

# Climate-related risk: Stress testing requirements in Asia

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Climate change has been a keenly discussed topic for more than a decade. However, it's only recently that financial regulators, globally, have started to seriously assess its potential impact on financial systems as climate scientists call for rapid change to avert a climate-related disaster.

Globally, governments are becoming increasingly conscious of the severe adverse impact that climate change could bring to socioeconomic systems across the world over the next few decades. The 26th annual summit of the Conference of the Parties (COP26), held in Glasgow, United Kingdom (UK), between 31 October and 13 November 2021, brought together most countries to work together to tackle climate-related risks. In particular, the Glasgow Climate Pact agreed at COP26 sets out plans for countries to accelerate emission cuts over the next decade in order to achieve carbon neutrality by 2050.

In response to the challenges posed by climate change, many central banks and supervisors around the world have begun taking measures to assess climate-related risk that could impact the stability and resilience of the global financial system. In late 2017, a group of central banks and financial supervisors created the Network for Greening the Financial System (NGFS) to spearhead efforts in this area. In Asia, many financial regulators have echoed their counterparts in the UK and continental Europe and become more vocal on the subject of climate-related risk.

The insurance industry is in a unique position as climate-related risks often impact both sides of companies' balance sheets. On the asset side, insurers' asset investments face potential headwinds, especially if they are highly exposed to fossil-fuel-dependent industries (e.g., coal-related assets, which will be adversely impacted as most countries have agreed to phase down coal in the coming years). On the liability side, insurers, particularly non-life insurers, face greater underwriting risks, as climate change is expected to lead to more frequent catastrophic events.

To better understand the potential impact of climate changes, a popular approach among insurance regulators is to use climate scenario analysis. Many regulators have emphasised the importance of climate-related risk assessment and encouraged insurers to develop their own climate scenarios for own risk and solvency assessment (ORSA) and stress testing purposes. A few regulators have even come up with a set of prescribed scenarios and have required insurers to conduct analyses. Arguably, the underwriting risks faced by non-life insurers are greater, but also better understood. This article focuses primarily on climate-related risks and regulatory stress testing requirements from the perspective of life insurers and reinsurers in Asia.

## What is climate-related risk to insurers?

Climate-related risks include all risks stemming from trends or events caused by climate change. This encompasses extreme weather events, which include natural catastrophes but also more general climate trends such as a general rise in temperature, sea levels or climate-related forced migration that could affect insurance activity.

Most countries adopt the Task Force on Climate-related Financial Disclosures (TCFD) approach that classifies climate-related risks into physical risk, transition risk and liability risk. However, liability risk is also often considered as an element within physical and transition risk rather than a separate consideration. Liability risk arises from people or businesses seeking compensation for losses they may have suffered from the physical or transition risks from climate change.

FIGURE 1: DEFINITIONS OF RISKS

RISK	DEFINITION
<b>Physical risk</b>	<ul style="list-style-type: none"> <li>▪ Physical risks are risks associated with the direct impact of climate change. Physical risks can be divided into two further categories: acute and chronic.</li> <li>▪ Acute physical risks are event-driven, including increased frequency and severity of extreme weather events such as cyclones, hurricanes and floods.</li> <li>▪ Chronic physical risks arise from longer-term shifts in climate patterns, e.g., sustained higher temperatures that may cause rising sea levels or heatwaves.</li> </ul>
<b>Transition risk</b>	Transition risks arise from the move to a low-carbon, greener economy. This transition could result in large changes in the value of certain assets or higher costs of doing business. Regulation and reputation risks can also arise as a result of this transition.

The two types of risks are deeply connected, and it can be argued that physical risk is inversely related to transition risk. As there is a greater urgency for transition into a low-carbon economy, and thus more actions taken to combat climate change in the future, there is increased transition risk and reduced physical risk. Conversely, if climate change actions are not taken in sufficient scale and speed, there is higher physical risk but lower transition risk.

## Stress test requirements of Asian regulators

Regulatory stress testing on climate risk is expanding fast globally, led by regulators in jurisdictions with a clearer focus on environmental policies, such as France and the UK. Currently, regulatory stress testing aims to allow regulators and the financial services industry to develop a better understanding of climate-related risk and the plausible adverse impacts within financial systems and economies, with no capital requirements being imposed by the test results. However, it may lead to insurers looking more closely at capital implications from potential climate-related losses.

### TRENDS IN THE UK AND FRANCE

In the UK, the Bank of England “Life Insurance Stress Test 2019” guidelines outline the asset shocks under three potential transition risk scenarios (i.e., a sudden transition, a long-term orderly transition and a failed future improvement in climate policy scenarios) split by sector. The 2021 Biennial Explanatory Scenario exercise assesses the resilience of the largest insurers in the UK using shocks to equity indices, corporate bond yields and government bond yields under three climate scenarios (i.e. early policy action, late policy action and no additional policy action scenarios).

In the European Union, France led the way in performing a 2020 climate pilot exercise using reference scenarios of the NGFS. A set of climate-related variables such as carbon price and macroeconomic and financial variables at five-year intervals from 2020 to 2050 were provided for each transition scenario. The European Insurance and Occupational Pensions Authority (EIOPA) issued a discussion paper in June 2020 setting out methodological principles to incorporate climate-related risks in a stress testing framework. These principles can be used to develop future EIOPA stress tests on climate-related risks, although no shock parameters have been provided as the stress tests are still under development.

In Asia, authorities in many jurisdictions have begun engaging industry on the topic of climate-related risks for insurers, at least for non-life insurers. Some have published guidelines requiring insurers to consider climate-related risks in their ORSAs or stress testing. But, with the exception of Singapore, full details of regulatory stress testing requirements have not been published.

A summary of our understanding of the current stress testing requirements of selected Asia-Pacific regulators (at the time of publishing this article) is given in Figure 2.

**FIGURE 2: STRESS TESTING REQUIREMENTS**

JURISDICTION	RELEVANT GUIDELINES	STRESS TEST REQUIREMENTS/DESCRIPTION	NEXT STEPS
<b>Singapore</b>	<p>2021 Industry Wide Stress Testing (IWST) Guidelines include a climate baseline scenario, with detailed prescribed macroeconomic and financial stress parameters over a short-term horizon of three years.</p> <p>2020 Guidelines on Environmental Risk Management (Insurers) stipulate that insurers should include, where relevant, short-term and long-term environmental scenarios into their scenario analyses and stress testing.</p>	<p>2021 IWST assumes a disorderly adjustment scenario with quick actions taken by governments to tackle climate change. This results in a short-term decline in economic growth in all economies, with some sectors and countries relatively harder hit. Different stresses have been prescribed for each sector and country. In the three-year scenario, carbon taxes, sovereign yields and credit spreads are assumed to increase while equity prices fall, with some recovery in the third projection year.</p>	<p>Ongoing annual stress tests are likely to involve at least a climate scenario, as announced by the MAS.</p> <p>A long-term climate stress scenario has been released to the non-life insurance industry for feedback, and the MAS is expected to expand participation to include the life insurance industry in the near future.</p>
<b>Australia</b>	<p>Prudential Practice Guide draft CPG 229 Climate Change Financial Risks contains guidance on managing the financial risks of climate change. The guidance covers the views of Australian Prudential Regulation Authority (APRA) of sound practice in areas such as governance, risk management, scenario analysis and disclosure.</p>	<p>Climate Vulnerability Assessment (CVA) is currently applicable to the banking sector only and is designed to use existing stress testing methods to test the resilience of entities to emerging financial risks associated with climate-related risk.</p>	<p>The experience gained from the CVA exercise may be applied to similar future activities in the insurance and superannuation sectors.</p>
<b>Taiwan</b>	<p>Financial Supervisory Commission (FSC) has required the insurance industry to include climate-related risk in the production of 2020 ORSA reports.</p>	<p>FSC announced that the 2021 supervisory stress tests would require non-life insurers to consider extreme weather environments brought on by climate change to project the possible impact upon the solvency of the companies.</p>	<p>It is expected that FSC will extend the supervisory stress tests to cover the whole financial industry (including life insurers). Details of the timeline and scenarios have not yet been released.</p>
<b>Hong Kong</b>	<p>The Insurance Authority (IA) has explicit requirement for companies under Hong Kong's Group-Wide Supervision (GWS) Framework to disclose their approaches to managing climate-related and environmental risks and the potential impact of material climate-related and environmental risks to the supervised group at least annually.</p>	<p>The Hong Kong Monetary Authority (HKMA) has conducted a pilot exercise on climate-related risk stress tests for the banking industry on a voluntary basis.</p> <p>The Green and Sustainable Finance Cross-Agency Steering Group was set up in May 2020 to coordinate the management of climate and environmental risks of the financial sector. One of its goals is to promote the use of scenario analysis to enhance understanding of the implications of climate change.</p>	<p>It is expected that more guidelines will be released soon.</p>
<b>Malaysia</b>	<p>A Climate Change and Principle-based Taxonomy guideline has been published by the Bank Negara Malaysia (BNM) to facilitate financial institutions in assessing climate-related risks within their risk management processes.</p>	<p>Joint Committee on Climate Change (JC3) is developing guidance documents on risk management and scenario analysis.</p>	<p>BNM is encouraging financial institutions to take climate-related risk considerations into account, qualitatively, in their risk management.</p> <p>It is expected that more guidelines will be released soon.</p>

It should be noted that Figure 2 is not an exhaustive list of jurisdictions with climate-related risk regulations or guidelines for financial institutions, or those with announced plans to issue them. We understand that China has launched regulatory climate-related stress testing for its commercial banks in 2021, although no timeline has been announced for regulatory stress testing exercises applicable to the insurance industry. Japan has started formal climate stress testing for large financial institutions, which is expected to be completed by mid-2022. We also understand that the Bank of Korea is performing a top-down climate impact assessment for the banking system to understand its vulnerability to transition risks, with no immediate requirements for regulatory climate-related risk stress testing for the insurance industry.

In general, regulators in Asia have focused on stress and scenario testing as the starting point for risk assessment for financial institutions, and banks have been at the forefront of these developments. There is also a general tendency for regulatory activity to be focused on non-life insurers ahead of life insurers.

## Where are Asian insurers with their climate-related risk assessments?

Some insurers across the Asia region have started to conduct both qualitative and quantitative climate-related risk assessment exercises. However, it is noted that most, if not all, are still at an experimental stage, with detailed quantitative exercises being considered premature. Although the development of methodologies and tools that would produce more meaningful information is generally work-in-progress, initiatives are underway to boost industry-level engagement. Climate-related topics are also being increasingly discussed at actuarial and insurance conferences in the region.

While local business units of some multinational insurers have obtained high-level guidelines from their regional or group offices, in general, specific information or guidance on stress and scenario testing has been limited. While top-down requirements to perform quantitative analysis have been relatively uncommon, many business units are expected to include qualitative narratives on climate-related risk in their risk management frameworks or ORSAs.

The most commonly cited challenges by insurers in climate-related risk assessment are gaps in the availability and quality of data to be used in producing climate scenario analyses and calibration of shock parameters. There is also significant amount of uncertainty over how data sets could change in the future as greater understanding of the impacts of climate change emerge. To overcome this, some insurers have supplemented their internal risk data with other public data sources from governments and reputable international institutions. As the impact of climate-related risks depends heavily on sector-specific information and on the location of the exposure, some insurers in Asia are also making headway in gathering higher granularity of exposure data in order to produce more meaningful analyses.

On top of the data issues faced, the time horizons to be considered for climate stress testing are also an issue up for debate. Climate-related risks are expected to emerge over a longer time horizon, which presents practical challenges to scenario testing. There will be a vast number of possible outcomes that are affected by external factors such as demographic and economic developments, government policy to curtail carbon emission, technological advancement and changes in public sentiment. The design of a robust climate-related risk assessment approach must consider the potential for the inherent uncertainties associated with the transition and physical risks over a long enough time horizon. While many insurers typically adopt a time horizon of five years or less in their stress test scenarios, most would agree that climate-related risks require consideration of a much longer time horizon, which makes it necessary to introduce more assumptions to model the evolution of the insurers' portfolio. Notwithstanding these challenges, insurers also need to ensure that their models are well developed to be able to support the complexity required to project climate-related risks. This implies an increase in both model risk and assumption risk in the stress testing exercise.

A common point raised by some insurers when it comes to climate scenarios is that the climate-related risk impacts are "double counted" or have already been considered within other scenarios such as market or insurance stress scenarios. As such, climate-related risk is discussed qualitatively within ORSAs but not assessed any further. However, it is important not to underestimate some material threats of climate change to business activities and portfolios of insurers, in particular the interrelated impacts between the physical and transition risks. For example, adverse climate change can reduce the production of crops, leading to an increase in food prices, and thus reducing consumers' disposable income to purchase insurance.

Despite the complexity of climate-related risks, more sophisticated insurers have started developing capabilities to assess climate-related risks using climate scenarios. Insurers typically start using a single hypothetical scenario, although it is necessary to use a relatively high number of scenarios to produce a range of outcomes that reflect the high degree of uncertainty involved. In this respect, there may be a need for a paradigm shift from current stress test practices to help identify vulnerabilities and concentrations in climate risk, and to start planning for management actions to appropriately mitigate climate-related risks. Many insurers in Asia are at the beginning of this journey, with a long way to go.

## Concluding remarks

It is expected that more and more regulators will start implementing TCFD recommendations as they aim to facilitate a smooth transition to a lower-carbon economy. While there is some level of convergence in global thinking on climate-related risk, with the help of international bodies like NGFS, insurers in Asia are given wide room to interpret these concepts and design scenarios. This presents challenges as well as opportunities and will likely encourage increased collaboration between public and private institutions in sharing of best practices.

Rather than deferring the discussion due to a lack of certainty, it is imperative to promote education and awareness of the risk and get buy-in from key stakeholders. Ideally the tone should come from the top in order to shift mindsets to the longer-term thinking necessary for effective management of climate-related risks. The time to start thinking more deeply on climate-related risk is now.



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