

Malaysia: 2024 Climate Risk Stress Testing Exercise

Key observations and takeaways

Farzana Ismail, FIA, FASM
Erica Chan, FSA, CERA, FASHK
Pingni Eng, FSAS, CERA, AASP
Daniel Lim, FIA C.Act, FASM



Climate risk stress tests—the Malaysian experience

In recent years, climate-related financial risks have shifted from being a long-term consideration to a supervisory priority. Globally, an increasing number of regulators are implementing climate risk stress testing (CRST), using either top-down or bottom-up approaches to evaluate the resilience of financial institutions and the broader financial system against both physical and transition risks arising from climate change. In particular, the banking industry is at the forefront of this effort, with the insurance industry following closely behind.

In 2024, Bank Negara Malaysia (BNM) mandated financial institutions, including insurers, to participate in an industrywide CRST exercise. This initiative positions Malaysia as one of the foremost jurisdictions in Asia to undertake a coordinated, sectorwide climate stress test. Indeed, Malaysia is among the few jurisdictions globally requiring broad-based participation across banks and insurers.

This white paper summarises key observations and lessons learned from the 2024 CRST exercise, focusing on the life insurance sector. While the exercise has provided valuable insights and heightened awareness of climate risk exposures, it has also highlighted significant methodological, data and modelling challenges that insurers should address as climate stress testing evolves from a regulatory compliance exercise into a core risk management tool.

Overview of the 2024 BNM CRST exercise

BNM required participating financial institutions to conduct a CRST exercise based on prescribed scenarios and methodologies. A detailed overview of the key requirements of the 2024 CRST is in a Milliman Asia e-Alert (available at <https://www.milliman.com/en/insight/bank-negara-malaysia-2024-climate-risk-stress-testing-exercise>).

At a glance, the key features of the exercise encompassed:

- Industrywide participation, covering banks and insurers
- Three prescribed climate scenarios, each focusing on different combinations of transition and physical risk intensities

- A static balance sheet approach, where asset and liability profiles were assumed to remain unchanged over the stress horizon
- Quantitative and qualitative assessments tailored to different risk types and institutions

For life insurers in particular, the exercise required a quantitative assessment of climate impacts across market and insurance/Takaful risks, while credit, liquidity and operational risks were assessed qualitatively.

Key observations from the exercise

FIRST INDUSTRY WIDE CRST EXERCISE FOR MOST INSURERS

For most Malaysian insurers, this was their first CRST exercise. As a result, one of the most significant takeaways was not the numerical results themselves, but the realisation that:

- With the exception of a few multinational firms, existing climate risk frameworks among life insurance companies remain at an early stage of maturity.
- Significant additional investment is required in governance, data, and analytical capabilities.

The exercise has therefore served as an important catalyst, enabling life insurers to gain a deeper understanding of the scope and complexity of climate-related financial risks.

LIMITATIONS OF THE STATIC BALANCE SHEET APPROACH

The use of a static balance sheet approach helps simplify the CRST exercise for many insurers who are conducting it for the first time. However, this approach may lead to potentially misleading conclusions, as it:

- Assumes no evolution in product design (including the repricing, withdrawal or redesign of long-term guarantee products), risk appetite and investment strategy
- Ignores management actions such as changes in product strategy, repricing, reinsurance or asset allocation

Therefore, this approach may either overstate or understate long-term vulnerabilities. As climate risks are inherently long-term and path-dependent, particularly for life insurers, results based on a static balance sheet should be interpreted with caution.

SCENARIO DESIGN AND SEVERITY

While the prescribed scenarios provided a useful starting point, many institutions observed that:

- The scenarios were not sufficiently severe to represent a true stress test, particularly scenarios involving 1.5°C–2.5°C temperature rises.
- Important non-linear effects and disorderly transition risks may not be fully captured.
- Scenario differentiation across industries and asset classes was limited.

As a result, the exercise may understate tail risks and extreme but plausible climate outcomes.

MODELLING CHALLENGES

The exercise highlighted a broad spectrum of modelling maturity across the industry.

- Some insurers relied on simple proxy-based approaches.
- Others attempted more advanced models, though often with limited validation or calibration.

This variation underscores the nascent stage of the industry's climate risk modelling capabilities, and indicates potential for more established market standards and practices to emerge. In Europe, some large multinationals have developed more advanced models to assess climate-related risk (e.g. the adoption of causal models that explicitly link climate variables to financial risk drivers for their internal reporting and disclosures).

DATA GAPS AND GRANULARITY ISSUES

Data availability emerged as one of the most significant constraints.

- Many insurers lack sufficiently granular data on asset exposures by industry, geography or emissions intensity; for example, it was challenging to assess whether an equity investment in a conglomerate should be classified as a green or brown investment.
- Counterparty-level climate data remains incomplete or inconsistent, leading to the need to source supplementary data from external providers.
- Insurance liability data is often not structured to support long-term climate risk analysis. Traditional linear risk analysis tools, which rely on hindsight and are calibrated using historical data and trend extrapolation, are not well suited for assessing emerging climate risks. The general lack of climate risk-specific data within life insurance liability datasets underscores the need to update traditional risk tools and adopt new approaches that address this additional layer of uncertainty.

These data limitations constrained both the scope and robustness of quantitative assessments.

Key benefits from the climate risk stress testing exercise

Despite the limitations, the 2024 CRST has delivered meaningful value to participating institutions by:

- Raising awareness of climate risks among senior management and at board level
- Encouraging cross-functional collaboration between risk, actuarial, investment and sustainability teams
- Highlighting gaps in data, systems and modelling capabilities
- Establishing a baseline for future exercises and regulatory expectations

Another important benefit has been the strengthening of firms' broader scenario analysis capabilities. In particular, companies are increasingly being required to focus not only on the quantitative outputs, but also on the implications of those outputs and the actions that may follow. This reflects a wider trend across the industry, as firms seek to assess more complex and emerging risks for which historical data is limited. In this context, the CRST has provided a valuable opportunity for participating firms to develop more robust and insightful scenario analysis capabilities.

Importantly, as BNM clearly states that this is not a one-off exercise, the knowledge and experience gained from the 2024 exercise should be regarded as part of a capability-building process. It is expected that further enhancements will be required for future exercises.

COMPANY CONSIDERATIONS LOOKING AHEAD

Strengthening climate scenario analysis and stress testing

Insurers may consider enhancing their climate scenario analysis framework to provide a more robust assessment of potential vulnerabilities. The existing analysis can be extended beyond minimum regulatory expectations, including the use of a dynamic balance sheet approach that would capture potential management actions such as changes in future product design and investment strategy. Insurance companies may also conduct reverse stress testing to identify scenarios that could threaten business viability, use more severe stress scenarios where current assumptions may not be sufficiently challenging, and refine scenarios so they better reflect the insurer's specific risk profile.

Deepening risk and exposure assessment

Insurance companies can improve on the granularity and depth of climate risk assessment across the balance sheet. This includes differentiating market stresses by sector or industry; incorporating credit rating migration analysis; and carrying out more detailed reviews of concentrated or particularly sensitive exposures, such as supply chains and significant investment holdings. In addition, insurers may consider undertaking longer-term assessments of product-related risks, including potential impacts on mortality or morbidity pseudo-guarantees.

Enhancing governance, strategic integration and market benchmarking

Besides CRST, life insurance companies can continue to strengthen the integration of climate risk considerations into their governance and decision-making framework. This includes developing internal policies that explicitly reflect climate-related risk considerations, such as investment guidelines, and ensuring that these are embedded within broader risk management practices. It would also be beneficial to benchmark the insurer's climate risk strategy and practices against peers to identify emerging good practices and areas for further enhancement.

Additional resources

See the following for more of our thought leadership related to this topic.

[Climate forecast: Looking beyond net-zero mortality predictions](#)

[If there were a 1 in 6 chance of 8°C degrees of warming, what would you do differently?](#)

[Beware “net-zero” mortality and morbidity!](#)

[The rise and fall: Climate change and inflation modelling](#)

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CONTACT

Farzana Ismail
farzana.ismail@milliman.com

Erica Chan
erica.chan@milliman.com

Pingni Eng
pingni.eng@milliman.com

Daniel Lim
daniel.lim@milliman.com

