Climate resilience, modelling and insurance innovation

L-R: Chairperson Michael Rellosa, Messrs Laurence Lumagbas, Israel Dela Cruz, Jose Augurio De Vera, Jr. and Vyjayanta Kashyap.

As climate risks intensify across Asia, the 22nd Asia Nat CAT and Climate Change Conference brought together insurers, catastrophe experts, scientists and industry stakeholders to examine how climate intelligence, evolving catastrophe models and stronger risk financing strategies can help build resilience in an increasingly volatile environment.

By Jake Dellosa

Resilience was high on the agenda in the Philippine business capital of Makati City as the 22nd Asia Nat CAT and Climate Change Conference got underway, given Asia's historic vulnerability to natural disasters. The host country, the Philippines, had itself been rocked by an earthquake just weeks before the event, killing dozens, causing significant economic losses, and shaking large swathes of the country's southernmost island, Mindanao.

From the outset, it was clear that the speakers and guests were fully aware of rising Nat CAT losses. In his opening address, Philippine Insurance Commissioner Atty Reynaldo Regalado called for stronger climate resilience and innovative risk financing amid the increasing frequency and severity of natural catastrophes and their growing impact on economies, communities and the insurance sector.

Atty Reynaldo Regalado

"These events remind us that the most catastrophic disasters are no longer rare, once-in-a-generation occurrences. As risks continue to evolve, so too must our efforts to strengthen financial resilience and ensure that people, businesses, and communities can withstand shocks and recover more quickly from their impacts," Mr Regalado said, stressing the need for insurers to adopt forward-looking approaches to underwriting, pricing, reserving and capital management.

Still, he remained optimistic. "What matters most is that we are prepared — because risks become far less intimidating when we are ready for them. I hope this forum will be a chance not just to exchange ideas and experiences, but also to identify practical solutions that will strengthen the resilience of our industry and the communities we serve."

Are models still effective?

The effectiveness of models in the current environment was a key topic of discussion at the event, with clients, risk managers and insurers agreeing that climate change has significantly changed how insurers should develop and use catastrophe models.

JBA Risk Management Technical Director Dr Pradeep V Mandapaka said climate change is expected to significantly alter flood risk patterns, prompting catastrophe models to increasingly rely on climate projections to quantify those changes. "We take the daily precipitation and daily temperature, and we estimate these change factors for every location in the world along the river networks, as well as for every gridded location when it comes to surface water flooding," he said. Under the medium-emissions SSP2-4.5 scenario for 2050, "there are a lot of green dots for river flooding", with green indicating that "the future river flooding is more intense than the baseline flooding", although some areas may experience reduced flooding.


Dr Pradeep V Mandapaka

Dr Mandapaka said the projected changes become even more pronounced under higher-emissions scenarios. "If we move to a higher-emission scenario, the shades of green get greener and the shades of brown also get more brown," he said, meaning future flooding is expected to become more intense than under the SSP2-4.5 scenario. "These are some of the examples in which we can quantify the changes in flood risk. And once we have these change factors, we can incorporate these change factors into our models, such as the hazard module and the event set module," he added.

He also noted that the change factors are used to create new event sets and hazard maps, enabling insurers to compare projected losses against today's baseline. Using the Philippines as an example, he said exceedance probability curves under the high-emissions SSP5-8.5 scenario for 2050 are higher than the baseline, indicating greater potential losses. He added that the approach also produces climate-adjusted hazard maps for surface water, river and coastal flooding.

Understanding models and pricing

Beyond the numbers, according to Taiping Reinsurance General Manager of Analytics Centre Michael Fung, it is important to understand what factors are influencing model results. "Do you understand the risk actually happening in the region, and what data is driving the model result? These are the key things that we consider when looking at pricing."

Mr Fung said that models support decision-making but are not the be-all and end-all. "The model output is a guideline. It provides direction, but it is not the holy grail or the ultimate truth," he explained. Instead, the model serves as a reference point that underwriters can use alongside their expertise. For more advanced models supported by strong, reliable data, insurers can place greater confidence in the results. However, where data quality is less certain, underwriters are given greater flexibility, allowing them to price risks within a wider range based on their professional judgement.


Mr Michael Fung

Swiss Re Senior Product Manager for APAC Han Chen echoed Mr Fung's point that models are a guide, not an absolute answer. Dr Han agreed that increasing sophistication in modelling may have given the industry a false sense of confidence in its understanding of risk.


Dr Han Chen

"My supervisor always told me that all models are wrong, but some are useful. I think that is particularly true in the context of Asia because we are dealing with really rapid urbanisation and climate change. The uncertainty is still there. I don't think model sophistication is the only issue behind why we cannot estimate risk very well," he said.

What clients expect from insurers

To give insurers a better understanding of clients' perspectives, the conference also featured a representative from the telecommunications sector to discuss what the industry expects from insurers in the face of natural disasters and climate change.

Globe Telecom Vice President and Head of Risk and Property Management Raymond Martin Aguilar said telecom operators manage "massive, geographically dispersed networks spanning tens of thousands of kilometres of terrestrial fibre and submarine cable systems", making them highly vulnerable to extreme weather and cascading operational disruptions.


Mr Raymond Martin Aguilar

"When a typhoon hits or a river floods, it isn't just our equipment that's at risk. We face a compounding chain reaction." Beyond physical damage, he said insurers should recognise that losses are amplified by "surging labour costs" and the rising cost of replacing specialised telecommunications equipment, making recovery more complex and expensive after major disasters.

Mr Aguilar also challenged insurers to look beyond natural catastrophes and consider the full spectrum of operational risks that can disrupt telecommunications services. "Critical disruptions like fibre cuts and submarine cable theft severely threaten network reliability," he said. "Can you believe that they can actually go down and steal our cables? That's an existing threat right now."

Climate intelligence and the road ahead

The conference concluded with perspectives from experts working directly in weather, climate and catastrophe risk.

PAGASA Assistant Weather Services Chief Jorybell Masallo said climate intelligence is becoming

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an essential tool for risk-informed decision-making, particularly in a country as disaster-prone as the Philippines. "Insurers may increase premiums or tighten coverage in high-risk areas, especially those heavily affected by disasters," Ms Masallo said.


Ms Jorybell Masallo

She added that "capital adequacy considerations" are equally important, noting that insurers "must maintain sufficient reserves to absorb large losses", with climate stress testing helping determine the capital needed to withstand future climate-related events. As climate risks continue to intensify, Ms Masallo emphasised that integrating scientific forecasts into insurance decisions is no longer optional but necessary.

World Meteorological Organization (WMO) Regional Office for Asia and the Pacific Technical Coordinator for Services Jochen Luther said the scientific evidence is unequivocal. "It's just the fact," Mr Luther said. "The climate is changing, the world is warming. All the models, all the observation data sets show this."


Mr Jochen Luther

He noted that 2024 was "the warmest on record" globally and that temperatures are already approaching 1.5℃ above the baseline, while Asia continues to experience the same upward trend. "Most of South Asia and Southeast Asia have above normal rainfall," he added, highlighting the changing climate conditions that are increasing the frequency and severity of weather-related risks. For insurers, these climate trends underscore the importance of incorporating science-based forecasts and observations into underwriting, pricing and long-term risk planning.

The 22nd Asia Nat CAT and Climate Change Conference was held on 25–26 June. It was organised by *Asia Insurance Review*, with JBA Risk Management as Knowledge Partner.


Panel: Capital in focus — The true cost of catastrophe risk
L-R: Moderator Charisse Rossielin Young Cruz, Mr Paulo Antonio Burro, Mr Premasis Mukherjee, Ms Adrea Lau and Ms Melisa Turingan