

AMRO-INSPIRE-GAIP Conference

Climate change – the effects, the impacts

Assessing environmental risks in Southeast Asia and what these mean for the insurance and banking sectors



by Thessa Vasudhevan, Research Consultant, INSPIRE; Lea Reitmeier Policy Analyst, Sustainable Finance, LSE; Aziz Durrani, Capacity Development Expert, AMRO; Simon Dikau, Distinguished Policy Fellow at the Grantham Research Institute and Research Director at INSPIRE; Min Hung Cheng, Senior Director, Global Asia Insurance Partnership

The inaugural AMRO-INSPIRE-GAIP Conference in Singapore in April 2023 brought together senior figures from financial regulators, central banks, multilateral development banks, non-governmental organisations and the financial sector to discuss the effects and impacts of climate change on the financial system. The conference was held as a side-event to the [Plenary Meeting](#) of the Network of Central Banks and Supervisors for Greening the Financial System (NGFS) in Singapore.

This note gives an overview of the presentations, discussions and key summary points from each of the conference's four sessions. Focusing on the Asia-Pacific region, these sessions addressed the following themes: scenarios for environmental and climate risks; the role of the ocean economy; climate-related financial risks in insurance; and public-private partnerships.

Session 1: Environmental and climate risks – regional scenarios for Southeast Asia

Introduction

Environmental and climate risk scenarios, with a focus on the Southeast Asian context, was the theme of the first panel of the conference. [Simon Dikau](#), Distinguished Policy Fellow at the Grantham Research Institute on Climate Change and the Environment at the London School of Economics and Research Director at INSPIRE, provided an introduction to scenario analysis and insights into the dependence of economies and the financial system on nature. The presentation emphasised that climate- and biodiversity-related risks are subsets of environment-related risks and two sides of the same coin. They are characterised by a high interdependence and the potential to create significant dynamically interacting and potentially compounding risks to the system. While the NGFS and financial industry had started off with a strong and almost exclusive focus on climate change-related risks, it has now become increasingly clear (and accepted by the NGFS and other bodies) that an expanded and more comprehensive understanding of broader environmental risks is needed. In this context, focussing on just one risk component, such as the exclusive focus on assessing climate risk, would lead to an incomplete picture of related risks. While empirical studies are starting to explore these broader environment-related risks, sometimes labelled ‘nature risks’, with a focus on ecosystem services and related impacts and dependencies, incorporating these broader risk components into dynamic and forward-looking scenario analysis to test the resilience of the financial system is still in its infancy.

Discussion

[Aziz Durrani](#), a capacity development expert from AMRO moderated the subsequent discussion. Durrani and Dikau were joined by three other experts: [Fiona Stewart](#), the global lead for insurance and pensions within the World Bank Group; [Adam Ng](#), the Asia-Pacific lead for the Greening Financial Regulation Initiative (GFRI) and a sustainable finance advisor at WWF; and [Thessa Vasudhevan](#), a research associate at the Asia School of Business.

During the first round of questions, Durrani asked the panellists to provide more concrete guidance and tips on how to develop these broader ‘nature scenarios’ that go beyond the current set of climate-focused approaches. The panellists agreed that models can be helpful to provide insights into the magnitude of specific risks, but also emphasised their limitations. An example was given of one [study](#) which found that in Brazil, the collapse of ecosystem services would be associated with a 9% increase in corporate non-performing loans by 2030. The [ENCORE](#) database was frequently mentioned as a suitable starting point for physical and transition risk assessments. The discussants also made sure to take into account the regional context in their answers. This was particularly apparent during the discussion on transition-related risks.

Many areas in Southeast Asia are hot spots for biodiversity. A materialisation of associated transition risks through the designation of new protected areas could disrupt company operations, increase costs or even cause relocations of companies and economic activity. Stewart stressed the importance of central banks and financial supervisors to build an understanding of how much lending is going towards activities in these areas that could become protected in the future. Vasudhevan provided insights into a [study](#) conducted by Bank Negara Malaysia (BNM) which covered physical and transition risk scenarios. The BNM study investigated 15 ecosystem services and found that 54% of the analysed commercial loan portfolio was exposed to sectors that depend highly on ecosystem services. It also found that 87% of the analysed commercial loan portfolio was exposed to sectors that have a high adverse impact on ecosystem services related to greenhouse gas emissions, water and land use. Ng provided an overview of key considerations before conducting such a scenario analysis. He stressed

that, before deciding on the suitable data sources and scenarios, it is essential to develop suitable scenario narratives. This helps to identify material transmission channels and determines the level of granularity needed in the later assessments. To inform their narrative, BNM for example gathered insights by talking to various stakeholders, including academics, environmental NGOs and policymakers. Adding to his opening remarks outlining the opportunities of and need for broader environmental scenarios, Dikau discussed some practical challenges which can have design implications. Vasudhevan added that limitations around data availability and granularity are also an important consideration in practice from a central banking point of view. [BNM](#), for example, could not access good location-specific data, making it difficult to map loans to companies in conservation-critical areas.

Questions from the audience focused on the reasons why climate change and biodiversity loss were initially seen as separate issues and not as closely interconnected components of environmental risk in the first place. The panel re-emphasised that, if the financial world could turn the time back, the different environmental risk components should be viewed more holistically right from the start. Ng pointed out that the [Kunming-Montreal Global Biodiversity Framework](#) was only finalised in 2022, while the Paris Agreement's framework has been utilised from 2015. This lack of metrics and comparable data to assess biodiversity loss hindered uptake, especially since data and a reliable numerical framework that can stand up to robust interrogation and challenge are key requirements before the financial sector (and their regulators) can begin to utilise it. While nature-related risks have so far been poorly covered across the financial markets, the associated impacts and consequent second-order risks are becoming increasingly visible and gaining attention.

Summary

In this session, the panellists emphasised the importance for central banks to further conceptualise these risks and build on ongoing projects in [academia](#), the NGFS [task force](#) or a [OECD](#) project. It closed on a more positive note that, while nature-related aspects are gaining in importance for risk assessments, nature-based solutions to climate change also present huge economic opportunities, particularly for countries in Southeast Asia.

Session 2: The role of the blue economy and ocean finance in the transition to sustainable, inclusive and resilient development and growth in the ASEAN region

Introduction

The role of the blue economy and ocean finance in the transition to sustainable, inclusive and resilient development and growth within the ASEAN region was the focus of the second session. [Darian McBain](#), a Visiting Professor in Practice at the Grantham Research Institute at the London School of Economics and CEO and Founder of Outsourced Chief Sustainability Officer Asia ([OCSO Asia](#)), opened with an [extensive overview](#) of the topic. In the Asia-Pacific region, a range of economic sectors have strong dependencies on marine ecosystems: busy ports and vital shipping routes are dispersed throughout Southeast Asia, and over half of all commercial fishing takes place in Asia. She also stressed that, although not widely understood, people rely on the ocean for even more than just fish and maritime transportation. Mangroves, seagrass beds and coral reefs are important ecosystems and provide support to diverse flora and fauna species. This abundance provides a very important source of ingredients for many medical products and they act as natural protection from floods and storm

surges and as carbon storage. Additionally, coastal tourism is essential to many economies in the Asia Pacific, and this heavily relies on resilient marine ecosystems.

Discussion

McBain led a discussion with three distinguished experts on the blue economy and capital markets: [Nikki Kemp](#), the former Asia Pacific Director for the World Economic Forum (WEF) on Sustainable Finance and former Regional Executive Director for ANZ Bank; [Vikalp Sabhlok](#), the Asia Pacific Director of Origination at NatureVest; and [Nicholas Gandolfo](#), Director for Sustainable Finance Solutions (Asia Pacific) at Sustainalytics/Morningstar.

The 1982 UN Convention on the Law of the Sea defines the area up to 200 nautical miles from the coast as an exclusive economic zone within which adjacent sovereign states have special rights – to explore or use marine resources, for example. However, only 39% of the ocean falls under the jurisdiction of individual countries, leaving the rest highly vulnerable to exploitation. This situation has been described as a ‘tragedy of the commons’, with individual entities acting in their own best interest, ultimately risking a depletion of resources. Governance of and responsibilities in the open ocean has not historically been clearly defined, but recently numerous organisations have taken accountability for certain aspects in the ocean. For example, UN Convention on the Law of the Sea ([UNCLOS](#)) for issues relating to deep-sea mining, the Food and Agriculture Organisation ([FAO](#)) for fishing stocks, and the UN Environment Programme ([UNEP](#)) for biodiversity-related matters. The panellists agreed that the announcement of the [UN High Seas Treaty](#) in March 2023 was a significant milestone and is expected to bring additional focus to the [blue economy](#).

However, the Treaty was only a first step, and the problem remains that the blue economy sector is underfinanced. This lack of finance to promote sustainable, inclusive and resilient development of the oceans was a prominent discussion point. The Finance Initiative of the UN Environment Program ([UNEP FI](#)) has established [principles](#) for sustainable blue economy finance to provide guidance to issuers and market participants on what constitutes a ‘good’ transaction. The panellists also shared some insights into best practice examples from their respective institutions. Despite a strong economic case, the panellists noted that the deployment of blue finance instruments has not yet taken off. One obstacle to the uptake of blue finance identified was that banks are used to knowing the exact location of their financed assets but this is not as easy to achieve within the ocean system, where assets and marine life can move around a lot and the significant size of the oceans makes it difficult to track such movements. However, new technological improvements can now help with this kind of tracking for the purposes of banks and insurers.

The importance of blue finance to facilitate the deployment of new technology also came across strongly during the session. In her presentation, McBain stressed the importance of data and technological advancements within the maritime space. The currently available data about the oceans is significantly worse in quantity and quality compared to terrestrial data. As such, data and technological improvements came up multiple times during the discussion. On the one hand, limited data resources combined with outdated ship equipment limits the options of measuring and reducing environmental impacts. On the other hand, advancements in technology (e.g. [electronic monitoring systems](#) on ships) and financial support for such technologies will enable wider deployment and hence more accurate measurement of the contribution of, and financial return from, marine projects.

Summary

The session concluded that the role of blue finance in the Asia Pacific region is a key factor in the journey to facilitate the transition to a sustainable, inclusive and resilient future economy. Technological advancements are available, but the financial support to enable a large-scale deployment of these is still lacking. This is the vital aspect that needs to change.

Session 3: Addressing climate-related financial risks in insurance

Introduction

The urgency of addressing climate change and its potential financial implications cannot be overstated. To shed light on the challenges faced by the insurance industry, this session convened experts from various sectors. The focus was on climate-related financial risks in insurance product pricing and underwriting. The insights shared highlighted the important role the insurance sector can have by sending climate risk price signals as well as the need for collaborative efforts by all financial sector stakeholders to prevent, mitigate and adapt to these risks.

[Professor Benjamin Horton](#), Director of the Earth Observatory of Singapore and a Professor at The Asian School of the Environment in Nanyang Technological University, started the session by emphasising the complexity of climate science. He highlighted the imminent threat of sea-level rise, particularly for countries like Singapore. Despite efforts to reduce greenhouse gas emissions, sea levels will continue to rise due to multiple factors such as thermal expansion, ice melting, geological activities and monsoon variability. Of particular concern is the potential drastic sea-level rise and flooding resulting from the melting of polar ice sheets, which contain a staggering 65 meters of sea level rise within them. Projections for global sea-level rise were presented, considering two scenarios: [SSP1 and SSP5](#). These scenarios indicate that sea-level rise is inevitable, with decisions made in the near future, particularly by 2030, determining the extent of the rise.

Discussion

Professor Horton's presentation was followed by a panel discussion co-chaired by [Jeffrey Yong](#), Principal Advisor of the Financial Stability Institute in the Bank of International Settlements and Co-chair of the NGFS taskforce on capacity development, and [Felicia Khoo](#), Director at the Global Asia Insurance Partnership. The panellists included Professor Horton, [Winnie Tan](#), Senior Vice President for Sustainability at Great Eastern, [Lee Jiat Liauw](#), Chief Actuary at Prudential Singapore, and [Nico Ahn](#), Regional Sustainability Lead at Allianz. The panellists stressed the need for businesses to collaborate with scientists to deepen understanding on how to mitigate the effects of climate change. They also highlighted the crucial role of insurance companies in assessing and managing climate risks in investments.

Tan and Liauw highlighted that insurance companies such as Great Eastern and Prudential Singapore are actively focusing on climate-related risks. They are striving to balance commercial considerations with environmental concerns and exploring opportunities related to energy transition. However, the insurance industry faces challenges in quantifying and pricing climate-related risks into insurance products due to the lack of data and direct correlation for the life insurance industry.

During the discussion, Ahn stressed the importance of better understanding and integrating data into decision-making processes. Insurance companies have a vital role in advising customers on increasing resilience and adaptation to climate change. Allianz is actively working on projects to assess climate-

related risks and manage post-disaster situations. One example of such initiatives involves using [satellite-based parametric insurance solutions](#) in collaboration with Swiss Re.

The panellists highlighted the urgent need for collaboration between the insurance industry, consumers, businesses, and governments to mitigate risks and adapt to climate change. The potential of reaching an "insurability tipping point" if climate change isn't adequately addressed was raised, as well as concerns about the potential catastrophic impacts if the global warming threshold of 2 degrees Celsius is exceeded.

One major challenge identified during the discussion was the communication gap between scientists and the financial boardroom regarding the understanding of climate financial risks. To effect change, stakeholders, including boards, investors and the public, need to be addressed in a unified language. The insurance industry's reliance on historical data is also challenged by climate risk due to changing patterns. This necessitates improvements in climate analytics and raises questions about their use in decision-making.

Accurate and sufficient data plays a crucial role in addressing climate-related financial risks. The insurance industry needs a global approach to gather risk assessment data. This requires greater collaboration between insurers and the scientific community to incorporate the latest climate data into pricing and underwriting models. Academic institutions, such as the Earth Observatory in Singapore, can play a significant role in collecting, processing and providing access to natural hazard data.

The development of new insurance products to address climate-related issues, such as the haze in Indonesia and Borneo, was also discussed. However, challenges exist in collecting relevant data, understanding customer needs and developing suitable products. Distribution, awareness and problem urgency were highlighted as key factors for the success of these products.

Summary

The panel discussion shed light on the urgent need for the insurance industry to address climate-related financial risks. Collaboration between insurers, consumers, businesses and governments is crucial to reduce risk through prevention, mitigation and adaptation to a changing climate. It was highlighted that Global Asia Insurance Partnership (GAIP) is working on a paper exploring how insurers and regulators are looking at the incorporation of climate risk into pricing and underwriting. It was noted that progress in this area is essential, and greater collaboration between insurers and the scientific community will help. Furthermore, the development of new insurance products that address climate-related issues requires innovative approaches and a deep understanding of customer needs. It is evident that the insurance industry plays a critical role in managing climate risks, and failure to adequately address these risks could have far-reaching consequences for society and the global economy.

Session 4: Public-private partnerships – applications in Asia

Introduction

Public-private partnerships (PPPs) have emerged as a crucial mechanism for addressing the diverse challenges faced by Asian countries, and this was the focus of the conference's fourth session. Setting the stage for the discussion, [Craig Thorburn](#), Consultant at Global Asia Insurance Partnership (GAIP)

gave a brief presentation on protection gaps and some examples of PPP solutions in place. The presentation also referred to the [protection gap paper](#) published by GAIP, which introduced a useful schematic that categorized the components of the gap into three segments: the uninsurable risk; the insurable risk without capacity; and the insurable risk with capacity. These categories highlight the need for different solutions tailored to each component. For the uninsurable risk, the focus shifts towards risk reduction and management strategies. In contrast, for the insurable risk without capacity, risk reduction efforts should be complemented by efforts to generate the necessary capacity. The government's role becomes crucial in addressing the fiscal gap and ensuring appropriate risk financing.

Discussion

Thorburn then led the discussion with the following panellists: [Christopher Au](#), Associate Director of the Climate Resilience Hub at Willis Towers Watson (WTW); [Kalpana Seethepalli](#), Director of ESG – Asia Pacific at Deutsche Bank and Suraya Sani, Deputy Director of Sustainability at Bank Negara Malaysia. The panel examined a series of case studies that exemplify the applications of PPPs. These case studies were categorised into three groups: risk-sharing exercises based on traditional indemnity insurance; parametric coverage utilizing indexes for swift payments; and regional schemes that pool risks across countries. Each case study demonstrated different approaches to address specific challenges, such as reducing the protection gap, facilitating risk transfer and achieving cost-effective solutions.

Au shared about the various PPPs in the [Caribbean](#), [Pacific](#) and [Africa](#) which WTW had been involved in, highlighting the evolution of the Caribbean program, which emerged as a response to the increasing costs of catastrophe insurance. Driven by the small island states, the programme aimed to access capacity and control risks collectively. Seethepalli provided a broader context for PPPs and climate change, bridging development finance and the private sector. She discussed four key points about PPPs, including their lack of commercial viability; the need for risk mitigation instruments such as insurance and guarantees; the importance of institutional coordination; and the challenges associated with navigating between the public and private sectors. Seethepalli then delved into the complexities introduced by climate change, particularly in relation to emissions. She highlighted the importance of measuring, monitoring and reducing emissions to address climate risks. However, she noted the lack of knowledge and a clear roadmap for achieving emission reduction targets. Moreover, the additional layer of disclosure requirements for emissions further complicates PPPs and climate risk management.

Focusing on the role of governments and regulators in facilitating PPPs, Sani acknowledged the importance of PPPs in mobilizing finance for transitioning to a low-carbon and climate-resilient economy. She emphasised that regulators play a critical role in creating a supportive ecosystem for PPPs and acting as catalysts to mobilise finance. In Malaysia, the [Joint Committee on Climate Change](#), co-chaired by Bank Negara Malaysia and the Securities Commission, facilitates collaborative efforts among various stakeholders in the financial sector. Sani highlighted the committee's subcommittees, each focusing on different aspects of climate resilience, including risk management, disclosure, product innovation, engagement, capacity building and bridging data gaps. PPP components are embedded within these subcommittees' work, enabling the exploration of PPP solutions for climate-related projects, such as flood parametric solutions.

Sani also emphasized the importance of policy structures and frameworks, citing the [Climate Change and Principle-Based Taxonomy](#) (CCPT) as an example. The CCPT facilitates the assessment of economic activities' impact on the environment and helps identify green, transitioning and sustainable projects, minimising greenwashing risks. Additionally, Bank Negara Malaysia is working with its counterparts

through the ASEAN Taxonomy Board to develop a regional taxonomy, harmonising and standardizing the classification of sustainable activities at the regional level. Sani highlighted that these frameworks not only identify suitable projects but also encourage enhanced governance, disclosure and efficient allocation of capital.

The panel discussed the effectiveness of PPPs in addressing transition risks and advancing mitigation efforts. The need for a 'systems' view when considering infrastructure development and the energy transition was emphasised, highlighting the challenges of a disorderly transition and the importance of aligning incentives upfront. Concerns about the transfer of risk from the private sector to the public sector without reducing the overall protection gap were raised and the significance of risk quantification at every point in a PPP transaction, ensuring that financial risks are appropriately distributed and managed was stressed.

Regarding the energy transition, Au shared insights from modelling exercises conducted in Indonesia, analysing coal mining, demand and global coal markets. He discussed the potential risks and fiscal implications associated with the declining coal prices and the need for a transition plan for fossil fuel plants. The [Climate Transitions Pathway](#) initiative was also mentioned, which encourages fossil fuel plants to adopt Paris-aligned transition plans in exchange for unlocking insurance capacity committed to supporting their transition. Au highlighted the importance of innovative approaches, such as transition finance and blended finance, to facilitate the decarbonisation of the energy sector. The panel emphasised the need for insurance companies to remain engaged and not step back, as their involvement plays a crucial role in driving real-world decarbonisation efforts.

Summary

The panel discussion shed light on the potential of PPPs and insurance solutions in addressing climate risks and promoting sustainable development. It emphasised the need for collaboration, regulatory support and capacity building to harness these solutions effectively. By working together, governments, private sector actors and insurers can contribute to closing the protection gap, managing risks effectively, and building resilience in the face of climate change. The panellists stressed the importance of continued efforts and cooperation to bridge the insurance gap, promote sustainable development, and address the pressing challenges faced by Asian countries. Through leveraging the strengths and expertise of both sectors, significant progress can be made in addressing these challenges and achieving a sustainable and resilient future for Asia.

The [Global Asia Insurance Partnership](#) (GAIP) is a tripartite partnership between the insurance industry, regulators and policymakers, and academia. Through actionable research insights, policy recommendations, and co-creation of innovative solutions, GAIP looks to address the needs and future development of the insurance sector with the aim to build long term risk resilience in Asia.

The [ASEAN+3 Macroeconomic Research Office](#) (AMRO) is an international organization (IO) that aims to contribute to the macroeconomic and financial resilience and stability of the ASEAN+3 region—comprising 10 member states of the Association of Southeast Asian Nations (ASEAN), and China; Hong Kong, China; Japan; and Korea. To fulfil its mandate, AMRO focuses on three core functions—conducting macroeconomic surveillance, supporting ASEAN+3 RFAs, including ensuring the operational readiness of the Chiang Mai Initiative Multilateralisation (CMIM), and providing Technical Assistance to members. In addition, AMRO also serves as a regional knowledge hub and provides support to ASEAN+3 financial cooperation.



The [International Network for Sustainable Financial Policy Insights, Research, and Exchange \(INSPIRE\)](#) is a global, philanthropy-supported research network launched in 2019 to commission independent, gold-standard research on the financial oversight of climate- and environment-related risks and to promote green finance. As a designated stakeholder of the Central Banks and Supervisors' Network for Greening the Financial System (NGFS), INSPIRE is designed to swiftly commission and fund multiple lines of innovative and robust research and interface with the NGFS and its members.