e-Alert

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Bank Negara Malaysia 2024 Climate Risk Stress Testing Exercise: Key Considerations for Insurers

INTRODUCTION

Although climate risk has garnered significant global attention, guidelines and regulatory requirements concerning climate risk management in Asia have only recently begun to emerge. Notably, Malaysia is one of the jurisdictions in Asia mandating insurers to conduct industry-wide climate stress testing. On 29 February 2024, the regulatory body overseeing Malaysia's financial institutions, Bank Negara Malaysia (BNM), published a policy document titled "2024 Climate Risk Stress Testing Exercise – Methodology Paper" (Methodology Paper), outlining the scope, approach and requirements of the first industry-wide Climate Risk Stress Testing (CRST) exercise. This e-Alert aims to provide a brief summary of the key requirements of the 2024 CRST for insurance companies in Malaysia, followed by several key considerations for climate risk stress testing.

BNM has categorised insurers into two cohorts, taking into account the financial institution's size, potential portfolio exposure to climate-related risks and its internal state of readiness. Insurers falling under Cohort 1 are required to submit their results by 30 June 2025, while insurers in Cohort 2 are granted an additional six months to prepare, with the submission deadline being extended to 31 December 2025.[1]

OVERVIEW

The objective of the 2024 CRST is to prompt each financial institution to:

- foster an understanding of how climate risk can impact its business, and embed climate risk into its risk management framework
- continue investing in capabilities to identify and measure climate risk, including developing proficiencies on new and evolving stress testing techniques
- generate a comprehensive understanding of data requirements, including the level of granularity necessary to complete future CRSTs
- identify areas of improvement, such as refining processes and methodologies, to enhance the quality of future regulatory submissions

BNM has clarified in the Methodology Paper that the 2024 CRSTs will not be utilised to establish additional capital requirements related to climate risk. However, BNM reserves the right to potentially impose additional capital requirements in the future as part of its supervisory measures for companies that fail to demonstrate adequate progress in strengthening their resilience to climate risk. Therefore, it is imperative that insurers undertake thorough work to understand and assess their climate exposures.

CLIMATE SCENARIOS

BNM requires financial institutions to conduct the 2024 CRST using three long-term adverse climate scenarios. These scenarios aim to assess the impact of various combinations of physical and transition risks:

Orderly Scenario – Net Zero 2050 (NZ 2050): This scenario assumes an orderly transition to a low-carbon world, limiting global warming to 1.4°C in 2050, resulting in high transition risk but low physical risk.

Disorderly Scenario – Divergent Net Zero 2050 (DNZ 2050): This scenario aims to assess insurers' vulnerability to a disorderly transition in the climate-policy pathway, while limiting global warming to 1.4°C by 2050. This results in a moderate to high transition risk but low physical risk.

Hot House World Scenario – Nationally Determined Contributions (NDCs): This scenario examines the vulnerability of insurers' current business models to inadequate climate policies, leading to an increase in global temperature of 2.6°C by 2050. Unlike the other scenarios, it is expected to have a lower impact from transition risks, focusing primarily on physical risks from climate change.

These scenarios are based on the climate-related scenarios published by the Network for Greening the Financial System (NGFS) in September 2022. They align with the approaches used by other regulators, such as those in Singapore and the United Kingdom, for their industry-wide stress testing.

[1] The list of Cohort 1 and Cohort 2 companies can be found in Appendix 6 of the Methodology Paper.

All insurance companies are required to conduct stress testing on these three scenarios, using the climate and macroeconomic variables provided by BNM.

In addition to the three scenarios described above, non-life insurers must assess the financial impact of a short-term acute physical scenario. This involves a one-off 1-in-200-years flood event in Malaysia, and is assumed to align with the climate conditions projected in the Representative Concentration Pathway (RCP) 8.5 scenario for the year 2050 of the Intergovernmental Panel on Climate Change ("IPCC").

APPROACH AND ASSUMPTIONS

The 2024 CRST focuses on quantifying changes in invested assets (i.e., market risk), and insurance liabilities (i.e., insurance and takaful risk). For credit, liquidity and operational risks, a qualitative approach may be adopted to assess these risks under the climate scenarios.

A static balance sheet approach is recommended to measure the impact of scenarios on end-2023 balance sheets, as a proxy for current business models. In general, the size and composition of balance sheets are assumed to be fixed, with no consideration of mitigation and adaptation plans. The stress scenario brings forward the impact of future climatic environment to today's balance sheet, without allowing for changes in product, pricing, underwriting, investment, expenses or reinsurance strategies.

BNM requires the stress testing to cover a period of 27 years (i.e., end-2023 to 2050), with results provided annually from 2024 to 2030, and subsequently at five-year intervals until 2050 (i.e., 2035, 2040, 2045 and 2050). Stress factors will be based on the climate pathways, with unique narratives describing how climate risk will evolve, resulting in varying stress factors year-to-year.

For the short-term acute physical flood event scenario, non-life insurers must conduct quantitative assessments of the impact on all flood risk coverage for properties and motor vehicle portfolios. Insurers are encouraged to assess the impact on contractors' all-risks and engineering segments, although it is not a requirement. BNM explicitly states that insurers shall consider both riverine floods (fluvial floods) and urban flash floods (pluvial floods) down to postcode level. Insurers must also assess the impact on key Malaysian economic regions, and the in-scope regions should cover at least 75% of each insurer's portfolio.

Insights: Planning for 2024 CRST implementation

Drawing from our experience of similar exercises in other markets, and considering the specific requirements of the BNM Methodology Paper, we have outlined some key insights and common challenges typically encountered by insurers in climate risk stress testing.

ENHANCING THE BOARD'S UNDERSTANDING OF CLIMATE RISK TO INSURANCE BUSINESS

As part of the requirements stipulated in the Methodology Paper, the insurer's board of directors has the responsibility for ensuring that the design of the 2024 CRST exercise, including the input parameters, key assumptions and methodologies, aligns with the nature, scale and complexity of the insurer's business activities. More broadly, the board is accountable for ensuring that the insurer achieves its business objectives, underscoring the importance of understanding the business impact of climate risk. This implies that the board needs to cultivate a deep understanding of the insurer's exposure to climate-related risks. Additional training may be necessary to ensure the board possesses the requisite knowledge to provide constructive challenge to the results of the CRST exercise and is aware of the various modelling limitations and underlying assumptions.

DATA REQUIRED TO PERFORM STRESS TESTING

BNM mandates insurers to assess the adequacy of their data to perform the CRST exercise. For instance, non-life insurers must consider both fluvial and pluvial flood impacts down to at least postcode level. This could present significant challenges as insures may lack data at the required granularity. Therefore, insurers may need to supplement their in-house data with open-source data or data provided by external vendors in order to quantify flood risk in line with requirements in the Methodology Paper.

Insurers must categorise their existing asset data to apply the appropriate stress factors in the CRST exercise. Climate-related risk scenarios typically require subdivision of asset portfolios by sector or subsector in order to quantify the varying market risk stresses. For example, within the fossil fuels sector, assets can be further subdivided into subsegments such as mining and quarrying, oil and gas extraction etc. Each subsegment may be subject to different stress factors due to the varied transition risk exposures.

TRANSLATION OF CLIMATE RISK DRIVERS INTO QUALITATIVE FINANCIAL AND INSURANCE RISK DRIVERS

Developing a risk map can help an insurer assess the potential impact of climate risk. A risk map outlines the climate-related risk drivers linked to market, credit and insurance risks. For example, if a government implements a carbon tax, it could adversely affect the value of an insurer's carbon-intensive assets, consequently increasing the insurer's market risk. Companies should also examine the interconnectivity of the various risk drivers and their potential impact on key financial and nonfinancial objectives.

SETTING QUANTITATIVE ASSUMPTIONS REQUIRED TO PERFORM STRESS TESTING

Insights from the risk map, combined with data from NGFS, in-house sources, desktop research and expert judgement can be leveraged to develop quantitative stress parameters for market and insurance risks. These parameters can be used to quantify the impact on the balance sheet under various short-term and long-term climate scenarios. For short-term flood risk scenarios, the Methodology Paper suggests using flood risk-specific models and geographic information systems (GIS) to assess portfolio exposures. These models can establish a more direct correlation between flood damage in specific locations and portfolio exposures, aligning with the requirements from BNM.

AWARENESS OF THE HIGH LEVEL OF UNCERTAINTY OF ASSUMPTIONS AND RESULTS

When conducting climate risk stress testing, insurers must be mindful of several key considerations due to the long-term nature of the assessment and the broad range of assumptions used in modelling:

High uncertainty: There is a high level of uncertainty associated with the probability and impact of climate events.

Limited historical data: Past data may not provide sufficient insight for future assumptions relating to climate risk. In particular, climate events are heavily linked to location whereas most existing insurance data are not location-linked.

Influence of the market and global landscape: Climate risk is intrinsically linked with many other global threats. The political landscape and consumer sentiment can significantly influence climate risk developments. However, these factors are often volatile and unpredictable. Additionally, transition risks are associated with advancements in new technology and changes in regulatory requirements.

Emergence of risks at different time periods: Climate-related risks can emerge over different time periods, requiring insurers to consider longer time horizons than their usual business planning period. Additionally, rapid reactionary changes, especially on the transition side, may impact companies in the short term and cannot be ignored.

Model limitations: Climate scenarios often require explicit considerations for the interconnected nature of climate-related impacts on risks. Most existing modelling approaches rely on dependency structures like correlations or copulas as input to the model, which do not fully account for the complex relationships present in climate-related scenarios. Furthermore, the nonlinear nature of climate-related risk means that there is the possibility for multiple climate tipping points, which are not well-handled by traditional modelling techniques.

Climate-related risk is still relatively new for insurers, and best practices in risk measurement techniques are still evolving. For example, in the United Kingdom, emerging perspectives suggest that the climate scenarios assumed in recent stress testing exercises may not be sufficiently extreme, which may lead to the adoption of more severe climate scenarios in the future.

Given the increasing importance of climate risk, insurers would benefit from developing thought processes and investing in risk management techniques sooner rather than later, using a practical and pragmatic approach.

Conclusions and next steps: Embedding climate risk into the risk management framework

The evaluation of the impact of climate risk on insurers is a complex exercise and the 2024 CRST marks the beginning of an ongoing journey for insurers in Malaysia to enhance their capabilities in handling climate risk.

It is essential to understand that climate risk assessment extends beyond completing the CRST. Insurers are expected to integrate climate risk into their overall risk management frameworks. Although the 2024 CRST does not require management actions to be considered, insurers should start planning potential actions, their timing, and the expected impacts to address the challenges brought by climate change.

Milliman has helped and provided support to insurers worldwide in climate risk stress testing. In 2023, Milliman consultants conducted a webinar titled “Climate Stress Testing and Reporting across Asia,” and published a paper on regulatory requirements for climate risk stress testing across Asia (see https://www.milliman.com/en/insight/climate-related-risk-stress-testing-requirements-asia-pacific).

If you would like to learn more about climate-risk stress testing, please contact the authors of this paper, or your usual Milliman consultant.

More Approaches

Milliman has published several papers on possible approaches to climate risk management, including the following:

- Flood Risk Modelling in Europe, by Jan Thiemen Postema, Daniël van Dam, Menno van Wijk, Niels van der Laan, Antoine Rainaud and Eve Titon (May 2024)
- Consistent Equity Risk-Neutral Valuation Under Climate Stress Tests, by Sophian Mehalla, Grzegorz Darkiewicz, Michał Krzemiński and Céline Francony (February 2024)
- A Simple Approach to Climate Scenarios, by Amy Nicholson (March 2023)
- Developing Climate Risk Scenarios for Solvency II ORSA, by Grzegorz Darkiewicz, Diana Dodu, Michał Krzemiński and Daniele Zinicola (October 2022)
- Causal Modelling: A Possible Application Considering Climate Risk and Asset Returns, by Chris Beck, Adél Drew, Lewis Duffy, Tatiana Egoshina and Russell Ward (October 2022)

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