration.
- S** 12.12 In conducting climate scenario analysis, financial institutions must consider both short-term and long-term horizons. Short-term assessments are useful to assess risks within an ordinary business planning horizon. As climate change occurs over an extended period, financial institutions must conduct both climate scenario analysis and stress testing under different time horizons to identify and address vulnerabilities and build resilience. In this regard, financial institutions must refer to paragraph 9.3 in this policy document and the Stress Testing policy documents for licensed financial institutions.
- G** 12.13 The following factors may be considered in determining an appropriate time horizon for the scenario analysis:
- (a) short-term horizon captures the impacts of climate-related risks over the ordinary business plan horizon. Nevertheless, these may yield limited information and insights on the resilience of financial institutions to manage climate-related risks in the long run; and
 - (b) longer time horizons are useful in providing financial institutions with a richer understanding and insights on impacts from climate-related risks as these risks are likely to materialise more gradually over several decades. However, a longer time horizon introduces significant complexity into the assessment and requires the use of broad-based assumptions and proxies, both of which could lead to greater uncertainty in the outcomes.
- S** 12.14 A financial institution must consider the appropriate level of granularity incorporated in the climate scenario analysis. This can range from high-level assessments based on sensitivity to climate-related risks impacting certain lines of business or economic sectors, to more granular assessments based on specific portfolios that also consider the interactions between climate-related risks and underlying activities of counterparties.
- G** 12.15 In determining the level of granularity for climate scenario analysis, financial institutions may consider the following:
- (a) high-level specifications (e.g., climate impact on country level data such as economic growth, level of unemployment and headline inflation) can reduce complexity while providing an assessment of the impact of climate-related risks on financial portfolios. However, such analysis relies on various assumptions and could consequently be less useful in informing specific business and risk management strategies across business lines and portfolios; or

- (b) more granular specifications (e.g., counterparty level exposures or firm specific information) provide more accurate and consistent results to size up the exposure of climate-related risks. Nonetheless, the analysis is more complex and requires highly granular and consistent data and information, some of which could be time consuming to develop and collect.
- S** 12.16 The depth of the analysis shall be proportionate to the materiality of climate-related risks, taking into consideration the size, nature and complexity of financial institutions' business and operations. In this regard, climate-related scenario analysis must consider the –
- (a) size and nature of underlying exposure and counterparties;
 - (b) interlinkages of exposures and counterparties to the financial system and economy;
 - (c) geographical location of the exposures;
 - (d) expected physical damage to the exposures arising from adverse climate-related events;
 - (e) counterparties responses to climate change such as actions to mitigate GHG emissions; and
 - (f) forward-looking information such as future trends in consumer preference, green technology innovation and national policy developments.
- S** 12.17 In the event financial institutions decide to factor in the climate adaptation plans of their counterparties into their scenario analyses, such plans shall only be considered if the following conditions are met:
- (a) there is credible evidence that these adaptation plans are already under implementation; and
 - (b) financial institutions are of the view that the completion of such plans is highly likely.
- G** 12.18 In assessing the counterparty climate adaptation plans for inclusion, financial institutions may consider a variety of factors, such as a counterparty's current performance against interim targets, the availability¹⁷ of technologies, products, or resources necessary to meet the intended targets, the credibility of strategies proposed in the adaptation plans and whether a counterparty has considered potential unintended consequences in implementing such plans.

Question SA-1

With reference to paragraphs 12.10 and 12.11, does your institution envisage any challenges in using the NGFS scenarios as a starting point to conduct climate-related scenario analysis for your institution? If yes, please share what are the other climate scenarios that would be more suited to your institution's risk profile and capacity.

Question SA-2

With reference to paragraphs 12.14 and 12.15, which level of granularity is your institution pursuing or would likely to pursue in conducting climate-related scenario analysis? Please elaborate your response.

Additional questions for Development Financial Institutions (DFIs)

Question SA-DFIs-1

How would your institution rank the level of difficulty in meeting all the requirements in paragraph 12? Please elaborate your response.

¹⁷ For instance, if a counterparty's climate adaptation plan relies upon technology or products that have yet to be discovered, the plan cannot be considered as being "under implementation", even if the underlying research has been funded or is on-going.

13. Disclosure

- S Principle 14: Financial institutions shall produce reliable, meaningful and comparable climate-related disclosures, to support informed decisions by stakeholders and reinforce the effective management of material climate-related risks in the financial sector.**
- S** 13.1 Financial institutions must establish a board-approved policy on climate-related disclosures that serves to ensure credible as well as high-quality disclosures and mitigate the risks of greenwashing. This is to address internal controls¹⁸ and governance arrangements over the disclosure process.
- S** 13.2 Financial institutions must review the disclosure policy in a timely manner to continuously improve the clarity, comprehensiveness and relevance of climate-related disclosures. The review shall account for domestic and global developments¹⁹ on climate change, which will drive the evolution of widely recognised practices and methodologies on disclosures.
- S** 13.3 Financial institutions shall make annual climate-related disclosures²⁰ that are aligned with the recommendations of the Financial Stability Board’s Task Force on Climate-related Financial Disclosures (TCFD) by 31 December 2024. The disclosures shall be published together with annual financial reports for financial years beginning on or after 1 January 2024.
- S** 13.4 Financial institutions shall separately address the following areas in the annual disclosures:
- (a) governance around climate-related risks and opportunities;
 - (b) actual and potential impact of climate-related risks and opportunities on business, strategy and financial planning;
 - (c) approach to identify, assess and manage climate-related risks; and
 - (d) metrics and targets used to assess and manage relevant climate-related risks and opportunities.
- G** 13.5 Appendices 14 and 15 provide the description of the disclosures for financial institutions, aligned to the “Basic” and “Stretch” recommendations outlined in the JC3 TCFD Application Guide for Malaysian Financial Institutions (hereinafter TCFD Application Guide)²¹. Financial institutions are expected to work towards adopting “Stretch” recommendations outlined in the TCFD Application Guide in line with their climate risk exposure and complexity of operations, in efforts to be fully aligned with TCFD recommendations.
- G** 13.6 A financial institution may disclose the information required in paragraph 13.4 in the management commentary of the financial report, within an existing report²², or on the financial institution’s website. The disclosures should be labelled clearly to enhance readability and guide users to navigate the disclosures.

¹⁸ This includes verification and review of accuracy of information.

¹⁹ This includes global developments at the International Sustainability Standard Board (ISSB) under the IFRS Foundation and Pillar 3 requirements under the BCBS.

²⁰ To the extent that the disclosures required in this policy document are substantially similar to the Malaysian Financial Reporting Standards (MFRS), listing requirements by Bursa Malaysia, or other statutory reporting requirements, disclosures made in compliance with such requirements are deemed to have met the requirements of this policy document.

²¹ In the event of discrepancies between this policy document and the TCFD Application Guide on the recommendations and descriptions, the TCFD Application Guide shall prevail as the primary reference.

²² For example, the annual report or sustainability report.

- S** 13.7 While the Bank does not require the disclosures to be audited by external auditors, financial institutions shall be responsible for ensuring that the disclosures are accurate, complete and not misleading, to mitigate the risks associated with greenwashing. The Bank may require an independent audit by an external auditor at the financial institutions' expense if there is reason to believe that any disclosure is incorrect, incomplete or misleading.
- G** 13.8 Financial institutions may consider appointing an independent and qualified external third-party to perform verification or provide assurance on the disclosures, such as external assurance on climate-related metrics and targets, to improve the reliability and credibility of the disclosures.

Question D-1

Please elaborate on the specific challenges your institution may face to produce the TCFD-aligned disclosures in paragraph 13.4 by 31 December 2024, and how these challenges will be addressed. Please indicate a reasonable timeline as well as provide suggestions that could be considered for your institution to comply with the requirement.

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14. Implementation Plan

- S** 14.1 A financial institution must perform a gap analysis between its existing practices in managing climate-related risks and the requirements in this policy document and shall highlight all key implementation gaps.
- S** 14.2 A financial institution must develop a board-approved implementation plan with a clear timeline, as well as interim targets and milestones to address the gaps identified.
- S** 14.3 The gap analysis and implementation plan must be submitted no later than six months after the issuance date of the final policy document to –
- Pengarah
Jabatan Penyeliaan Konglomerat Kewangan or
Jabatan Penyeliaan Perbankan or
Jabatan Penyeliaan Insurans dan Takaful (as applicable)
Bank Negara Malaysia
Jalan Dato' Onn
50480 Kuala Lumpur
- S** 14.4 In relation to paragraphs 14.1 and 14.2, when preparing the implementation plan, financial institutions must –
- (a) review and confirm existing policies and processes and clarify roles and responsibilities;
 - (b) establish appropriate monitoring and reporting mechanisms to ensure compliance with the requirements in this policy document;
 - (c) undertake enhancement to existing systems to address and manage climate-related risks, where applicable; and
 - (d) give prominence to metrics and targets by formulating an internal long-term roadmap to track the developments and progress of metrics and targets.
- S** 14.5 A financial institution must immediately notify the Bank if the financial institution identifies any cause that may affect its full compliance with the requirements in this policy document by the respective effective dates as set out in paragraph 4.1.

15. Supervisory Process

- G** 15.1 The management of climate-related risks of a financial institution will be monitored by the Bank against the standards and guidance set out in this policy document.
- S** 15.2 A financial institution shall maintain and make all the relevant information readily available for submission upon request by the Bank to facilitate on-going supervision.

PART C APPENDICES

Appendix 1

Principles for climate risk management and scenario analysis

Governance	<p>Principle 1: The board and senior management shall exercise effective oversight of climate-related risks to safeguard the financial institution’s resilience against the adverse impacts of climate change. Financial institutions shall clearly identify the relevant responsibilities for managing climate-related risks and assign these responsibilities throughout the organisation structure. Financial institutions shall manage climate-related risks proportionate to the materiality of climate-related risks, taking into consideration the size, nature and complexity of the financial institutions’ business model.</p> <p>Principle 2: The board and senior management shall ensure that they have a sound understanding of climate-related risks to inform the financial institution’s business and risk management strategies.</p> <p>Principle 3: Financial institutions shall embed climate-related risks into their internal control frameworks across the three lines of defence to ensure the robust management of material climate-related risks.</p>
Strategy	<p>Principle 4: Financial institutions shall incorporate the potential impact of material climate-related risks into their business strategies to strengthen resilience against climate-related risks and support orderly transitions.</p>
Risk Appetite	<p>Principle 5: Financial institutions shall embed climate-related risks into the risk appetite framework, including the potential long-term impact of these risks as drivers of existing types of material risks. Financial institutions shall reflect these material risks in the internal capital adequacy assessment process.</p>
Risk Management	<p>Principle 6: Financial institutions shall integrate material climate-related risk considerations into their existing enterprise-wide risk management framework. This must be supported by a reliable approach to identifying, measuring, monitoring and controlling material risks.</p> <p>Principle 7: Financial institutions shall continuously develop data capabilities, tools and methodologies to effectively aggregate and report material climate-related risks.</p> <p>Principle 8: Financial institutions shall consider climate-related risks as part of comprehensive risk assessments to identify and measure all material risks.</p> <p>Principle 9: Financial institutions shall actively monitor and escalate material and potential climate-related risks in a timely manner. This is supported by appropriate data, risk analysis and clear reporting procedures.</p> <p>Principle 10: Financial institutions shall put in place appropriate risk controls when managing current and potential impact of material climate-related risks. Financial institutions shall implement controls in a timely manner to mitigate the potential build-up in concentration to climate-related risks, in line with the risk appetite and business strategy.</p> <p>Principle 11: Climate-related risks can have a significant impact on other major risk types. In this regard, financial institutions shall understand the transmission and impact of climate-related risks on existing risk types and ensure their risk management systems and processes account for material climate-related risks.</p>
Scenario Analysis	<p>Principle 12: Financial institutions must employ scenario analysis to determine the resilience of their business strategies to material climate-related risks. Given the complexity and evolving nature of these risks, insights from the scenario analyses shall inform the risk profile, risk appetite and risk management framework.</p> <p>Principle 13: Financial institutions must ensure scenario analysis exercises are relevant, follow certain prescribed and well-known standards, are conducted at appropriate time horizons and contain sufficient level of granularity. This is proportionate to the materiality of climate-related risks associated with the financial institutions’ business and operations.</p>
Disclosure	<p>Principle 14: Financial institutions shall produce reliable, meaningful and comparable climate-related disclosures, to support informed decisions by stakeholders and reinforce the effective management of material climate-related risks in the financial sector.</p>

Appendix 2

Embedding climate-related risks across the three lines of defence

First line	<ul style="list-style-type: none"> • The first line of defence is provided by the business units where risks are taken as well as formed by functions that own and manage risks within the financial institution • For example, staff in the business units should perform climate-related risk assessments during on-boarding of new clients and periodic review of existing clients, especially those in sectors that are vulnerable to climate-related risks • In addition, relevant staff in the business units should have sufficient training and understanding to identify and assess potential climate-related risks such as the transmission channels of risks; uncertainties surrounding the timing of climate-related risks such as new developments in global and domestic regulations in economic sectors that face high climate-related risks; as well as mitigation and adaptation plans of customers when responding to climate change
Second line	<ul style="list-style-type: none"> • The second line of defence is provided by the independent and effective risk management and compliance functions • Risk management is primarily responsible for overseeing climate-related risks in business activities. This includes on-going risks monitoring, developing and reviewing relevant policies and procedures on climate-related risks as well as ensuring that the definition and measurement of climate-related risks are consistent across the financial institution • The risk management function should undertake independent assessment and monitoring of climate-related risks, including challenging the assessment conducted by the business units • The risk management function should also develop relevant metrics and tools to manage climate-related risks, including scenario analysis • The compliance function is responsible for monitoring compliance with applicable laws, regulations and internal policies • Both risk management and compliance functions are responsible to ensure that the first line of defence are equipped with adequate capacity building to manage climate-related risks in the business processes
Third line	<ul style="list-style-type: none"> • The third line of defence is provided by an independent and effective internal audit function • This line is responsible for providing assurance on the robustness and effectiveness of the financial institution's climate-related risk management framework and practices • This line conducts periodic audit evaluations on the first and second line of defences to ensure adequate internal controls are in place to manage climate-related risks in the business processes

Source: Adapted from BCBS

Appendix 3

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 commitments²³ 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 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

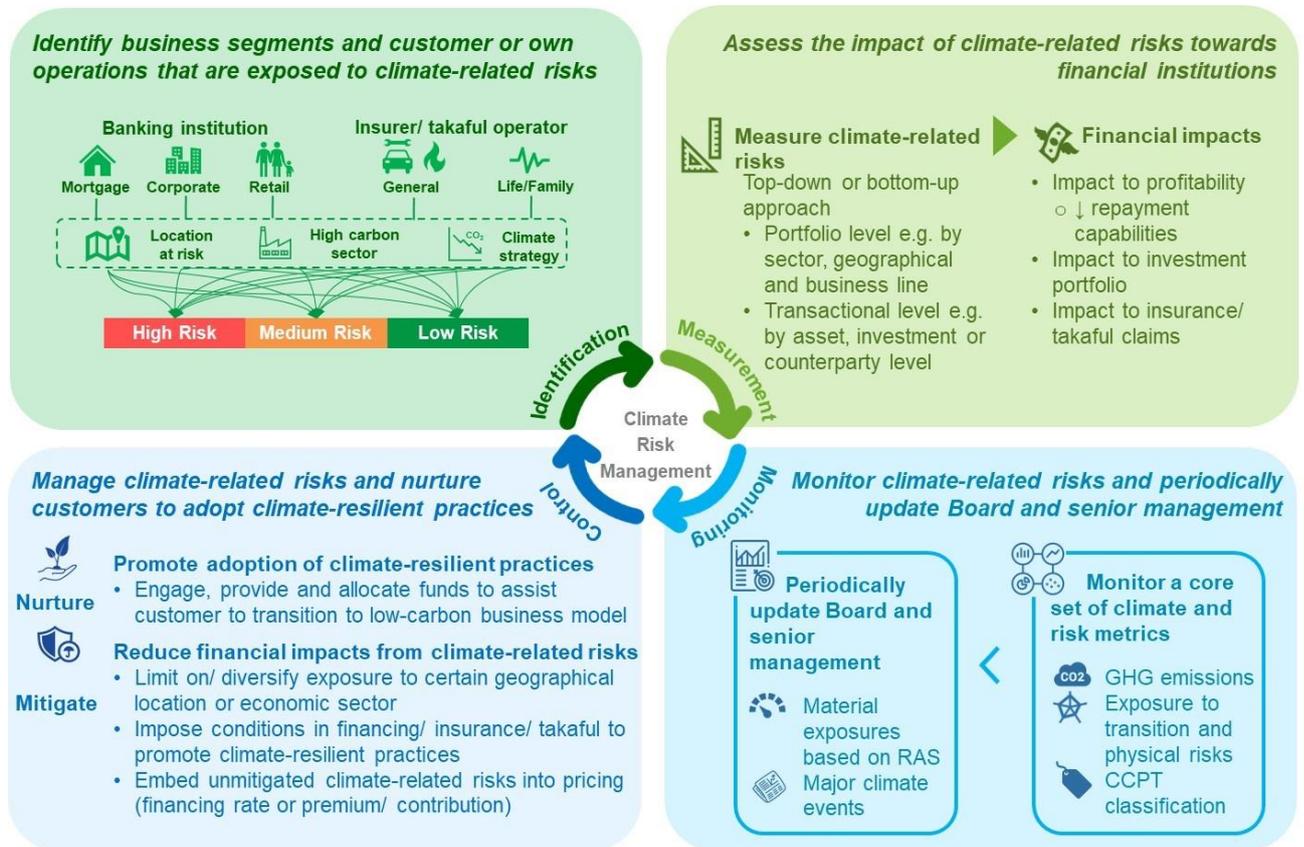
Set Agenda on Climate Change	<ul style="list-style-type: none"> Establishment of a committee consisting of board members and CEO to set the agenda for climate risk Agenda incorporates strategy, roadmap and monitoring of action plans such that there is alignment and integration of ESG and climate change strategies within the financial institution Make climate change a strategic priority and integrate climate-related risks into decision making and risk management 					
Assessment on Impact of Climate Change to Business Operations	<ul style="list-style-type: none"> Understand key climate-related issues faced by stakeholders and assess impact to the business <table border="1" data-bbox="422 1095 1436 1305"> <tbody> <tr> <td data-bbox="422 1095 788 1305"> Preface to establishing targets <ul style="list-style-type: none"> Better understand climate-related risks and opportunities when setting internal targets </td> <td data-bbox="788 1095 1187 1305"> Formulate business strategy <ul style="list-style-type: none"> Identify key strategic areas on climate change, with linkages to governance and integration across and within business lines </td> <td data-bbox="1187 1095 1436 1305"> Additional analysis <ul style="list-style-type: none"> Industry benchmarking Gap analysis </td> </tr> </tbody> </table>			Preface to establishing targets <ul style="list-style-type: none"> Better understand climate-related risks and opportunities when setting internal targets 	Formulate business strategy <ul style="list-style-type: none"> Identify key strategic areas on climate change, with linkages to governance and integration across and within business lines 	Additional analysis <ul style="list-style-type: none"> Industry benchmarking Gap analysis
Preface to establishing targets <ul style="list-style-type: none"> Better understand climate-related risks and opportunities when setting internal targets 	Formulate business strategy <ul style="list-style-type: none"> Identify key strategic areas on climate change, with linkages to governance and integration across and within business lines 	Additional analysis <ul style="list-style-type: none"> Industry benchmarking Gap analysis 				
Metrics	<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 					
Targets	<ul style="list-style-type: none"> Use appropriate climate and risk metrics to set targets for the financial institution and specific sectors, covering different time horizons <table border="1" data-bbox="422 1532 1436 1798"> <tbody> <tr> <td data-bbox="422 1532 746 1798"> Short- and Medium-term targets <ul style="list-style-type: none"> Interim targets and action plans to monitor performance and targets over a few years </td> <td data-bbox="746 1532 1082 1798"> Long-term targets <ul style="list-style-type: none"> Climate risk-related targets are aligned to achieve net-zero GHG emission by 2050 </td> <td data-bbox="1082 1532 1436 1798"> Key Performance Indicators <ul style="list-style-type: none"> Targets embedded into performance scorecard Targets translated into risk appetite using appropriate risk metrics </td> </tr> </tbody> </table>			Short- and Medium-term targets <ul style="list-style-type: none"> Interim targets and action plans to monitor performance and targets over a few years 	Long-term targets <ul style="list-style-type: none"> Climate risk-related targets are aligned to achieve net-zero GHG emission by 2050 	Key Performance Indicators <ul style="list-style-type: none"> Targets embedded into performance scorecard Targets translated into risk appetite using appropriate risk metrics
Short- and Medium-term targets <ul style="list-style-type: none"> Interim targets and action plans to monitor performance and targets over a few years 	Long-term targets <ul style="list-style-type: none"> Climate risk-related targets are aligned to achieve net-zero GHG emission by 2050 	Key Performance Indicators <ul style="list-style-type: none"> Targets embedded into performance scorecard Targets translated into risk appetite using appropriate risk metrics 				

Source: Adapted from selected financial institutions

²³ For example, the Paris Agreement and the 12th Malaysia Plan.

Appendix 4

Illustration of climate risk management cycle



Source: BNM

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Appendix 5

Case study on 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 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 certifications²⁴ 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

²⁴ 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.

Appendix 6

Case study on the management of physical risk**A. Management of physical risk by 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

Appendix 7

Case study on 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 environmental²⁵ and social impacts. As one of the largest palm oil producers in the world, the government has mandated oil palm plantations, independent and organised smallholdings and palm oil processing facilities to be certified based on the requirements of the Malaysian Sustainable Palm Oil (MSPO) certification in 2017. 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

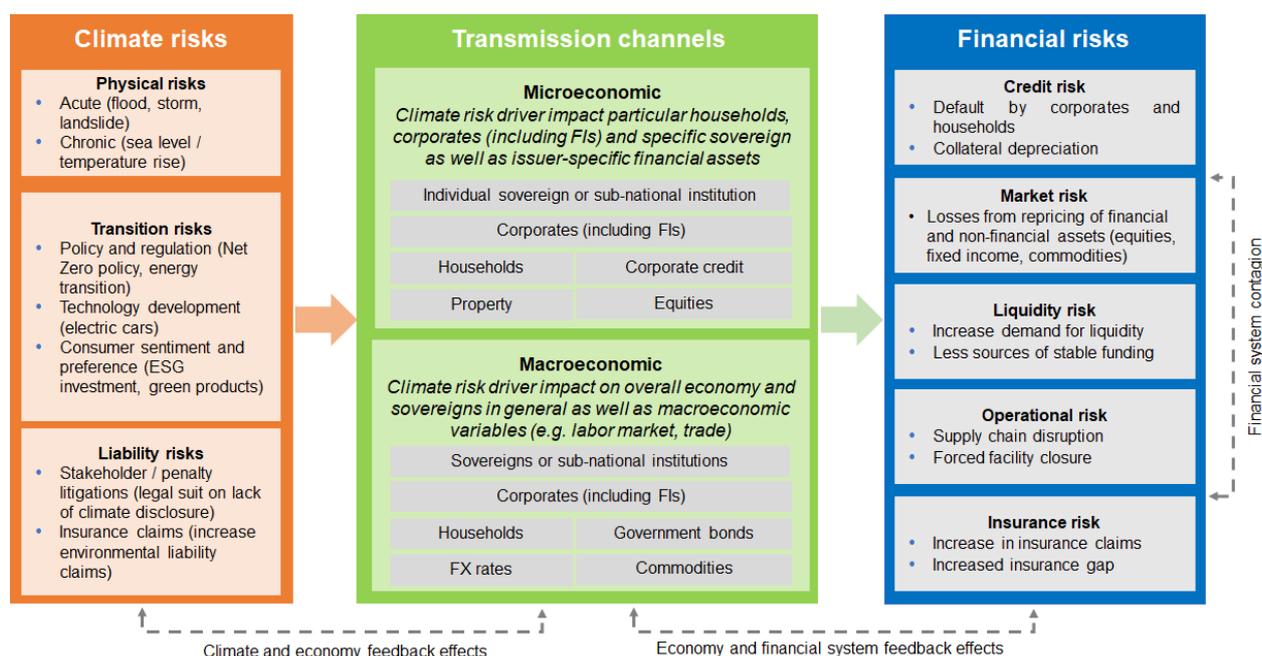
To ensure an orderly transition and to minimise potential adverse financial impact, the financial institution collaborated with the relevant agencies such as the Malaysian Palm Oil Board (MPOB) and Malaysian Palm Oil Certification Council (MPOCC) to encourage and facilitate relevant borrowers to be MSPO 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

²⁵ Which includes reduction of GHG, efficient use of energy and zero burning practices.

Appendix 8

Transmission of climate-related risks to existing types of risks



Source: Adapted from NGFS and BCBS

Financial risks	Transmission channels
Credit risk	Severe weather events can affect productivity, damage physical asset which lowers the asset/collateral value and disrupt corporates operation/supply chain. This will in turn increase probability of default (PD) for both corporates and individuals and loss given default given (LGD) due to depreciation of collateral value.
Market risk	Negative sentiment towards carbon-intensive assets/sectors or changes in regulation may result in volatile and downward market valuations and pricing, which lead to investment losses.
Liquidity risk	Sudden increase in deposits withdrawal, drawdown of committed facilities and insurance/takaful claims post disaster may result in significant and negative impact on liquidity buffers.
Operational risk	Financial institutions' operations are disrupted due to damage to their or outsourced service providers' physical property and data centres as a result of severe weather event; climate-related lawsuits could target financial institutions for poor management of climate risks or inadequate climate-related disclosures; and higher exposure to reputational damage due to change in consumer sentiments towards more climate friendly business practices.
Insurance/takaful underwriting risk	The impact can be two pronged, i.e. increase insured losses due to increased frequency and concentration of high impact natural catastrophes, resulting increases in weather-related insurance claims and increase insured gap due to ITOs constrained capacity to write insurance business due to increasing physical risks to insured property and assets, which increases the price beyond demand elasticity and customer's willingness to pay.

Source: Adapted from NGFS and BCBS

Appendix 9

Case study on liquidity risk management arising from climate-related risks

Physical risk related to Climate Change Scenario

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

Appendix 10

Case study on 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 carbon emissions for its operations • Methodologies including emissions calculations, metrics and scenarios will gradually be developed over time, including the computation of Scope 3 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 bank’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

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Appendix 11

A list of questions to guide scenario analysis

Broad questions
<ul style="list-style-type: none">• What is the focus of the scenario analysis exercise? Is the focus on transition risk, physical risk or both?• What is the time horizon? Why was this chosen?• Is the purpose of the scenario to inform quantitative analysis or qualitative discussions?• Should the financial institution consider common reference scenarios or develop their own internal scenarios? If the latter, how should a financial institution provide a high degree of rigour and robustness of the scenarios?• If the financial institution is using a common reference scenario, are the accompanying assumptions suitable? Could adjustments be made by the financial institution to fit internal needs and beliefs? If so, how?• Should the financial institution focus only on 'stress scenarios', that are extreme but unlikely, or on scenarios that are more likely to materialise?• How should the financial institution balance between realism and conservatism?
Specific questions unique to Malaysia
<ul style="list-style-type: none">• How will the climate in Malaysia change over the next 30 to 50 years?• What are the possible transmission channels of climate-related risks affecting the Malaysian economy? When will these effects materialise?• Between physical hazards and transition risks, which of the two is a more important consideration for the financial institution and why?• What are unique and prominent features of the Malaysian climate that are not captured by common reference scenarios?• What are the existing national policies on climate change? How are these expected to evolve over across different time horizons?

Source: BNM

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Appendix 12

Shared socioeconomic pathways (SSPs)

The SSPs are commonly used narratives that represent five possible socioeconomic futures with varying challenges to climate mitigation and adaptation. They are increasingly used in integrated assessment models (IAMs) to systematically explore the impacts of different socioeconomic contexts on emissions pathways. The diagram below describes the SSPs –

		Socio-Economic Challenges to Adaptation		
		Low	Medium	High
Socio-Economic Challenges to Mitigation	High	SSP 5: Fossil Fuel Development <ul style="list-style-type: none"> • low population • very high economic growth per capita • high human development • high technological progress • ample fossil fuel resources • very resource intensive lifestyles • high energy and food demand per capita • economic convergence and global cooperation 		SSP 3: Regional rivalry <ul style="list-style-type: none"> • high population • low economic growth per capita • low human development • low technological progress • resource-intensive lifestyles • resource constrained energy and food demand per capita • focus on regional food and energy security • regionalisation and lack of global cooperation
	Medium		SSP 2: Middle of the road <ul style="list-style-type: none"> • medium population • medium and uneven economic growth • medium and uneven human development • medium and uneven technological progress • resource-intensive lifestyles • medium and uneven energy and food demand per capita • limited global cooperation and economic convergence 	
	Low	SSP 1: Sustainable Development <ul style="list-style-type: none"> • low population • high economic growth per capita • high human development • high technological progress • environmentally oriented technological and behavioural change • resource-efficient lifestyles • low energy and food demand per capita • economic convergence and global cooperation 		SSP 4: Inequality <ul style="list-style-type: none"> • medium to high population • unequal low to medium economic growth per capita • unequal low to medium human development • unequal technological progress: high in globalised high-tech sectors, slow in domestic sectors • unequal lifestyles in energy/food consumption: resource intensity depending on income • globally connected elite, disconnected domestic work forces

Source: IPCC, *Global Warming of 1.5°C Special Report, 2018, page 110*

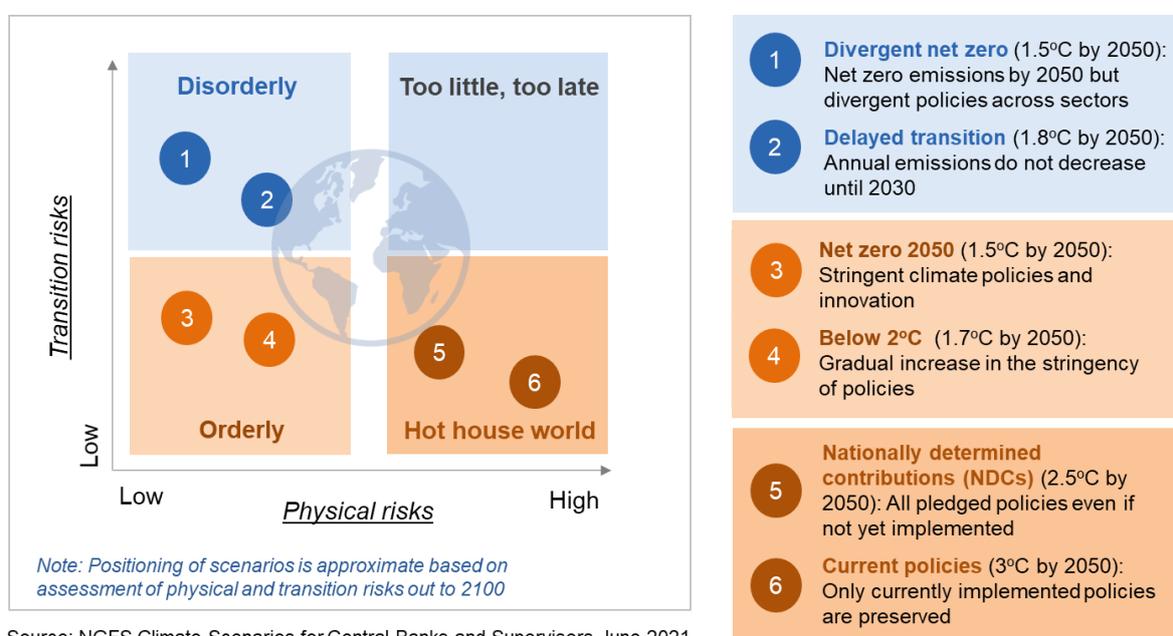
Appendix 13

NGFS global scenarios

Building on the IPCC and IEA scenarios, the NGFS in 2021 developed a set of scenarios²⁶ exploring the impact of climate change and climate policies with the aim of providing a common reference framework for various users. Each NGFS scenario explores a distinct set of assumptions for how policies, emissions and temperatures evolve and the consequent transition and physical risks from a macro-financial perspective –

- i. **Orderly scenarios:** assume climate policies are introduced early and become gradually more stringent. Both physical and transition risks are relatively subdued.
- ii. **Disorderly scenarios:** explore higher transition risk due to policies being delayed or divergent across countries and sectors. For example, carbon prices would have to increase abruptly after a period of delay.
- iii. **Hot house world scenarios:** assume that some climate policies are implemented in some jurisdictions, but global efforts are insufficient to halt significant global warming. These scenarios result in severe physical risk including irreversible impact like sea-level rise.

The physical and transition risks in the NGFS scenarios are driven by policy ambition, policy timing, co-ordination and technology levers. For instance, higher temperatures associated with less policy ambition are correlated with larger impact on physical assets and the economy. On the transition side, economic and financial impacts increase with strong, sudden and/or divergent policy; fast technological change even if carbon price changes are modest; and limited availability of carbon dioxide removal technologies meaning that the transition must be more abrupt in other parts of the economy.



²⁶ Financial institutions may explore the scenarios and access additional materials by NGFS here: <https://www.ngfs.net/ngfs-scenarios-portal/>

Appendix 14

“Basic” disclosure recommendations from the TCFD Application Guide

“Basic” Recommendations	Descriptions
Governance	
Recommendation G1 Board Oversight of Sustainability and Climate-related Matters	<ul style="list-style-type: none"> Disclose nature of Board oversight and accountability with respect to sustainability and climate-related matters, risks and opportunities
Recommendation G2 Sustainability Governance Structure Including Climate-Related Matters at the Management Level	<ul style="list-style-type: none"> Disclose management-level sustainability governance structure as well as processes for sustainability and climate-related matters, including accountability, responsibility and decision-making
Recommendation G3 Sustainability and Climate-related Board Credentials	<ul style="list-style-type: none"> Disclose sustainability and climate-related credentials, experience and individual biographies for Board members
Recommendation G4 Sustainability and Climate-Related Training	<ul style="list-style-type: none"> Disclose the initiatives undertaken and training programmes conducted annually to build capacity of Board members and management on sustainability issues including climate-related matters
Strategy	
Recommendation S1 Identification of Climate-related Risks and Opportunities	<ul style="list-style-type: none"> Review the financial institution’s strategy to identify and disclose climate related risks and opportunities over the short-, medium- and long-term
Recommendation S2 Impact of Climate-related Risks and Opportunities	<ul style="list-style-type: none"> Assess and disclose how climate-associated risks and opportunities could affect the financial institution’s existing businesses, strategy and financial planning
Recommendation S3 Strategy and Risk Appetite on Climate Change-Related Risks and Sustainability Measures	<ul style="list-style-type: none"> Disclose strategy and appetite with regard to climate-related risks and opportunities and the measures towards sustainability in the financial institution’s business activities
Risk Management	
Recommendation R1 Process for Identifying and Assessing Climate-related Risks	<ul style="list-style-type: none"> Disclose how the financial institution looks at existing and emerging regulatory requirements related to climate change and other relevant factors Disclose the risk classification framework(s) used Disclose the risk terminology definitions used or existing risk classification framework(s) used
Recommendation R2 Process for Managing Climate-related Risks	<ul style="list-style-type: none"> Disclose the financial institution’s risk management processes and controls Disclose the identities of individual(s)/function(s) responsible for oversight of climate-related risks and its relationship with the business operation
Recommendation R3 Process for Integrating (i) Process for Identifying and Assessing Climate-related Risks and (ii) Process for Managing Climate-related Risks into Overall Risk Management	<ul style="list-style-type: none"> Disclose the integration of processes for identifying, assessing and managing climate-related risks into overall risk management Disclose processes for prioritising climate-related risks, including how materiality determinations are made within the financial institution

"Basic" Recommendations	Descriptions
Metrics and Targets	
Recommendation M1 Key Climate-related Metrics	<ul style="list-style-type: none">• Disclose the metrics used to assess the impacts of (both transition and physical) climate-related risks on lending and other financial intermediary business activities in the short-, medium- and long-term. Metrics provided may relate to credit exposure, equity and debt holdings, or trading positions, broken down by industry, geography, credit quality or average tenor• Disclose the amount and percentage of carbon-related assets relative to total assets as well as the amount of lending and other financing-related to climate-related opportunities
Recommendation M2 Key Climate-related Targets	<ul style="list-style-type: none">• Set and disclose clear climate-related targets based on recognised metrics (i.e. cross-industry, sector-specific and/or institution-specific metrics)

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Appendix 15

“Stretch” disclosure recommendations from the TCFD Application Guide

“Stretch” Recommendations	Descriptions
Governance	
Recommendation G5 Sustainability and Climate-related Discussions in Board Meetings	<ul style="list-style-type: none"> • Disclose the frequency of Board meetings per year in which sustainability and climate-related issues have been a substantive agenda item and a summary of key climate-related issues and initiatives deliberated
Recommendation G6 Separate Committee on Sustainability and Climate-related Matters	<ul style="list-style-type: none"> • Set up a separate committee to oversee sustainability-related matters, reporting to the Board of Directors for all sustainability- and climate-related matters
Recommendation G7 Sustainability/Climate-linked Remuneration	<ul style="list-style-type: none"> • Link Board of Director (excluding independent directors) and top management remuneration to performance against specified sustainability and climate-related targets
Strategy	
Recommendation S4 Scenario Analysis as an Opportunity to Improve Strategic Resilience and Explore Climate Vulnerabilities	<ul style="list-style-type: none"> • Perform climate-related scenario analysis to assess potential business implications of climate-related risks and opportunities over time and under different conditions
Risk Management	
Recommendation R4 Process for Identifying and Assessing Climate-related Risks	<ul style="list-style-type: none"> • Disclose the financial institution’s risk management processes used to identify and assess climate-related risks • Disclose the financial institution’s climate-related risks and their significance within existing risk categories such as credit, market, operational, liquidity risk • Disclose the financial institution’s processes for assessing the potential size and scope of identified climate-related risks • Disclose key sectors in the financial institution’s portfolio that are identified as being highly exposed to climate risk • Set out the financial institution’s risk management controls or actions in managing impacts from direct climate-related risks (i.e. through own operations)
Recommendation R5 Process for Managing Climate-related Risks	<ul style="list-style-type: none"> • Disclose the financial institution’s processes for managing climate-related risks including decisions to mitigate, transfer, accept, or control those risks • Disclose improvements planned/completed by the financial institution to enhance capabilities and incorporate climate-related risks into existing risk management framework • Conduct training and employee readiness planning as well as programmes • Disclose how the financial institution’s customers are engaged and helped in mitigating climate-related risks • Use metrics and targets to monitor progress in managing climate risks (i.e. exposure to and quantification of, risk types by business segment and jurisdiction) • Set out risk the financial institution’s management controls or actions in managing impacts from indirect climate-related risks (i.e. through activities of its clients) • Disclose the financial institution’s exposure to and quantification of, sustainable financing

“Stretch” Recommendations	Descriptions
<p>Recommendation R6 Process for Integrating (i) Process for Identifying and Assessing Climate-related Risks and (ii) Process for Managing Climate-related Risks into Overall Risk Management</p>	<ul style="list-style-type: none"> • Disclose how the financial institution has integrated climate-related risks into existing risk categories such as credit, market, operational, insurance and liquidity risks • Disclose how the financial institution has integrated climate-related risks into existing risk framework(s) and/or directly into credit and investment decision-making (e.g., lending policies, underwriting standards, risk ratings, pricing models) • Disclose the financial institution’s exposure to physical and transition risks within its operations and business model, including concentrations of risk at portfolio and transaction levels and by geographical footprint • Disclose the financial institution’s efforts in supporting clients through mitigating climate-related risks via sustainable finance solutions • Implement policies that restrict/divest from high-risk exposures and in line with international commitments/frameworks • Enhance the financial institution’s climate risk management framework to be more predictive
Metrics and Targets	
<p>Recommendation M1 Key Climate-related Metrics</p>	<ul style="list-style-type: none"> • Disclose the metrics used to assess the impacts of (both transition and physical) climate-related risks on lending and other financial intermediary business activities in the short-, medium- and long-term. Metrics provided may relate to credit exposure, equity and debt holdings, or trading positions, broken down by industry, geography, credit quality or average tenor • Disclose the amount and percentage of carbon-related assets relative to total assets as well as the amount of lending and other financing-related to climate-related opportunities
<p>Recommendation M2 Key Climate-related Targets</p>	<ul style="list-style-type: none"> • Set and disclose clear climate-related targets based on recognised metrics (i.e. cross-industry, sector-specific and/or institution-specific metrics)

PART D GLOSSARY

Carbon neutrality	Occurs when net contribution to GHG emissions is zero as emissions are fully compensated by offsets.
Climate metrics	A quantitative indicator that provides information about a particular activity or quantitative assessment on the level of climate-related risks for a given institution. Metrics can contain backward- or forward-looking information and can be outbound or inbound. For example, GHG metrics (outbound) quantify the amount of GHG produced by the institution. Climate metrics are translated into financial impact to quantify climate risk metrics for risk assessment and monitoring. For example, climate risk metrics include exposure to physical and transition risks (inbound).
Climate-related risks	The potential risks that may arise from climate change, their related impacts and their economic and financial consequences. Drivers of climate risks, namely physical, transition and liability risks, that are sources of financial risks.
Climate resilience	Iterative processes for managing change within complex systems in order to reduce disruptions and enhance opportunities associated with climate change.
Climate target	Climate target refers to a specific level or threshold or metric such as a temperature limit or emissions reduction to avoid dangerous interference with the climate system and achieve climate-related goals, ambitions and strategies. For example, a climate target may aim to reduce GHG emissions by a certain amount over a given time horizon. Examples of targets include net-zero carbon emissions by 2050 and carbon neutrality by 2050.
Credit risk	Credit risk (including counterparty credit risk) is the risk of a counterparty failing to perform its obligations.
Insurance/Takaful reserving risk	Risk that an ITO under-estimates its insurance/takaful liabilities given the uncertainty associated with the forecasted impact of climate change on the business written, leading to insufficient reserves held to cover those liabilities.
Insurance/Takaful underwriting risk	Risk that an ITO will suffer losses due to the impact of climate change that has changed contrary to the forecast made at the time when a premium/contribution rate was set.
Liability risk	Risks stemming from parties that are seeking compensation for losses these parties may have suffered from the physical or transition risks from climate change. The climate-related litigations can directly and indirectly impact financial losses of financial institutions.
Liquidity risk	Ability of the financial institution to fund increases in assets and meet obligations as they come due, without incurring unacceptable losses, including both market and funding liquidity. The risk that an ITO is unable to realise its investments and other assets in a timely manner to meet its financial obligations, including collateral needs, as they fall due.
Market risk	Market risk is defined as the risk of losses in on and off-balance sheet positions arising from movements in market prices.
Nationally Determined Contributions (NDC)	A term used under the United Nations Framework Convention on Climate Change (UNFCCC) whereby a country that has joined the Paris Agreement outlines its plans for reducing its emissions. In some countries the NDC would also address how the countries will adapt to climate change impacts and what support they need from, or will provide to, other countries to adopt low-carbon pathways and to build climate resilience.

Net-zero emissions	Net-zero emissions are achieved when anthropogenic (released by human activities like usage of fossil fuels) emissions of greenhouse gases to the atmosphere are balanced by anthropogenic removals (such as greater forestry and carbon capture and storage) over a specified period. Where multiple greenhouse gases are involved, the quantification of net-zero emissions depends on the climate metric chosen to compare emissions of different gases (such as global warming potential, global temperature change potential and others, as well as the chosen time horizon).
Nonlinear	A process is called nonlinear when there is no simple proportional relation between cause and effect. The climate system contains many such nonlinear processes, resulting in a system with potentially very complex behaviour. Such complexity may lead to abrupt climate change.
Operational risk	Operational risk refers to the risk of loss resulting from inadequate or failed internal processes, people and systems, or from external events. Operational risk may result in direct financial losses as well as indirect financial losses (e.g., loss of business and market share) due to reputational damage.
Paris Agreement	An international agreement signed in 2015 to keep the average global temperature rise this century well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C.
Pathways	The temporal evolution of natural and/or human systems towards a future state. Pathway concepts range from sets of quantitative and qualitative scenarios or narratives of potential futures to solution oriented decision-making processes to achieve desirable societal goals. Pathway approaches typically focus on biophysical, techno-economic and/or socio-behavioural trajectories and involve various dynamics, goals and actors across different scales.
Physical risks	<p>Economic costs and financial losses resulting from the increasing severity and frequency of –</p> <ul style="list-style-type: none"> • extreme climate change-related weather events (or extreme weather events) such as heatwaves, landslides, floods, wildfires and storms (i.e. acute physical risks); • longer-term gradual shifts of the climate such as changes in precipitation, extreme weather variability, ocean acidification and rising sea levels and average temperatures (i.e. chronic physical risks or chronic risks); and • indirect effects of climate change such as loss of ecosystem services (e.g., desertification, water shortage, degradation of soil quality or marine ecology). <p>Physical risk drivers are the changes in weather and climate mentioned above that lead to physical risks and impacts on economies and financial institutions.</p>
Resilience	The capacity of social, economic and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganizing in ways that maintain their essential function identity and structure while also maintaining the capacity for adaptation, learning and transformation.
Roadmap	A roadmap sets out a comprehensive and coordinated long-term plan to address climate-related financial risks, including steps and interim time horizons needed to do so. It also articulates ways to implement and monitor interim progress over time to reach intended outcomes and targets.
Scenario	A plausible description of how the future may develop based on a coherent and internally consistent set of assumptions about key driving forces (e.g., rate of technological change) and relationships. Note that scenarios are neither predictions nor forecasts but are used to provide a view of the implications of developments and actions.

Scope 1, 2 and 3 GHG Emissions	<p>The Greenhouse Gas Protocol separates emissions into three scopes –</p> <ul style="list-style-type: none"> • Scope 1 covers direct emissions from owned or controlled sources. • Scope 2 covers indirect emissions from purchased electricity consumed by the reporting entity. • Scope 3 covers indirect emissions from assets not owned or activities not controlled by the reporting entity along its value chain (upstream and downstream).
Stranded asset	Assets exposed to devaluations or conversion to 'liabilities' because of unanticipated changes in their initially expected revenues due to innovations and/or evolutions of the business context, including changes in regulations at the domestic and international levels.
Strategic risk	Loss in competitiveness and market standing for failing to respond in a timely manner to the changing market environment along with increasing scrutiny and preference towards climate or environmental-friendly solutions and responsible practices.
Sustainability	A dynamic process that guarantees the persistence of natural and human systems in an equitable manner. This can be done by encouraging businesses and households to embed the decision-making process with financial and ESG effects to ensure long-term resilience and value creation.
Transition risks	<p>The risks related to the process of adjustment towards a low-carbon economy.</p> <p>These drivers represent climate-related changes that could generate, increase or reduce transition risks. They include changes in public sector (generally government) policies, legislation and regulation, changes in technology and changes in market and customer sentiment, each of which has the potential to generate, accelerate, slow or disrupt the transition towards a low-carbon economy.</p>
Transmission channels	The causal chains that explain how climate risk drivers give rise to financial risks that impact financial institutions directly or indirectly through their counterparties, the assets they hold and the economy in which they operate.

Source: Adapted from multiple sources including BNM, IPCC, TCFD, BCBS and IAIS

PART E ADDITIONAL 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, 2021

Climate Financial Risk Forum (CFRF)

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

IAIS

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

IPCC

- AR6 Climate Change 2021: The Physical Science Basis, 2021

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
- 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 Litigations: 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
- NGFS Climate Scenarios for Central Banks and Supervisors, 2021
- Progress Report on Bridging Data Gaps, 2021
- Progress Report on the Guide for Supervisors, 2021

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