The Solutions Landscape

Learning from efforts to reduce the Protection Gap

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POLICY PAPER

Acknowledgements

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Foreword

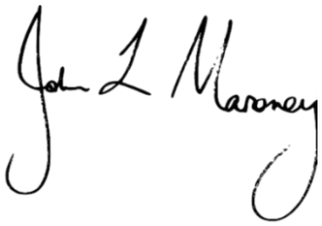
Supporting the reduction of Asia's protection gaps is at the core of Global Asia Insurance Partnership (GAIP). Our vision is to build long term risk resilience in Asia, and we see the reduction of Asia's protection gaps as the key element to achieving this.

Addressing protection gaps is immensely complex and requires a concerted multi-stakeholder, holistic approach, especially in the context of Asia's dynamic and diverse landscape. Our first paper on this topic, a foundational paper, set the scene in discussing the concept, definitions, and motivations, and posits the conceptual building blocks of protection gaps, examining the three components of definitional elements, gaps as fiscal exposures, and the three categories of solutions.

In this paper, the second in our series on this topic, we conducted a much deeper exploration of each of the three categories of solutions, as well as the role of Public-Private Partnerships (PPPs) in them, highlighting the interconnectedness of the solutions and the need for a holistic, multi-stakeholder approach to protection gaps.

This paper is the bridge between our first foundational paper, and our next paper. Through an understanding of what has been done and what are the learnings from them, our next paper plans to put in place a framework to help guide policymakers in developing their national protection gaps strategies. It is our belief that the effective implementation of a well-developed national protection gaps strategy that encompasses a multi-stakeholder, holistic approach to consideration of the three categories of solutions, will be pivotal in addressing protection gaps.

In closing, I would like to extend a big thank you to our external expert, Craig Thorburn, who researched and authored our papers on protection gaps, as well as the helpful contributions of GAIP's partners.



John Maroney
CEO, GAIP

Executive Summary

Reducing the protection gap is a significant challenge. Many efforts have been made with their own successes. However, progress has been slower than is needed. A key to more substantial progress lies in commitment, coordination and leverage at levels not seen to date. Truly, one plus one can equal much more than two. The benefits to governments, societies and the economic wellbeing of people and nations will be substantial with every successful step.

Our earlier paper discussed definitional issues and analysed the problem. We now turn to the solutions. Put simply, three main groups of solutions exist: (1) reduce risk; (2) increase insurance penetration to insure more risk; and (3) for the balance that often falls to governments, consider how this is to be financed, and the potential for fiscal risk and its transfer.

Risk reduction is a powerful tool and an active area especially when lives can be saved. For natural hazards, efforts include creating barriers to control physical risk, regulation to limit risk, better preparedness, and an increasing focus on the need to respond to supporting vulnerable members of society. However, initiatives are often considered in isolation. Some lower cost options may remain underutilized when cost-benefit analysis does not include comparative trade-offs. Natural barriers are only now getting real consideration. More proactive risk reduction efforts by governments, especially in response to natural hazards, are informed by climate change transitions. Governments are engaging increasingly in cyber risk reduction, and health risk mitigation has been enhanced to implement lessons from the pandemic experience.

Investment in mitigation should continue with a renewed focus that considers a broader cost benefit, better compares competing options, and is more comprehensive regarding projects considered. Initiatives for health, retirement, and cyber risks should be given a similar level of consideration. The **opportunity for risk reduction to also leverage increased penetration** by helping to make risks more insurable is under-recognized. This creates a multiplier effect for government investment by encouraging policyholders to finance additional mitigation, and governments would benefit from **insurance sector input** as mitigation partners[1].

[1] Insurers can also engage in risk mitigation efforts as investors in infrastructure when the terms are appropriate given the nature of their liabilities.

Efforts to improve **insurance penetration** especially for unserved or underserved customers have seen many initiatives. Progress is, however, well below what would be needed to make a significant impact on the protection gap. Innovations in product, distribution and technology have all been useful but are not sufficiently widespread even in an enabling environment.

Governments may consider the need to be more proactive to encourage a greater number of insurers to innovate, addressing constraints to financial capacity to deliver change, the usefulness of sponsoring donor engagement, and the value of collective research, data gathering and learning efforts. This is especially important where market conditions can limit resources to invest in new approaches at smaller and mid-sized insurers. Although not particular to Asia, initiatives have yet to make significant progress for **underserved enterprise risks** especially for micro, small and medium enterprises.

Other observations regarding increasing insurance penetration include the need to pursue improvements in **insurance literacy** more energetically and cost effectively, and that further consideration may be given to integrating private insurance into the **health** landscape.

Fiscal risk management and risk transfer at the sovereign level is most evident for countries with high natural hazard exposure. Ex-ante financing is increasingly part of sound planning. The experience of ex-post donor funding and fiscal constraints from the impact on revenue and GDP from events both strongly suggest ex-ante funding is more effective. Regional experience reinforces more general guidance on the advantages of ex-ante efforts. Ex-ante initiatives have been put in place in countries most exposed to natural hazard risks. Further, some initiatives have also expanded to health risks since the pandemic.

However, all fiscal risk transfer efforts are somewhat nascent and **there is opportunity to deepen engagement in all countries** and to see **local expertise and capital play a greater role**. Government risk transfer is expected to increase in all countries including those that have already made progress. Separate organizational and legal arrangements for natural catastrophe sovereign risk financing might be considered to maximise the value of reserve funds, insurance of sovereign assets, and other risk transfers.

Effective usage of data and experiences, and addressing the relationship between all three solution areas, **national protection gap strategies should be a clear starting**

point. Tradeoffs between the three solution areas and between initiatives within them call for a well-structured response.

True partnerships between government and the private sector insurance market have created change. However, these partnerships are challenging to develop. Effective partnerships show how **industry and government can work together on solutions and share a commitment to each other's goals** in the implementation. Partnerships can be expanded in all risk areas. The full promise of regional partnerships remains ahead, and renewed engagement is likely to realise significant benefits, albeit that it is critically reliant on hazard modelling capacity.

Although there is much activity, most initiatives are considered and delivered in isolation and miss opportunities to leverage a broader perspective. Coordinating all options must give the best opportunity for the step change needed as well as galvanising political support and commitment.

Introduction

Introduction

The protection gap has been a persistent challenge. The gap between total economic losses and the amount that is insured is significant. Although many initiatives have been launched to reduce it, the protection gap remains significant and continues to grow. Our earlier paper[2] discussed the concepts, definitions, calculation, and dynamics of protection gaps in more depth. The paper also discussed the relationship (and, frequently, the disconnect) between the gap itself and the motivation of the range of stakeholders who need to act if we want to see meaningful reduction in protection gaps. Lastly, the paper also proposed some initial direction to improve the situation in these respects.

In Asia, it is estimated that the uninsured natural hazard gap is a massive 84% of total economic losses. Africa and Latin America and the Caribbean regions also have similarly high exposures. The relatively more developed markets in Europe, North America, and Oceania (largely Australia and New Zealand exposures) have far lower gaps at 42% to 45%.

Despite initiatives to increase insurance penetration and better manage risk, the protection gap for natural hazards worldwide has showed limited progress with a reduction from 93% to 86% over the last 10 years.

Further, these figures do not include shortfalls in coverage for mortality, health, and morbidity (exposed by the recent pandemic experience), and retirement income security (usually measured separately) or exposure to cyber risk where uninsured exposure is well over 97% of economic losses experienced as exposures grow exponentially.

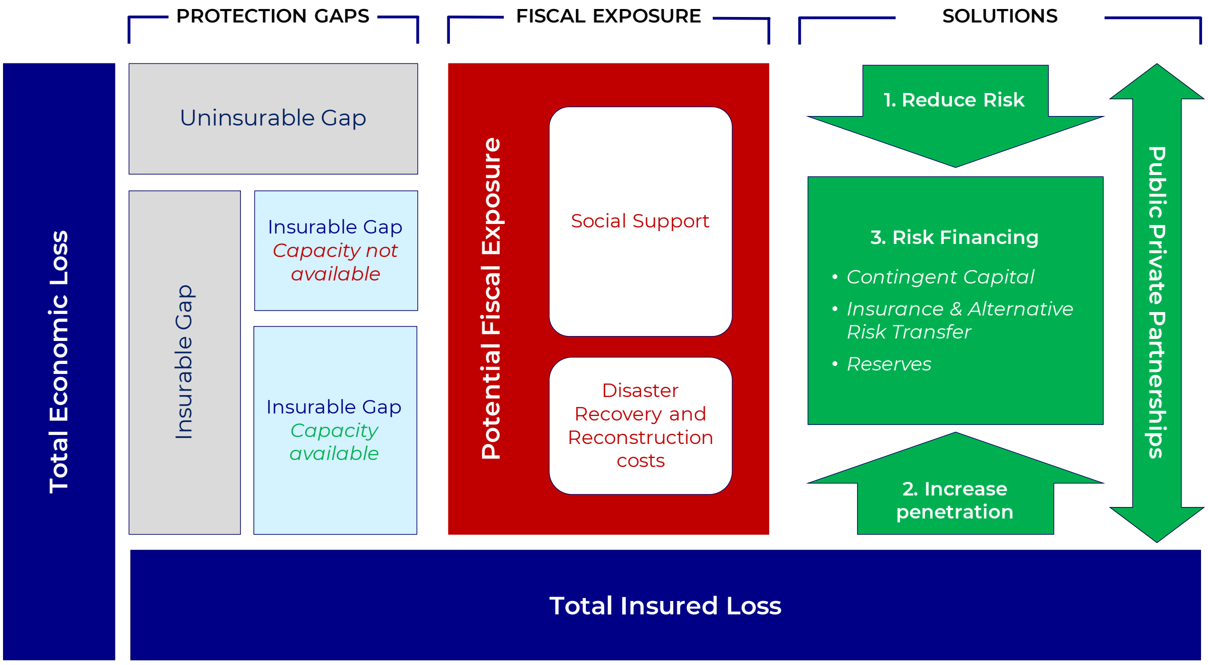
The conceptual building blocks in the protection gap paper (see Figure 1 below) examine three paradigms (definitional elements, gaps as fiscal exposures, and categories of solutions). Some solutions are more relevant for some parts of the gap, for example for that part that is not insurable. Some solutions are more relevant for some elements of fiscal exposure, for example sovereign risk transfer. Other solutions find broad application.

This paper further examines specific initiatives that have been launched to reduce the protection gap. Here we focus on those initiatives that aim to: (1) reduce risk; (2) increase insurance penetration; and (3) finance the residual exposure that tends to fall back as a fiscal concern for governments. As many of these solutions can include Public-Private Partnerships (PPPs) we include a further discussion on the role of PPPs.

Throughout this paper, our aim is to investigate what has been done and what we can learn from these examples regarding what has worked and, potentially even more usefully, what has not worked as intended.

[2] See GAIP (2023) available at https://www.gaip.global/publications/about-the-protection-gap/

Figure 1: Conceptual Building Blocks for the Protection Gap, Responses and Solutions



This paper represents the next step in our discussion on these issues. It is based on a review of the current solution landscape in Asia and beyond. As a supplement to this paper, a database of current examples has been developed. This database is available at https://gaip.global for partners of the Global Asia Insurance Partnership (GAIP). This paper also provides some conclusions on directions in efforts to reduce the protection gap for the better well-being, resilience, and sustainability of communities through Asia and beyond.

Reducing Risk: Risk mitigation and control

Reducing Risk: risk mitigation and control

Sometimes, a risk can be avoided altogether but, more likely, it can be reduced in incidence or severity even if not eliminated. These initiatives to reduce risk exposure are particularly relevant for uninsurable risks or where capacity is not available. Interventions are categorized here using natural hazards as the illustrative case then examining the other perils of interest, especially mortality, health, retirement, and cyber-risk.

Mitigation against physical risks in the context of natural hazards provide some of the clearest examples of risk reduction. Building levee banks, sea walls, dams, and other watercourse management efforts represent **investments which aim to reduce or control physical risk**. The second category of physical risk reduction is through building codes, land use and zoning **regulations that limit risk exposure and improve resilience**. Efforts to reduce expected losses also consider sound **preparedness** by authorities and public education. Preparedness has been enhanced by **early warning systems** allowing more time for action and evacuations if necessary and includes both avoidance and response elements as both can improve outcomes and reduce impacts of events.

Countries have looked to improve national disaster preparedness through strategies and initiatives with donor support.

For example, UNDP and the Japanese Government are supporting DX4Resilience implementing digital opportunities to enhance disaster preparedness and response in Indonesia, Nepal, Philippines, and Sri Lanka.

This project highlighted how increased data and changing technology along with more systemic risks have all added complexity to the issue.

This has historically meant that some initiatives remain reactive rather than proactive, silos and segmentalized data analysis remain, and integration opportunities are difficult to secure.

These four elements formed the core of risk reduction efforts but have become more nuanced recently. Risk is a combination of the disaster hazard, the exposure, and the vulnerability of those who are exposed. Although reducing exposure to risk is a valuable way to reduce the risk, **vulnerability can also be addressed**. Different members of society are more vulnerable to events because of circumstances beyond their location including age, socio-economic status, education, and ethnic background, so a broader range of solutions is available[3].

An additional change in physical intervention is greater use of **natural systems restoration** with reef and mangrove restoration being high-profile examples. A country-

[3] Source: Aktion (2016)

by-country study for Caribbean countries found that these natural restoration efforts reduced potential losses and produced net economic benefits well in excess of the costs for almost all countries[4].

Mangrove restoration has been relevant in many Southeast Asian countries but is only more recently becoming central to the thinking of insurers and reinsurers.

In the Philippines, Earth Security has partnered with the Philippines Insurance and Reinsurance Association to highlight the business case for valuing the mitigating impact of coastal mangrove as part of underwriting and pricing.

This will provide a strong pricing signal for both investing in mitigation and seeing premium reductions from increased sustainability.

Increasingly, **interventions are becoming more proactive** in response to climate impacts. Rebuilding is no longer the only option with relocation getting attention instead, particularly for flood prone locations. Relocation programs in Asia have tended to focus on lower income and more vulnerable populations as they are often the communities living in particularly flood prone areas. This trend is growing to cover a broader population profile outside Asia.

Health and mortality risks are front of mind after the recent pandemic experience. Efforts to reduce risk in real time in the face of a significant threat were constantly evolving in response to the nature of risk and capacity of health services and to bring therapeutic, diagnostic testing and preventative vaccination services to communities. But other public health interventions from public safety to education, regular health screening, ongoing vaccination programs, to encouraging healthy habits and discouraging unhealthy ones can all play a role in the consequent health outcomes and, ultimately, mortality levels.

For natural perils, health and mortality, risk mitigation saves lives. It is a strong motivation and advantage that mitigation has over other interventions. Acting to save lives does prioritize risk reduction in the minds of stakeholders over other interventions.

[4] See CCRIF 2010, Beck, Heck et al (2022) for example.

Retirement is related to health and mortality but can offer additional interventions. An individual or household has a "retirement gap" that is a function of longevity, health in older age, and levels of resources available to finance living costs during retirement. Whilst multifaceted solutions with initiatives that improve health and, consequently reduce mortality along with facilitating continued activity in older age groups can impact all three risk areas, targeted initiatives might aim to reduce the risk of retirement income inadequacy.

Retirement ages in Asia have been increasing through government policy interventions and can be expected to continue to do so. Policies that consider past demographic trends and try to influence future ones will be necessary.

The number of elderly people will continue to grow and the proportion of the population in the workforce is projected to fall, and in some cases, the nominal number of workers will also fall.

More flexible transitions from work to retirement will need to be part of the solution.

Targeted initiatives might include encouraging (or mandating) contributions to retirement saving, defined decumulation standards for accumulated balances, later retirement ages and increased workforce participation at older ages. Interactions in policy consequences are clear here too as retirement initiatives also are closely linked to older age health outcomes.

Cyber-risk presents a different picture as it is much newer and remains substantively uninsured. Despite variation in estimates, the protection gap is well in excess of 90% of risk exposures. Some observers describe this risk as uninsurable because of the amount of capacity that would be needed whilst others point to technical challenges including acts of undeclared war or systemic effects, and a third group point to the difficulty insuring risks beyond those with a reasonable level of cyber defence and preparedness. As a result, the main efforts seen so far involve risk reduction, particularly:

Cyber risk agencies have been established in developed nations but have also been created in Thailand (National Cyber Security Agency), Indonesia (National Cyber and Crypto Agency). The Philippines has a National Cybersecurity Interagency Committee supported from the Department of Information and Communications Technology. However, progress on much of the work required to implement strategies lies ahead.

- **Reducing exposure to risk**: Increasingly, governments are developing and implementing cyber strategies. These initiatives bring some prioritization to investment in risk assessment and remediation particularly for critical infrastructure, government systems, and high priority segments in the private sector where regulation can require action. Education, ongoing assessments, information, and data gathering also support these initiatives. However, regulatory policies can also play a role in reducing risk exposure as they can reduce the attraction of targets. One example is to revisit data retention obligations to allow entities to reduce long data retention obligations and hence make targets less attractive to cyber criminals.

- **Reducing the consequences of adverse events**: Governments can, and some are, engaging in more proactive cyber response through law enforcement activity, coordinating with other agencies capable of investigation and counter-actions, changing rules on cyber-crime, and privacy to facilitate early action. There is also an ongoing debate on the legislative treatment of ransom payments.

However, the cyber defence spend as a proportion of GDP is lower than the global average in all Asian countries except Singapore[5] pointing to a continuing need for investment in defence and response.

In summary:

Risk or Peril	Key initiatives
Natural Catastrophe	Building codes, land use and zoning regulations, levee banks, water resource management, disaster related early warning systems, natural environment hazard restoration.
Mortality	Enhanced health delivery, public safety regulations, epidemic and pandemic preparedness, public education initiatives, vaccination programs, increased taxes on unhealthy behaviour.
Health	Public health, education, incentives, national screening programs
Retirement income insecurity	Retirement saving mandates, changing conditions for retirement entry, mandated standards for retirement income drawdown
Cyber Risk	Public education, Incentives, National Agencies

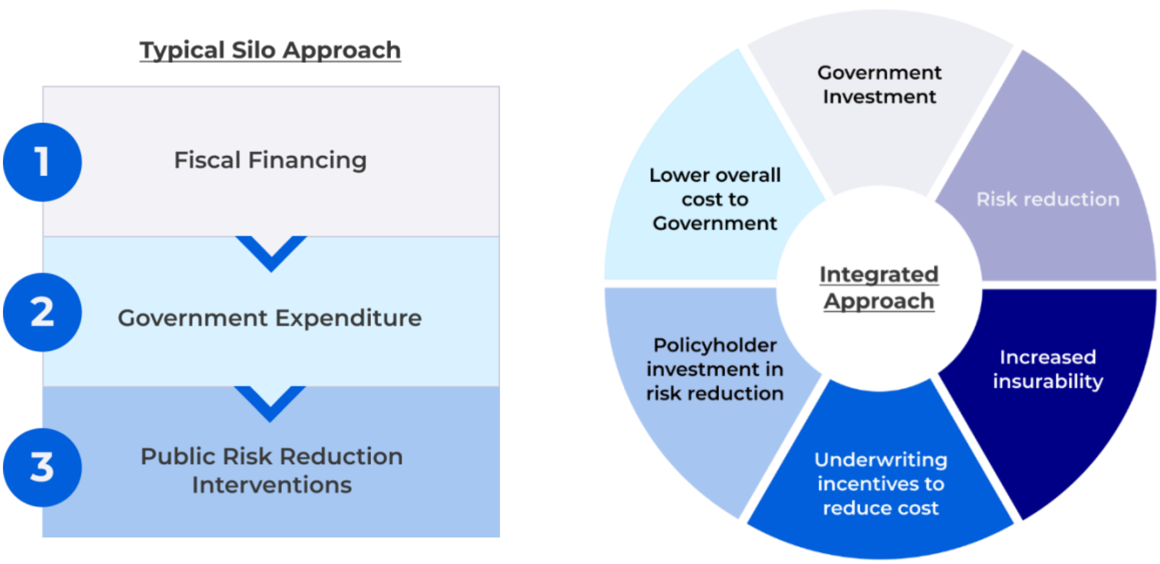
Less well recognized as a benefit of mitigation, but possibly more powerful, is how public investment can create a multiplier effect, leading to policyholder funding for further mitigation. Government initiatives can transform the severity of some gaps making them more insurable for a part of the risk pool, encouraging consequent growth in insurance penetration. Risk reduction through significant public investment usually targets uninsurable risks. Encouraging reduction at the level of individuals, households and firms can move them to a more insurable status. The insurance underwriting process then creates its own incentives for further mitigation investment by policyholders seeking to lower premiums or increase coverage acceptance.

[5] Source: AT Kearney (2018)

Both public and private investments can reduce risk, further improving insurability and creating a virtuous cycle that encourages further insurability. Once insurance becomes an option, the process of risk reduction becomes embedded in the insurance purchase process and is financed by those taking out insurance. Underwriting standards, coverage terms and conditions and pricing create incentives to invest in risk management and risk reduction to reduce premiums, delivering economy-wide risk reduction through policy-by-policy level initiatives. When it is appropriate given the nature of insurance sector liabilities, especially regarding risk-return, duration, and liquidity (or otherwise), insurers may also be a source of finance through their investment activities.

There are many micro level examples of such impacts of underwriting. For example, compliance with sufficiently robust building codes can make buildings insurable for windstorms, further encouraging policyholders to invest in additional measures to reduce windstorm damage, with incentives to lower premiums or adjust deductibles. Traditional risk reduction approaches then become second nature. Increasingly, interventions have included more fintech applications from water sensors that raise alarms or shut off main water intake valves, to wearable devices to encourage exercise, monitor heart rates, or enhance workplace safety. Although not yet as evident, there have been calls for similar interventions to help to facilitate broader coverage of uninsured cyber-risks.

Figure 2: Typical Silo Approach vs Integrated Approach



For this interaction to work well, governments should avoid constraining the price and risk signals of insurance transactions unduly. This issue is discussed more in the section on insurance penetration. At the level of mitigation and of risk financing, it is also relevant. In short, social policy redistribution or solidarity has to be handled carefully if it is to be delivered through insurance markets. It also highlights the relevance of a holistic approach to capture benefits.

Capturing benefits of more integrated perspectives should also be brought to cost benefit analysis. In Mitigation, Cost-Benefit Analysis is a useful tool and tends to support risk reduction initiatives simply as the cost is less than the benefit. Most of the literature identifies projects where benefits exceed costs and indicate that this justifies the project. Published assessments are almost always done at a national level.

However, benefit estimates might be quite uncertain given the volatility of potential losses from adverse events and not all studies consider alternative uses of the funding cost to question whether there are better uses. In the few published cases where studies compare different alternatives to identify the initiative with the best payout, efforts focus on different mitigation elements only. Comparisons of the relative benefits and costs of mitigation, increased insurance penetration and risk financing are difficult to find.

Nevertheless, governments would benefit from more publicly available case studies and examples.

Taken together:

Overall, risk reduction through prevention, mitigation and adaptation is a powerful tool and one that gets attention, particularly regarding natural hazards, health, and mortality where lives are saved. Most risk reduction measures are cost-benefit justified despite the potential value of benefits often reflecting a large range.

However, initiatives are often considered using a “silo” approach, likely due to the complexity of doing more, but this approach has some limitations. For example, very low-cost options such as enforcing effective land use laws do not always get compared to building physical barriers, natural barriers remain underutilized and underfunded despite the potential for a strong economic case, especially when mitigation advantages are factored in, and the leverage of insurance penetration change is rarely noted.

There is considerable scope for further risk reduction investment and for more proactive stances by governments.

Further, just as governments may benefit from thinking about risk reduction across all types of risk, given that current approaches tend to be at different stages even within each country, the private sector may benefit from getting more proactively engaged in dialogue with government about the choices between different risk reduction investments and could provide feedback on the anticipated sector responses. Policymakers may do well to engage with insurance companies concerning the mitigation choices they are making so that the power of the underwriting process for insurable risks can be harnessed – even unleashed – as a multiplier for government investment in mitigation.

Global Asia Insurance Partnership

Increasing Insurance Penetration

Increasing Insurance Penetration

Increasing insurance penetration reduces the protection gap and the potential fiscal exposure by policyholder funding of private sector insurer provided risk transfer[6]. In a sense, it can be seen as "protecting the protection gap" or, alternatively, accessing private sector financing of risk instead of requiring governments to fund costs and recover them through other means. As is noted above, insurance penetration encourages policyholders to mitigate risk to reduce out of pocket premium costs.

Initiatives directed at increasing insurance penetration focus on greater private utilisation of insurance, increased personal risk coverage, and increased ex-ante contributions to risk finance as the premium pool increases. Governments have acted to provide an enabling environment, remove barriers to inclusion, and encourage innovation. In some instances, governments have gone further and intervened where market failures required a more proactive approach.

However, progress has been problematic. The protection gap in Asia is consistently over 80% of total losses for several perils[7]. In the 17 Asian jurisdictions reviewed, 7 did not have growth in insurance penetration in real terms. Those that did have growth were achieving improvements at a rate under 5% per annum on average in real terms - a rate that will take far too long to close the protection gap.

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[6] Insurance penetration can refer to the concept of "more people having more insurance". The technical definition of insurance penetration (premium divided by GDP) may increase with or without "more insurance coverage" as people may spend more on insurance in one area and less in another and this may mean that the goal of a reduced protection gap depends on the type of insurance bought and reduced. A transaction may reduce one gap and increase another. It is therefore recognized as a broad and useful indicator but worthy of deeper analysis.

[7] See, for example, Swiss Re (2023).

Table 1: Insurance Penetration – change over the last 10 years

Jurisdiction	Current			10 years earlier			Total real annual growth (%)
	Life	Non-Life	Total	Life	Non-Life	Total	
Bangladesh	0.29	0.15	0.44	0.69	0.21	0.90	Negative
Brunei	0.48	0.30	0.78	0.30	0.27	0.57	3.2
Cambodia	0.00	0.46	0.46	0.00	0.24	0.24	6.7
PR China	2.66	1.22	3.88	1.84	1.04	2.88	3.0
China - Hong Kong	17.31	1.66	18.97	11.00	1.42	12.42	4.3
India	3.0	1.0	4.0	3.17	0.78	3.96	0.1
Indonesia	0.87	0.46	1.33	1.26	0.42	1.68	Negative
Japan	5.42	1.79	7.21	6.48	1.62	8.10	Negative
Laos	0.05	0.55	0.60	0.01	0.39	0.40	4.1
Malaysia	2.76	1.17	3.93	2.77	1.53	4.30	Negative
Myanmar	0.05	0.27	0.32	0.00	0.05	0.05	20.4
Republic of Korea	6.15	5.50	11.65	8.00	4.70	12.70	Negative
Philippines	1.40	0.74	2.14	1.05	0.54	1.59	3.0
Singapore	7.90	0.78	8.68	4.72	0.99	5.71	4.3
Chinese - Taipei	8.2	3.1	11.4	15.03	3.16	18.19	Negative
Thailand	3.62	1.61	5.23	3.65	1.54	5.19	0.1
Vietnam	2.05	0.93	2.98	0.64	0.85	1.49	Negative

Source: AXCO, Author's analysis. Insurance penetration is gross written premium divided by GDP. Comparisons show the latest available figure in the data set (mostly 2022 or 2021). Health and personal accident insurances are included under the life category to the extent that it writes the business.

There are many reasons why insurance providers and potential customers may not transact to close their protection gap. The discussion here is, of necessity, abbreviated but illustrates the issues that initiatives to improve insurance penetration can address.

Figure 3 below sets out issues considering the demand and supply side "barriers". Overcoming or removing these barriers is important to finding solutions to increase insurance penetration, but the time required to see barriers reduced can seem overwhelming, for example, the wait to enter the market until public education improves financial literacy or low-income potential customers graduate to a higher income decile.

Figure 3: Demand and supply side issues that hinder more inclusive insurance.

Demand side issues	Supply side issues
Low income/affordability: Customers may not have sufficient funds or funds at the right time when payment is due, or they may simply feel the cost is too high. **Lack of Trust**: Mistrust of large formal institutions or of insurance products and services. **Lack of financial literacy**: General financial literacy can lead to a lack of knowledge of the existence of insurance or of its role or be reflected in incorrect understanding of what may give rise to claims. **Regulatory and supervisory weakness**; Customers may perceive that regulation will not provide protection for them. **Existence of alternative approaches**: Perceived value and reliability of humanitarian services, social safety networks, etc that may reduce interest in insurance.	**Inappropriate products**: Products that are simply cut down versions of more conventional products may not reflect the different needs and risks facing an underserved customer group. **Lack of trust**: Insurance management may have biased and misplaced views of the business risks associated with this customer segment. **Moral hazard and adverse selection concerns**: Reinforced by trust concerns and a lack of understanding of the unserved customer segment, concerns about potential fraud and adverse selection are magnified by the challenge in finding cost effective ways to address them. **Underdeveloped or inappropriate service delivery:** Policyholder enrolment, premium collection, claim notification and payment processes may be vulnerable to breakdown when trying to meet customers who are, for example, remote, informal, unbanked, illiterate, or culturally excluded. **Lack of data for pricing**: Uncertainty creates pressure for contingency margins, and reinforces concerns about trust, fraud moral hazard and adverse selection. Margins increase cost and affordability barriers. **Risks that are difficult to insure**: Some risks are technically challenging to insure at the retail level due to systemic concerns, capacity, or are otherwise difficult to pool and diversify for insurers[8]. **Unsupportive regulatory settings**: Some products or services may be constrained by disproportionate or prohibitive regulations. **Lack of specific technical skills**: Catastrophe and risk financing is a particular specialist area in many respects, particularly when schemes are first being explored. These skills are particularly challenging for emerging markets.

Source: Asian Development Bank (2019) and author's additions

[8] For example, sea level rise is, of itself, difficult to provide insurance protection against as a sole solution to the risk exposure.

Removing or working around these barriers requires proactive innovation. Things have to be done differently, something that is not surprising when it is recognised that an unserved or underserved market segment is likely to be a "different" market segment with different needs from products and services. Understanding these customers does drive product innovation both in terms of contractual terms and conditions as well as service delivery. These innovations also attack operational and distribution costs, hence reducing cost barriers and bringing the services to customers in ways that improve trust.

There have been many initiatives taken by insurers, but three main areas can be highlighted:

- **The critical nature of distribution**: Reaching underserved customers in ways that are effective to connect and engage with them is a fundamental challenge. Many efforts to increase insurance penetration involve alternative distribution given that traditional approaches have not managed to reach the "last mile" and to do so cost effectively[9]. Alternatives include using community groups, religious associations, cooperatives, retailers with complementary products for the target customer base[10], other financial institutions, and mobile phone companies.

- **Redesigned products**: Although it is logical that an underserved market is a "new market" and that existing products are not finding traction with the segment, efforts to understand the customer base and design appropriate products for them have taken a long time. Research is costly and, given the small premium per policy expected, a "test and learn" approach starting with existing products and approaches is typical. Unfortunately, the main learning has been a reminder that existing approaches do not work. New product initiatives have emerged and been successful, especially when they can reduce costs whilst being more reflective of customers' risk protection needs. Examples now are widely evident in agriculture, health, and mortality.

- **Technology**: Digitalisation, mobile phone delivery, claims assessment, using drones, leveraging data from divergent sources as local as RFID tags on livestock to satellite imagery, the "Internet of Things", and many other applications are often touted as key opportunities to reduce the protection gap. In ASEAN, digitalization

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[9] Cost effective distribution is a continuing challenge. When insurance distribution costs as a proportion of premium are high and low income populations are paying small premiums for precious but small cover, the merit of seeing a substantial proportion of that premium in items other than risk coverage is a challenge. There have been cases of distribution costs exceeding the risk coverage component and sometimes substantially so.
[10] For example, farm suppliers and seed merchants have provided a channel to deliver agricultural insurance.

has made most progress in reforms to distribution although regulatory constraints have impacted progress as digital players who become part of a partnership may not be readily accommodated as distributors and licensed. Some jurisdictions have strong distribution regulations, but they are designed for a more traditional agent and broker distribution channel..

A review of references to the "protection gap" and insurance in the media reveals that the vast majority of mentions (86%) are focused on increased insurance penetration with only 6% each discussing risk transfer or focusing on new estimates. Just 2% covered mitigation efforts.

Of the insurance penetration items, the majority discuss innovations in products or distribution, or insuretech.

Media coverage does not focus on promoting protection gaps. Instead, it tends to use protection gaps to bring focus to initiatives as a "cut through" call to bring credibility.

Most of the public discussion on protection gap issues is focused on these private sector initiatives to innovate and increase insurance penetration.

Governments have engaged in the innovation space by **creating environments** where innovation can occur, and pilot schemes can be tested. A range of approaches have been used, most recently popularized through initiatives such as a "regulatory sandbox"[11]. Several Asian jurisdictions and beyond have a regulatory sandbox for insurance including Brunei, Hong Kong SAR, Indonesia, Japan, South Korea, Malaysia, Philippines, Singapore, and Thailand. Others have adopted a range of other approaches.

But, with all this activity, progress remains limited. The remaining part of this section discusses examples and lessons under each of the following:

1. A disconnect between creating an enabling environment and the insurer response;
2. Solutions miss opportunities for enterprise risks;
3. Solutions pursued by insurers face challenges;
4. Constraints on innovation by insurers; and
5. Too few true partnerships for action.

[11] See references for more information on each country mentioned.

A disconnect between creating an enabling environment and the insurer response

Creating an enabling environment and then expecting change to follow is based on an assumption that the regulatory barriers were a material and critical constraining element for action. Consequently, once removed, then action should naturally follow.

However, creating the environment does not guarantee participation. There may be other barriers that remain even when the regulatory ones are reduced or removed.

For insurers, entering a new, largely unknown, market segment requires more thinking than meeting regulatory requirements. Understanding customer needs, attitudes, and then developing a compelling and affordable solution that can be delivered profitably requires considerable investment and innovation.

The original terminology "microinsurance" has largely been replaced with "inclusive insurance" to emphasize that the issue is not simply producing small sizes of more conventional products and marketing them "as usual". Rather, the need is to address the causes of "exclusion".

Well known examples of change that have made an impact include:

1) Use of mobile phone company partnerships to distribute and service insurance. For some time, this was the most significant cause of increase in the number of people with some insurance throughout much of Africa and in some Asian countries.

2) Distributing agricultural insurance bundled with other agricultural inputs such as seeds and fertilizers was a breakthrough for that product line.

3) Transforming health products to a "hospital cash" design has facilitated significant distribution of low-cost health benefits for hospitalization.

Whilst current sandboxes are not empty, the level of engagement might well be short of what is needed to reduce the protection gap materially. Although, in a free market, not all companies will find that underserved markets are part of their strategy, some might respond to a stronger, more positive, encouragement. Perhaps there is a need for a more active role. What would facilitate more players in the sandbox?

The most well-known case of mandates on insurance companies to write more inclusive insurance is the case of India where, since 2002, insurers had a mandated level of business that had to be written in defined rural and socially oriented business. These requirements were also refined in 2015.

The situation was somewhat unique as it coincided with market opening and concerns that new entrants would target existing insurer clients only and not grow the market.

Results were mixed. Positively, many initiatives to meet the obligation were pursued. Some insurers saw the opportunity to make the mandate into a profitable business line. Others saw it as a "cost of doing business" and sought the lowest cost route to meet the obligation without trying to exceed it unnecessarily.

Incentives to innovate can come from governments, donors, and others working with industry associations. Just as industry-wide studies of claims experiences are conducted in many countries, similar efforts to do preliminary surveys of underserved clients have been carried out in some countries with donor support. This knowledge base can then be used by insurers looking to enter the market[12].

Donor projects can also provide technical assistance to support product development, provide initial financing for innovative projects, and support market infrastructure such as analytical studies of contingencies that could be insured. These projects have value and can deliver change, but challenges exist disseminating learning and sustaining the use of innovations. In some cases, success leads to a new innovative project rather than a continuation and improvement of the existing one. The business might then be construed more as a donor subsidy hosting business than an insurance market development business. In other cases, due to the procurement and partner selection processes of donors or governments, the opportunity is largely shared with one selected insurer or reinsurer, and becomes commercially advantageous to them, but difficult for second movers to enter. Donors can make efforts to avoid these challenges.

Innovation also needs insurance executives to be exposed to international developments. Supervisors have been engaged in some countries lending their voices to support for conventions and other events that bring these ideas to the local market's attention.

[12] These initiatives have been done by a range of donors including the World Bank (in Ethiopia), Asia Development Bank, UN, and the International Labour Organization (ILO) (in Jordan, Kenya for example) and bilateral donors.

Increasingly, to leverage resources, innovation competitions can be a way to engage providers and potential partners. By providing competition for funding and technical assistance, several organizations can compete and generate ideas. It will then be likely that more innovations can be supported[13].

Solutions miss opportunities for enterprise risks

Another challenge is the focus of inclusive insurance programs that have developed over time to find solutions for individuals and households in particular.

Understanding customer needs, attitudes, and then developing a compelling and affordable solution that can be delivered profitably requires considerable investment. New customer segments need new products and processes and there is plenty of experience in the inclusive insurance literature and practice of the risk of not understanding customers well enough. Test and learn concepts are well documented and encouraged however, they have struggled to move from experimental phases to achieve scale. Key distribution innovations have been most successful in breaking out to larger numbers. But still, total penetration levels remain a challenge.The investment in time, effort, research, and solutions has been largely focused on households, although has also more recently considered the particular perspective of women, and small holder farmers, both motivated by broader policy and development goals. Over time, the solutions have been improved on the basis of experience.

The pandemic experience highlighted a divergence between cover provided and cover those customers wanted. Business interruption insurance was one such business line. Whilst many argue that the risk that customers would want to cover is difficult to insure, there has been some creative thinking to find a solution.

There is, indisputably, a protection gap and a significant demand. Perhaps the insurance sector is one of the few where customer demand does not automatically invite a significant positive supplier response. Similar challenges are evident where insurers are challenged to provide coverage in areas where risk is increasing due to climate such as in California, northern Australia and Florida.. A situation where insurance penetration and insurability reduces exacerbates protection gap challenges. Solutions tend to need greater PPP oriented efforts.

[13] The UN Capital Development Fund (UNCDF), for example, conducted a competition seeking innovative programs to support insurance solutions for migrants in 2022.

However, with the exception of small holder farmers, more inclusive insurance for small businesses has not made the same progress. It might be characterized that the pathway and results of close to 25 years of hard work for households has yet to start when it comes to the small business segment.

Challenges such as understanding the needs of a new customer group, finding appropriate products that can be delivered cost effectively, and then being able to ensure servicing such as enrolment, premium collection and claims payment are all able to function are all issues that had to be addressed for households. These same issues also need to be overcome for underserved enterprises.

The recent pandemic reaction highlighted that there is a significant need for products and services for small businesses and a customer base that has, at least at a basic level, a desire to buy insurance to reduce risk. Until progress is made on addressing the needs of such a substantial part of economic activity, rather than focusing elsewhere, then the protection gap will remain substantial.

Solutions pursued by insurers face challenges

Another consideration might be that while the efforts of insurers are well planned, well intentioned, and well executed but, like any commercial undertaking, are not universally successful for various reasons.

Many publications highlight opportunities for governments to intervene to address challenges that insurers face. Two particular interventions are regularly advocated: (1) to improve financial literacy and insurance awareness and (2) to introduce (more) compulsory products.

Financial Literacy and Insurance Awareness

There is a positive correlation between insurance penetration and financial literacy. Whilst results depend on the data set, we calculate correlations of 33.6% for life insurance, 45.5% for non-life insurance, and 46.0% overall - all positive and significant[14]. This result is encouraging despite many financial literacy measures under-emphasizing insurance

[14] In this example, we used available cross-country data from the World Bank S&P measures of financial literacy compared to insurance penetration as published by Swiss Re Sigma 3/2023.

concepts or not addressing them at all. Most standard financial literacy tests only focus on concepts of inflation and the value of money, bank type savings, and credit.

The cause and effect of this correlation is less clear. Does increased general financial literacy lead to an increased likelihood to purchase and maintain insurance? As increasing financial literacy can also be linked to access to credit, greater likelihood of savings habits, and other benefits of financial well-being, this may provide a channel to increased insurance penetration, albeit that the relationship may be more indirect. Much of the literature cites a relationship without reference and as a statement of fact, although some have examined the issue more closely and have identified the relationship after investigation, particularly of a more focused "insurance literacy" measure.

But the case does go beyond advocacy. Adult education programs, especially those directed at customers where insurance is being made available, can be timely. Other initiatives to simply raise awareness of insurance and concepts can be delivered quite economically[15]. Several donor programs have developed a range of initiatives in this area providing useful templates[16]. Innovative approaches to communication have been developed in the inclusive space as diverse as the use of street art, comic books, television soap opera programs. Importantly, these initiatives tend to be more timely for consumers as they approach points in life where insurance decisions are more likely.

Compulsion

Recently, a leading global insurance CEO specifically advocated for greater compulsion to close the protection gap. The arguments made included both low penetration in emerging markets as well as what he saw as psychological barriers in more developed economies where insurance was both affordable and available, but protection gaps remained stubborn[17].

The range of compulsory products and the levels of benefits provided by them varies considerably[18]. The products are, to a greater extent, non-life products and serve a number of public policy objectives. Liability insurances covering motor third party, workers

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[15] Several countries have developed "insurance awareness" days, weeks or months and are able to generate public event and media coverage of insurance issues around these designated dates. More examples of such initiatives are available outside Asia. Most Asian examples have been initiated by life insurance industry associations.
[16] For example, the ILO program is outlined at https://www.ilo.org/global/topics/employment-promotion/social-finance/financial-inclusion/WCMS_879354/lang--en/index.htm
[17] See Reinsurance News (2023) article.
[18] Existing products that are made compulsory across Asia are documented in the annex.

compensation, aviation, and shipping are particularly common. Motor and workers compensation aim to ensure, for example, that the consequences of unsafe actions that injure others can be resolved with sufficient certainty. Aviation insurances are required under international treaty and shipping insurances ensure that any pollution cleanup can be financed even when the ultimate owner is beyond the jurisdiction of the country. Professional indemnity insurances are common especially for insurance brokers but extend to a diverse range of professionals in other countries.

"whatever … industry players do, the reality is that the gap persists and unfortunately, the only way to close the gap, in many instances, is for the state to get involved and force some minimum level of insurance".

As a condition of being able to legally carry out an activity, holding insurance becomes a critical part of a licensing or authorization regime. Insurance underwriters become gatekeepers for participation in these activities given that, if they decline cover then the person cannot legally carry out the activity. Insurance also operates to deliver effective compensation reliably and, in some cases, as an alternative to more intrusive regulation of conduct and financial standing. However, the financial sustainability of many of these insurance products can become problematic given the social objectives and competing interests of stakeholders, leading to a drain on insurer resources that could be used for more productive innovation.

In some jurisdictions, health insurance and/or contributions to retirement savings may be compulsory, at least for a part of the population. The form of retirement benefit may also be prescribed and include products offered by the private sector. Life insurance is less likely to be compulsory although it is often imposed more indirectly through obligations on borrowers to purchase life insurance. Similarly, mortgagees may impose indirect compulsion on mortgagors for property insurances of collateral, flood, or other natural peril insurances.

Requiring more people to buy more insurance by law does increase insurance penetration in the targeted area. However, it may also encourage or reinforce some less desirable outcomes. There are some cases where the insurance obligation is seen as a cost without benefits and dropped as soon as the compulsion ceases to have effect or does not lead to further voluntary insurances. Compulsion also does not help insurers to develop proactive distribution and marketing capacity. Some compulsory insurances are financially challenging for insurers either through constrained underwriting, product or pricing rules, further reinforcing negative perceptions of insurance for policyholders. In some jurisdictions, compulsion does not lead to full observance and enforcement is problematic, further eroding the reputation of the product and its true value.

Compulsion imposed through requirements to have insurance as part other transactions, rather than through legislation, has been positive in some jurisdictions. Significant increases in insurance penetration have been observed when insurances are required when associated with credit for collateral. However, to realise the full benefit of this requirement, the insurance purchase should be transparent. Transparency ensures that customers realise they have an insurance experience that they will, hopefully, value. Additionally, it avoids the risk of questionable value or market conduct issues arising.

In some jurisdictions, compulsory bundling has led to creating PPPs when insurance market failure events demand it. When insurance for natural perils is required as part of this insurance for home mortgage collateral (as is the case in New Zealand, France, and the USA for example) then the natural hazard risk gap is reduced. Similar obligations for terrorism insurance have also been applied in such a bundled form. In each case, it has been necessary to intervene to provide for continuing insurance when the market has been unable to provide it so that the remaining basic level of cover can be provided with the catastrophe risk included. This points further to the relevance of PPPs (see later chapter) in finding solutions that truly facilitate closing protection gaps.

All of these approaches are, however, not quite the same as compulsion to reduce the protection gap because of a psychological barrier. It seems likely that compulsion may provide some opportunities across Asia and that efforts to ensure that existing obligations are functioning as intended and making a positive contribution to overall insurance awareness should be examined. However, a broader mandate may depend on the social policy and approach to solidarity in community support that varies from community to community.

Constraints on innovation by insurers beyond the regulatory environment

In many countries, innovation is limited to the largest insurers. Smaller insurers struggle to find financial resources to invest in change even though sector leaders accept that continuing to do things the same way is unlikely to lead to a different outcome.

Recent research has highlighted that fragmented markets and constrained profitability from extremely competitive challenges means resources for innovation are scarce. The situation is worse when major business lines are not profitable as is the case for motor third-party liability in many emerging markets. Hence, management focus will be on current problems and less so on future opportunities.

Several Asian markets are fragmented compared to international benchmarks[19]. Over time, it can be expected that natural market forces will resolve this issue, but it is usually a prolonged process in the insurance sector taking over a decade or more. In the Asian case, regional synergies might help to reduce the pressure and release some resources for innovation, but these are more challenging than in some other regions given the heterogeneity.

Additionally, the situation raises the question of whether governments should look to be more proactive in resolving conditions that may be constraining innovation. Studies have highlighted that more risk-based supervisory approaches and well-designed risk-based capital regimes support sound business decisions by insurers even more than direct interventions, such as increasing nominal capital requirements or pausing new entrants[20], to address overly fragmented markets.

Too few true partnerships for action

Some national initiatives have directly impacted insurance penetration significantly, stepping in where markets were not delivering. These initiatives are discussed below and highlight that real change can occur even when it is challenging for each of the partners acting alone.

Thailand Rice Growers Initiative

Commencing in 2011, the Government of Thailand operated a scheme to mitigate the hardship of farmers against the likelihood of financial loss from crop damage through an insurance system. The government assigned the Fiscal Policy Office (FPO), as project leader working together with related agencies (the Office of the Insurance Commission (OIC), the Bank for Agriculture and Agricultural Cooperatives (BAAC), the Department of Agricultural Extension (DOAE), the Department of Disaster Prevention and Mitigation (DDPM) and the Thai General Insurance Association (TGIA) to establish the scheme.

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[19] See Annex for concentration data.
[20] See Thorburn (2008), Thorburn (2020) and Thorburn & Ghimire (2020)

The initiative is a top-up to a government assistance scheme that provides a basic cover, of 1,340 Baht per Rai (the measure of land area used in Thailand equivalent to 1,600 square meters or around 40% of an acre). Without additional protection, farmers would have a continued gap as full cost for rice crops are estimated to be around 4,000 to 5,000 baht per Rai.

Cover was provided for damage caused by natural disasters such as flood, drought, cold, windstorms, hail, fire and has also had additional perils including pests and wild elephants. There are three types of cover offered with distinguished pricing for (i) BAAC loan customers; (ii) farmers who do not take BAAC loans; and (iii) an additional coverage for those in category (i) and (ii) who need more coverage than the standard level.

This partnership has seen the amount of farming covered increase from 1.05 million rai to 39 million rai after a recent effort by the OIC and other authorities to expand capacity in 2021. Clearly, the scheme has been particularly successful in assisting rice farmers, greatly reducing their risk exposure.

Another scheme for rice growers in Vietnam has been operating in a range of forms since 2010 when it commenced as an index-based cover through a partnership with a credit provider. In 2020, with some new partners and donor engagement, the scheme developed a remote sensing index-based product.

Risk transfer schemes for farmers have also been implemented in Indonesia, Malaysia, Philippines, and Cambodia.

ARPC Cyclone Pool

The Australian Reinsurance Pool Corporation (ARPC) was established in response to the withdrawal of terrorism coverage after the events of September 2001. This reinsurance pool continues to provide terrorism reinsurance to Australian insurers.

In recent years, there have been concerns about the increased cost of living in northern Australia including concerns about the costs of property insurance and the risk that a lower number of insurance providers might leave policyholders in a difficult situation. As a result, a cyclone pool was established in July 2022.

The pool, backed by a government guarantee, reinsures cyclone risk for all insurers operating in defined cyclone areas, focusing on residential, small business and “strata” apartment buildings, thus allowing all insurers to provide cover as part of their own products without exposure to this risk. It also covers some related flooding for a 48-hour period after a cyclone. Insurers chose to progressively join the pool during a transition period[21] until it became compulsory to participate if providing insurance in designated cyclone zones. Through the transition period, some small events occurred, followed most recently by Cyclone Jasper that crossed the coast north of Cairns as a Category 2 storm on 13 December 2023.

The cyclone pool is expected to increase the overall risk pool size delivering a benefit in cost. Insurers will no longer need to face the choice of excluding cyclone cover if their pool is small and their exposure would have been problematic. The geographic area is large, providing diversification of risk. The lower cost of capital, absence of profit obligation, and other factors also mean that the scheme should provide cost effective and sustainable cover over the medium term.

The consequence is that more people should have cyclone cover as the scheme comes into full effect, leveraging retail insurer distribution and overcoming the challenges of a risk that was difficult for individual insurers to handle directly. Pricing benefits will avoid the risk that policyholders do not have access to appropriate coverage. Overall, the cyclone protection gap should be addressed directly and reduced materially.

The terrorism pool remains in place. It was directed at the challenge of finding capacity for cover at the time and continues today for the largest risk concentrations in the Australian market. As a result, it too is providing access to cover to reduce the protection gap albeit primarily for large commercial rather than retail risks.

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[21] Large insurers, defined by Gross Written Premium exceeding $A 300 million, had until end 2023 to join the APRC pool. Smaller insurers could delay if desired through to end 2024.

Earthquake or Flood Insurance

Somewhat similar to the ARPC, there are a range of programs in different countries that provide protection for earthquakes and floods. These covers provide protection to retail customers, either directly or through insurers. Although flood and seismic risks are significant in many Asian countries, national insurance programs are not a common feature, in contrast to other regions where both developed and developing countries have some sort of program that supports cover as part of conventional property insurances. In most Asian countries, flood insurance is either available but not widely purchased, or is excluded.

Seismic risk makes New Zealand one of the most perilous places. Availability of insurance cover was a challenge so a country-wide pool (now the Toka Tū Ake Earthquake Commission often referred to as EQC) was established leveraging strong social solidarity. As insurance coverage was required for mortgages, with the earthquake addition, scale was achievable. A market grew around it, creating an affordable opportunity for customers to take top-up cover as they wished.

The EQC conducts risk research, helps communities reduce risks or make decisions about what they retain, and provides insurance. Earthquake, landslide, flood, and storm damage cover are provided via all home insurance policies that includes fire coverage. There is a policy excess and a maximum sum insured which, along with the premium rate, is standard for all policies across the country.

The EQC has a substantial reinsurance program in the international market, ceding around 40% of premiums. It has some experience with parametric catastrophe bonds used to diversify sources of coverage, and it also has retained funds and a government backstop amount as "capital".

Long term partnerships are valuable for reinsurance interactions, with risk modelling and investments in a national network of sensors having been critical to understanding risk, supporting risk research, and considering their reinsurance needs and value.

The interaction between the cap of the EQC cover and private sector top-up cover is a clear public-private point of interaction. Currently, more coordinated claims handling to reduce duplication has been an important development, with enhanced data flow between all parties being part of this process.

Cyber-risk

Although not yet as evident, there have been calls for similar interventions to help to facilitate broader coverage of uninsured cyber-risks. Mitigation efforts have begun as governments establish agencies that are promulgating education, collecting data, and providing some support for event response. Legislative interventions regarding responses have also been implemented that change potential costs of events.

This government intervention can be expected to develop into broader partnerships involving the insurance sector to address the particularly large exposure that is currently uninsured. The International Association of Insurance Supervisors (IAIS) has an active workstream on the topic alongside the Financial Stability Board (FSB), and industry associations have produced their own papers calling for a range of government responses, illustrating a level of engagement. Perhaps the most forward-reaching discussion has centered around potential PPPs and the engagement of governments to backstop some uninsurable exposures – an idea that is almost certain to become more familiar in this context in the future[22]. This year has seen the first Catastrophe Bond type products issued covering cyber risks[23].

Taken together:

Overall, increasing insurance penetration can help narrow the protection gap. Despite many initiatives, results remain limited. Notable exceptions are primarily found where partnerships have been put in place between governments and industry including where they have been able to combine insurance distribution and coverage with more catastrophic risk coverage through a PPP. More of these partnerships are needed across Asia.

Governments need to ensure that they have the elements of an enabling environment in place in line with international practices. However, they can also move from an accommodating stance to one that proactively encourages change in critical areas including financial literacy, innovation, digitalization, addressing fragmentation, and poorly performing compulsory insurances that divert scarce resources. Governments can also continue their efforts to move to more risk-based approaches that reward and allow insurance company management to make strategic and economic decisions.

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[22] See IAIS (2023a) and (2023b), and AM Best (2023)
[23] See Artemis (2023).

Efforts to increase the scope for insurer innovation need to be multifaceted. The conditions in many countries suggest that significant impediments to innovation remain despite relatively technical and resourceful populations. Too few companies have sufficient incentives or can afford to innovate at the level required to significantly increase penetration of underserved groups in current conditions.

Insurance literacy initiatives might be pursued more energetically in many countries making use of templates and examples that have already been developed.

Collective investments in data and research as well as bringing international experiences to local markets is a key priority that can be taken to a deeper level in each country through localized research and, where relevant, the support of bilateral and multilateral technical assistance. This investment needs to focus on gaps regarding enterprise risks as well as the more commonly addressed protection gaps for individuals and households.

Fiscal Risk Financing

Fiscal Risk Financing

After risk reduction and increased private insurance take-up, the remaining risk needs to be addressed.

Our construct in Figure 1 links this protection gap to solutions from government perspectives through potential fiscal exposure. That is, where there is a gap, there is a consequence that becomes a potential cost to governments. Some costs are direct to governments such as social support payments, recovery costs, and reconstruction. Other costs are indirect, as economic growth is constrained with consequently lower revenue from an eroded base.

In this chapter, we will discuss (i) the benefits of ex-ante versus ex-post solutions; (ii) some examples of government arrangements for such ex-post solutions in Asia; and (iii) regional, more collective, opportunities.

When it comes to sovereign risk financing, a range of in-advance (ex-ante) solutions can be put in place. Some ex-post solutions are usually necessary after the event if ex-ante solutions are not in place. The list of responses that are usually discussed are:

Ex-Ante[24]	Ex-Post
• **Regular Budget Allocations**, setting aside funds to cover anticipated needs each year. • **Contingent budgeting**, considering amounts for various contingencies. • **Reserves**, establishing funds set aside to be drawn down as needed. • **Contingent credit**, where the contingent finance is drawn upon only when needed. • **Parametric (re)insurance**, • **Catastrophe bonds**	• **Fiscal revenue increases** • **Fiscal expense reallocation** • **International donor assistance** • **Borrowing, domestically or internationally.**

Sources: Surminski et al (2019), Cummins and Mahul (2009) and others

[24] Ex-ante solutions are shown in order of those that are often considered appropriate in a multi layered solution from coverage for lower cost higher frequency events (for example local flooding) to higher risk (low frequency greater severity such as major floods, earthquakes, or cyclones).

When ex-ante plans are in place, financing is available in a timely fashion and the economic damage can be limited, reducing the negative GDP consequences. This observation alone, reinforces the interrelated nature of solutions – risk reduction and insurance penetration along with the solutions in this chapter all contribute positively to maintaining GDP and avoiding the worst of negative revenue impacts.

Research has shown that **ex-post solutions tend to be sub-optimal** despite the initial attraction of not having to commit cost to them in advance.

- Fiscal revenue increases can be difficult when GDP is significantly reduced. Adverse natural catastrophes can reduce GDP sharply and tend to do so more adversely in emerging economies[25]. In the last 20 years in Asia, many events have led to GDP hits in excess of 5% and several have exceeded 10% (Source EM-DAT, Author's analysis). With reduced revenue, post disaster costs put pressure on other priority government expenditure further exacerbating the GDP impact with potential longer-term impacts on human capital accumulation and the country's potential growth in the medium term[26]. Other research has cited benchmarks for increased government expenditure at 15% and decreased revenue at 10% of GDP following a disaster highlighting the impact on both revenue and expenditure[27] [28].
- Equally, reallocation of expenditure from high priority spending to meet crisis funding needs can be politically challenging and, even if possible, can take longer than is desirable.
- International donor assistance, for eligible countries, also can take some time to execute, and donor response can also be a function of the visibility of the event in the international press, which adds an element of variability. Evidence also points to some substitution, rather than new funds sourced through donor channels, as funds can be reallocated within overall country commitments. Asia's experience in the last 20 years has not generated significant donor funding as a proportion of total losses, with the average contribution in cases where there was funding at just 12% of the economic loss. No country received donor funding reliably for all events experienced, rather a small proportion of the events tended to result in support.
- GDP impacts also make borrowing more difficult precisely at the time it is needed.

[25] See IMF (2018) for example.
[26] IMF 2018 cites many references for this observation.
[27] More significant GDP impacts have been seen especially in small countries around the world. For example, a hurricane in Dominica in 2017 caused an impact of 200% of GDP. (source: https://resilientcaribbean.caricom.org/wp-content/uploads/2017/11/DOMINICA-EXECUTIVE-SUMMARY.pdf)
[28] See Melecky and Raddatz (2011)

Ex-ante solutions are more immediate so provide short-term liquidity in the aftermath of a crisis.

- Regular allocations make funds available every year, but they tend to be best directed at more frequent and less severe risk events as they are more consistently experienced in line with consistent budget allocations from year to year and, therefore, not for less frequent more extreme events. If allocations are higher to cope with more extreme events, the opportunity cost of excess funds not used for other priorities in "normal years" can be high. It can be difficult to accumulate funds over time through such allocations as, if unused, for various good reasons, reserves tend to be reallocated to other government needs. To this end, some governments have established more formal reserve fund processes with some "arm's length" governance and transparency including the potential for a designated organisation to hold funds.
- Risk transfer instruments such as contingent credit and insurance type solutions are more relevant for high severity and low frequency events. Parametric solutions are particularly relevant for immediate liquidity and budget management.

Various jurisdictions have been involved in contractual risk transfer operations. Contingent credit is increasingly made available from multilateral development banks. The World Bank[29] and the Asian Development Bank[30] both have facilities in place. Bilateral donors also have been engaged in this area particularly JICA[31]. As a result, many client countries of these partners can access this form of finance relatively inexpensively.

Another example of a risk transfer instrument is the index-based pandemic bond issued by the World Bank in 2017 motivated by the need to finance support to countries after the Ebola outbreaks. The bond and associated derivatives provided substantial cover to the World Bank's Pandemic Emergency Financing Facility to support direct funding to client countries. This solution drew some criticism after the covid event as the overall amount was limited compared to funds mobilized for the pandemic and some complexities in design worked against the speed of funding. Triggers depended on decisions by external parties (the WHO in this case) and rates of change in disease (where there was some impact on the statistic from the timing of the way the disease progressed in China). These two elements delayed a final determination of the payout.

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[29] The World Bank CAT DDO (Catastrophe Deferred Drawdown Option) is a contingent financing line of credit to provide liquidity when catastrophe events occur.

[30] For more information on the ADB programs see https://www.adb.org/news/adb-introduces-contingent-disaster-financing-natural-disasters for example

[31] JICA, the Japan International Cooperation Agency, has provided contingent finance operations related to bilateral arrangements with countries.

However, the concept of index based rapid payments remains valid. Lessons learned can always be implemented in future initiatives and the concept of pandemic or epidemic bonds remains of interest. Pandemic related business interruption might also find some solution here, possibly with a combination of government mitigation and risk control, as this is a risk that insurers were not covering but there was clear demand for some kind of protection from the small business sector in particular and this demand has yet to find a solution.

> *JICA provided JPY 50 billion "Post disaster contingent loan" to the Government of Philippines for post disaster recovery for both natural and public health disasters in September 2020. This was the first case where JICA extended these contingent credits to health-related disasters.*
>
> *The assistance is the second phase of JICA's post-disaster standby loan for the Philippines. In 2014, the first standby loan helped to address Typhoon Yolanda recovery and rehabilitation.*

Development partner engagement has been a key element of these transactions. This partnership brings expertise and transactional experience and market relationships to the table. It leverages the credit rating of the development organization to the benefit of the client country. For countries with development partner relationships, leveraging them to advance risk transfer solutions would be the first lesson from experience.

For countries that do not have access to development partner assistance, some have still accessed parametric risk transfer products on their own account. This is further advanced if an organization is created to operationalize the effort, rather than the government directly. This is because the continuity of market engagement and technical oversight is advanced through such a dedicated entity. This would be the second lesson from experience.

In developed economies where insurance penetration is mature and public revenue financing reflects a wide and reliable revenue system, alternative finance might play a lesser role. However, evidence shows that risk financing is relevant and advantageous in all countries even if the magnitude of the issue differs.

Direct Risk Transfer Examples

The Philippines, given a high-risk exposure, has demonstrated additional reach.
In 2017, the government and participating provincial governments, through a "Government Service Insurance System", transferred catastrophe risk of $US206 million

for government assets and infrastructure to the global reinsurance sector. In 2018, it renewed the program and doubled the coverage.

In 2019, the Philippines Government continued its partnership with the World Bank and issued a catastrophe bond for $US 225 million listed on the Singapore Stock Exchange. It covered natural catastrophe perils for cyclones ($150 million) and earthquakes ($75 million) triggered by modelled loss levels. Much of the investment came from outside Asia (87%) and were institutional investors in nature. This cyclone trigger was assessed for several events, one of which did breach for a claim (Typhoon Odette in 2021) and reduced the capital for the relevant notes by 35%. The earthquake notes matured without loss.

Indonesia is developing a strategy that will include a central reserve fund as well as leveraging finance and insurance options with donor support.

Outside Asia, Jamaica[32], Chile, Colombia, Peru, and Mexico have also issued risk transfer to capital markets.

Key to success has been the value of building the contingent risk on highly rated credit instruments. Structures consist of underlying bonds with an added contingent risk based on the insurance events. Credit risk is a key consideration for such structures and AAA rated credit bonds serve a useful purpose. Whilst Asian AAA rated credits can be a source of such underlying securities, the ADB and World Bank have largely provided this role for their clients. That said, Singapore as the best rated ASEAN country could cover the basic government bond for Special Purpose Vehicles covering contingent risk.

Taken together:

For Asia, the data is consistent with global conclusions - ex-ante efforts are considered most effective. Direct ex-post donor funding has been inconsistent and insufficient, fiscal constraints have impacted responses without advance financing, and GDP impacts are significant in many cases.

Although there has been increased interest by donors and multilateral development partners supporting ex-ante instruments, the most activity in this area remains focused on countries with substantial natural catastrophe risk exposure. Some recent interest has

[32] Issued in July 2021 by the World Bank, the original term of 3 years expires at the end of 2023 to cover named hurricanes.

added pandemic risk after the Covid-19 experience but this remains nascent compared to the potential.

Donor engagement and technical assistance will be helpful to structuring transactions, as these transactions can be complex, as is leveraging the issuer's name and reputation for risk transfers into the capital markets. The AAA rating of donor agency bonds used for issuing securitized insurance coverage and contingent debt instruments could be replicated using the Singapore Government's rating to underly such issuances, providing an opportunity to further localize and expand these initiatives.

Dedicated entities can be useful to bring transparency to ex-ante reserve funds and provide some flexibility to use them across accounting periods. They also help to facilitate effective risk transfer using these more sophisticated instruments. Continuity in reinsurance market relationships is also helped by such dedicated institutions rather than direct relationships with governments and their broadly applied procurement rules.

Regional solutions have been useful and are further discussed in the next section.

Public Private Partnerships

Public Private Partnerships

One tool for implementing change in one or more of these three categories of solutions is through Public Private Partnerships (PPPs). Different PPPs address different elements of the problem and the solution. Depending on the issue that they are addressing, PPPs may be structured accordingly and so they show variation from each other in different situations even though there are some common keys to success. Although PPPs can play other roles, many of which include secondary or consequent management and transfer related to their own risks, the focus here is on those established with the intention of reducing protection gaps.

PPPs cover a range of potential applications. They are usually targeted and purpose-driven. By definition, a PPP involves a public sector entity and a private sector entity and a partnership. The public sector entity might be a national government, or it could be a subnational government or even a public sector organisation such as a utility company. The private sector entities involved could be a single partner or a broader group. Ultimately, a partnership is not an alignment of activity but a sharing of views and goals with deep mutual understanding.

Characteristics of PPPs focused on addressing protection gaps

Insurance related PPPs tend to involve insurance companies and/or reinsurers facilitating risk transfer and carrying some risk but may also involve them or other organisations for distribution and servicing or to make technical contributions.

The partnership involves a defined activity. Some definitions suggest that the defined activity being delivered by the partnership is a replacement for an activity that would be delivered directly by the public sector. For example, the insurance mechanism might deliver social assistance in the event of disaster better and in a more timely manner than a government might be able to do. In other cases, it may be that the government is not able to effectively deliver the service at all without the partnership such as, for example, by effectively reaching clients[33].

[33] In east Africa, initiatives to enrol the public in a national health scheme met with only limited coverage well under 20% of the population. Once it was then linked to opportunities for private health insurance as well, then insurers worked to ensure clients had both levels of coverage increasing the take-up of the national scheme to levels closer to 60%. Although there is still some way to go, this is an example of how the private sector achieved something that the government could not achieve alone. Another example is the substantial trend toward providing G2P payments electronically thus encouraging (or requiring) that lower income people are “banked” and have an account that they access, use and benefit from. The additional benefits of being banked then flow to them as well as the access to the G2P payments.

PPPs tend to take a long-term rather than transactional view. Some definitions point to a PPP being a “long-term contractual arrangement” distinguishing it from a case-by-case transaction.

Protection gap related PPPs may be less focused on financing initial investment. PPP literature sometimes considers that the private sector contributes capital to finance the initiative in return for a revenue stream, as they provide the relevant service thereby reducing the need for governments to finance the activity. Such a description fits well enough with, for example, the construction of a toll-road. An insurance gap related PPP may not involve the same timing of financing, just as insurance itself has a “reverse production cycle”. Either way, the social objectives of the government should be aligned with the financial incentives of all other partners.

Not all PPPs focus on private sector risk coverage. Some PPPs involve the public sector providing material risk coverage such as in situations where losses are uninsurable, or insurance capacity is not available. In these cases, governments provide coverage that allows insurers to leverage and complement it when providing coverage to customers. This can reduce gaps beyond the government provided backstop cover and facilitates the flow-on benefits of economic activity by policyholders. This contrasts with other PPPs where the private sector is the provider of risk coverage.

Not all partnerships involve a government organization contractually partnering with private sector entities. Some partnerships are equally significant but based on common understandings and practical engagement. This is often the case where public and private sector provision of coverage and benefits are complementary. The New Zealand earthquake example above mentioned this. It is also a strong feature of health and retirement interaction.

Retirement incomes and health have a strong social and policy “contract” that can define roles between public and private sectors explicitly or implicitly. The interaction between the roles of the public and private sector is a critical driver of the partnership. Although it differs from country to country, this interaction might be illustrated by considering, for example, the way that longevity risk is provided for or the expectations for financing health benefits above a broad basic level. We can refer to these partnerships as complementary and interactive partnerships given the interaction between the roles of governments and the private sector.

In addition to the important role of the social contract, the role of community solidarity is also key to the potential for and design of PPPs. Again, different community expectations will exist for different risks, but there are examples of PPPs that operate where solidarity is high, and they operate ensuring that a broad participation facilitates effective pooling of risk across the community. Other PPPs operate where solidarity is limited and, therefore, are not creating such a risk pool at the total community level. The pricing of risk, naturally, varies with the level of solidarity.

At this stage, although early in the development, more partnerships can be expected to be important in the cyber-risk space as well.

Examples of PPP approaches

There are a number of PPPs that we could select to discuss as examples. In the case of natural catastrophe risks, there are examples at the sovereign level, as well as at the meso and micro levels.

Level	Examples
Macro	SEADRIF and its peers
Meso	ARC-replica Global Parametrics and Vision Fund
Micro	R4 of WPF: Ethiopia, Senegal, Malawi, Zambia ACRE: Kenya, Rwanda, Tanzania, MCII: Caribbean

To consider these we discuss the most relevant Asian macro case for natural catastrophe, and then a health-related and a retirement related case.

Natural Catastrophe Risks – Regional Schemes

The Southeast Asia Disaster Risk Insurance Facility (SEADRIF) is a regional platform focused on "building resilience against climate risks and disasters". Risk pooling, insurance, and the need for quick disbursement of funds is highlighted by this facility. The facility is a partnership between the ASEAN+3 governments with the support of the World Bank, although the World Bank is not a member of any of the governing bodies. Similar initiatives established in the Caribbean, Pacific and Africa have operated for longer so we will discuss them first before considering SEADRIF and its potential role.

The Caribbean Catastrophe Risk Insurance Facility (CCRIF)

CCRIF is the first such regional scheme established by governments with World Bank engagement in 2007. The facility was restructured to regionally segregated funds in 2014, aiming to include central American states and additional products and is now known as CCRIF SPC (we still use the common shorter reference here) with 22 government members and two electric utilities at last report[34]. Financial support from a multi-donor trust fund at the World Bank provides some resourcing and financing whilst retained earnings, currently exceeding US$50 million, support operations and risk retention.

CCRIF's coverage is provided on a parametric / index-based approach and focusses on tropical hurricanes, excess rainfall, and earthquakes. It also has specific products for fisheries since 2019 and electric utilities since 2021. In the most recent reported year, it issued 63 parametric policies in total, principally at the national level. Since commencement, total cover provided has increased from just under US$500 million to US$1.1 billion and has made 58 payouts totalling US$ 260 million to 16 member governments. 2022 saw 34 events that gave rise to economic loss and 7 of them triggered payouts.

The facility focuses on providing quick response liquidity, committed to paying claims within 14 days of an event. The triggers are based on risk modelling developed and maintained through the facility drawing upon and enhancing a range of other models and data sources as input.

Premium costs are significantly lower than individual country market rates (up to 50% less) due, in part, to the pooling benefit. Over the years, the facility has also benefited from capital from the trust fund, membership fees and accumulated reserves. CCRIF notes that it "covers risks that are priced too high by the traditional markets". In addition, and despite the cost advantages, some lower income countries do receive donor premium support.

CCRIF also supports efforts to build capacity through advisory services and analytical reviews. Since 2011, it has taken steps to encourage more inclusive insurance markets

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[34] See CCRIF (2022)

through a “Climate Risk Insurance and Adaption in the Caribbean” (CRAIC) project. CRAIC includes parametric “meso” and “micro” insurance products to complement the sovereign coverage providing protection against heavy rain and strong wind to a much broader policyholder group. After 10 years, CRAIC is now transitioning to scale up these two initiatives across the Caribbean and Central America.

Surveys of member governments point to continued demand for CCRIF to provide new products to address additional perils and to focus on particular economic sectors such as agriculture, tourism, housing, and other utilities. CCRIF also sees the opportunity to expand the membership.

CCRIF accesses the reinsurance markets and issues catastrophe bonds with World Bank involvement – this blend of sourcing of capacity demonstrates the maturity of the scheme and an advantage that most governments in the region would not be able to do directly especially as there are many relatively small nations in the group.

African Risk Capacity (ARC)

Established in 2012, the ARC also provides parametric cover to participating countries where cover is provided based on supporting risk modelling and an acceptable contingency plan that provides substance to the intended use of funds. ARC consisted of two entities, the ARC Agency that provides capacity building, risk modelling, awareness building, and ARC Insurance, which was established in 2014, and started providing cover from that point.

ARC aims to cover 35 countries in the first 10 years of operation and currently has 29 drought covers in its pool. It has a track record of 10 claim payment country recipients in its first 5 years.

ARC is unique compared to other regional schemes in that the payments of claims are made only on receipt of detailed plans for use of funds reflecting the actual event. These plans are certified by a peer group of experts and subject to audit and would be generally consistent with the plan developed before cover was provided. This process extends the claim payment timeline compared to the other regional schemes by around an additional 14 days. Whilst longer, this process allows ARC to identify and substantiate the number of end beneficiaries for these funds, reinforcing the usefulness to low income and vulnerable groups.

To support the development of its products, ARC established its own risk modelling facility "Africa Riskview" and risk models for drought, tropical cyclones and river floods have been developed. An advisory committee supports the management of the models. The risk modelling facility is available for free use beyond the work directly related to ARC.

More recently, ARC has been developing responses in support of pandemics including openly available documentation of the effects of sets of scenarios and a simulation tool.

Recent independent reviews of ARC are positive although make some constructive suggestions concerning future development. The ARC agency has a good reputation among member states but has to balance a challenging demand for more services with some voices who consider the costs might be challenging to recover through premiums.

Additionally, an ARC Replica has been established where donors can effectively buy replicating cover for their recipient countries, helping to expand cover beyond the gap funded by the governments themselves. At the same time, donors can, through the replica, leverage the controls, planning, design, audit, and review processes of the ARC insurance policies that are being replicated[35].

The Pacific Catastrophe Risk Insurance Company (PCRIC)

The PCRIC was established in a pilot phase in 2013 and then more formally in 2015. It has been providing index-based coverage for tropical cyclones and earthquakes and associated tsunami. Six pacific nations are current members. In 2021, it became a segregated cell company in an effort to facilitate further expansion, including to sub-sovereign clients including those in the private sector[36].

In its history, it has paid four south pacific cyclone claims totalling US$ 11 million. In each case, they report that the payments were the "first financial injections of emergency funds received by the countries" paid between 7 and 14 days of the event.

Policy numbers have been flat for some time driven by product relevance, modelling, and premium funding needs, and PCRIC faced a significant challenge with the end of grant funding in 2022. It has sought to realign its strategy, to broaden its product range beyond cyclones, to expand the number of insurance policies issued, especially for northern

[35] For information on ARC Replica see, for example, https://www.arc.int/arc-replica
[36] Some of the PCRIC client countries do not have locally licensed insurance companies and are dependent on distribution from foreign insurers.

pacific countries, and to support premium funding through donor or other support where necessary.

Modelling capacity has been identified as critical to success. In line with this, initiatives to "enable PCRIC to own and maintain this process on an ongoing basis", and to update and maintain models to better reflect the Pacific cyclone experience, have been identified. PCRIC has worked with the external modelling firm to "procure the necessary model meta-data & information to develop its internal process for model adjustments" and "to provide flexibility to adjust model assumptions" especially regarding exposures and asset valuation – seen as key to getting the modelling more fit for purpose. Concerns also have been discussed regarding the initial modelling and its validity in the region in the context of basis risk. This led to a "RiskScape" project with substantive change in the modelling management[37].

SEADRIF

The SEADRIF Insurance Company, incorporated in April 2019, focusses on providing risk transfer products with the financial support of development partners. It has provided flood insurance to Lao PDR as its first product in February 2021 insuring the government through a combined index-based insurance coverage that is reinsured through the private sector and a supplemental "soft trigger" cover regarding potential basis risk issues.

It is seeking to expand coverage to other countries and for other perils as well as considering specific programs for public sector assets and infrastructure. SEADRIF Insurance only provides covers directly to sovereign governments at this stage.

One regulatory issue for PPPs that are looking to accept sovereign risk may be a local legal requirement that all risks in the jurisdiction must be insured (and/or reinsured) with locally licensed insurers (and/or reinsurers). This requirement reflects a common wording stemming from the IAIS Insurance Core Principles. However, the IAIS Insurance Core Principles are predominantly seeking the outcome that no insurance is issued to unauthorized insurers and that retail protections are provided. Proportionate approaches to macro level schemes and sovereign risk transfer make this requirement less compelling and legal compliance to this can create a burden that adds little value. The IAIS has also expressed the view that sovereign risk transfer at the national level should be able to be transacted directly with international markets. In some jurisdictions, this is clarified in the law so that some social "insurance" schemes have the appropriate freedom and efficiency.

[37] Refer discussion of risk modelling in PCRIC (2021), (2022), and (2023) noted in the references.

The SEADRIF Initiative, the other part of the SEADRIF structure, focusses on knowledge sharing, promoting shared investments in the understanding of risk, and contributing to political momentum. The Initiative is also the part of the structure that considers risk models and their development and availability. The role of the SEADRIF Initiative alongside the SEADRIF Insurance entity is, therefore, similar to the ARC Agency alongside the ARC Insurance entity. In this way, this twin structure is similar to ARC but different to the other examples. Unlike ARC, however, the work is at a far earlier stage in both SEADRIF operations.

SEADRIF has considerable potential to leverage risk pooling across risks and regionally. This pooling benefit has been estimated to save country clients up to 25% of the insurance premiums they might otherwise have to pay for the coverage as part of the initial work to establish the scheme.

The Covid-19 pandemic had an impact on SEADRIF's ability to take its new products and methods to the governments however, it is now practical for them to re-engage and set forth on a path to secure the vision intended for it. In the region, it is a first in terms of addressing disaster risk financing comprehensively.

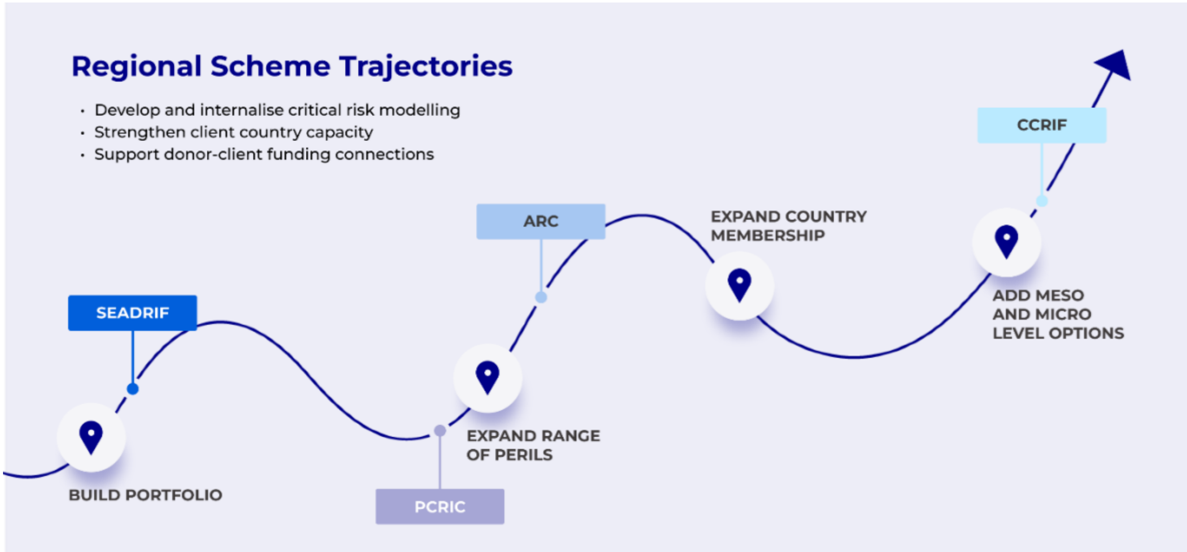
Observations on these regional schemes

The regional schemes are similar but also have their differences that go well beyond a reflection of their period of operation.

- Coverage is based on parametric / index-based approaches; with an exception in the case of SEADRIF with the "soft trigger" element. Whether this soft trigger approach persists as a feature for SEADRIF products remains to be seen.
- Parametric approaches facilitate an emphasis on rapid payment with a view of pre-financing short-term liquidity needs, reducing budget volatility and allowing countries to respond to their most pressing needs including providing targeted support to the most vulnerable.
- Modelling is critical to index-based approaches but, for these schemes, the modelling infrastructure is also critical to their success. In the case of Caribbean and African cases, this modelling effort was much more closely integrated from the start than it was with the Pacific case.
- The pooling effect, retained earnings, and access to additional financial support helps generate significant cost-effective risk transfer for member countries. This has been researched and documented in all cases.

- The relationship with donors is important, supporting development initiatives as well as assisting clients to access premium funding where relevant.
- Identifying risk, addressing risk reduction, preparedness, and insurance, can offer a more complete approach to solutions for resilient recovery from events but, as has been observed in other cases, all elements depend on each other to develop on similar timelines so that they can complement each other effectively.
- Any regulatory barriers that would prevent sovereign risk transfer to international markets may need to be addressed.

Figure 4: Regional Scheme Trajectories



The usual trajectory of these schemes has been as shown in Figure 4 to:

1. Build a portfolio of sovereign risk transfer contracts supported by technical modelling infrastructure and donor relationships that are both direct and indirect supporting clients;
2. Expand perils covered in response to client demand;
3. Continue to expand country participation;
4. Eventually add products providing parametric capacity for meso and micro level solutions.
5. In parallel, strengthen capacity in client countries particularly at macro, meso and micro levels in line with the portfolio development.

Given this trajectory, the potential role of SEADRIF in Asia might be anticipated to follow a similar path albeit tailored to regional and country needs and circumstances. This would imply that its development, issuing additional cover to more countries will be enhanced as the risk modelling becomes central to discussions with clients and product design. It will also benefit from good relationships between SEADRIF and donors as a supporting channel for lower income countries to gather early premium support.

Health insurance and health care

Integrating health care arrangements, health insurance, and health financing through public schemes can improve delivery quality, efficiency, and outcomes. Working together, this is an area where partnerships with strong interactions between governments, insurers, and health care providers, are not just a partnership of necessity, but one that can also be a valuable opportunity.

In Singapore, the introduction of "Integrated Shield Plans (ISP)" provides an example of the several points of interaction.

The national scheme, "Medishield Life", provides a set of medical benefits to the community administered by the Central Provident Fund (CPF), where benefits also include coverage for pre-existing medical conditions. Premiums are collected from a member's "Medisave" account, and benefits are provided based on a schedule. For some members, premiums are subsidised.

ISP are provided by approved insurers, providing upgraded benefits for an additional premium. Ancillary benefits are also available for additional services and health related interventions. The ISP provider acts as the point of contact for the customer for all levels of benefit and liaises directly with the CPF to handle premium and claims related elements. The ISP, the CPF and the Ministry of Health have interlinked systems for claims payment handling to avoid customer inconvenience.

As a result:

- The Medishield Life scheme provides some social objectives.
- By providing protection for pre-existing conditions, it facilitates cover that would not be insured privately.
- Integration and service delivery decisions in the design have minimized customer disruption and reduced duplicative service delivery[38].

[38] As noted, the EQC also moved to a single point of claim handling from a customer perspective to enhance service whilst reducing cost.

In another example, the Kenyan National Health Insurance Fund (NHIF) has a goal of delivering universal health insurance coverage to all Kenyans. Despite being established in 1966, initially for state employees but broadened since then, enrolments and penetration remained low with only 1 in 5 Kenyans having some kind of insurance. Recent government efforts to enrol more citizens in the NHIF have had a significant effect on health insurance awareness making private health insurance now the fastest growing product in the private sector[39]. Although it still has a long way to go, the interaction between health insurance awareness clearly flows across private and public sector provision.

Integrating at the interface between benefit structure, payments, cost allocation, and claim delivery are all opportunities for partnerships that ultimately benefit and can improve the health outcomes for citizens and reduce the health protection gap.

Retirement and longevity

The interaction between public and private provision is an important part of the partnership in retirement. Retirement incomes policies have a strong relationship to the social "contract" that helps to define the roles of public and private sectors. Sometimes, but not always or entirely, these relationships include an element of legislated compulsion with associated obligations on the private sector to deliver on their role consistent with the policy intention of the compulsion.

In the accumulation phase, retirement savings is often considered in terms of "pillars" where the social scheme is then supplemented by private sector managed schemes that might include compulsory contributions, voluntary contributions and other savings that could be accumulated toward retirement. The intersections of each pillar should be and usually are (but not always), creating the functions of the public private partnership. In practice, the definitions for eligibility of membership, contributions, and the fiscal treatment of them, all define the point of interaction between the pillars and, therefore, the form of private sector engagement.

In the decumulation phase, some countries have public and private sector roles for the investment of funds, managing regular payments, providing protection against rising living costs, and ultimately insuring against extreme longevity risks. By analysing the range of benefits and the way that older people can meet their income, housing, and

[39] See Mugo (2023) and Ajwang (2022) for example for information on the scheme.

health care needs through changing phases of older age, the way that the public and private sectors can be brought together to reduce risk for the elderly in extreme old age can be optimised.

Often cited, the Chilean retirement system retains a government guarantee that provides for retirees that outlive their funds. Retirees can purchase a lifetime annuity with guaranteed minimum standards or take a programmed withdrawal drawdown on an account with rules regarding drawdown amounts. For retirees who outlive their retirement account, a government guarantee covers the remaining longevity. This guarantee is paid through the existing provider to minimize disruption to customers.

In some other Latin American countries that were inspired by the Chilean reforms, the results for their longevity insurance are quite different due to seemingly small changes in the rules for annuities or programmed withdrawals, highlighting the sensitivity of the interaction in a public-private partnership that comes from the details of the rules applied at the junction.

Benefits of PPPs in addressing protection gaps

Some of the advantages cited of these arrangements provide positive benefits to the ultimate customers who might otherwise be bearing the risk themselves. Risk pooling reduces the cost of risks and risk transfer takes this further by smoothing cash flow and avoiding the variation, even partially, from adversity. Further, solutions that include insurance mechanisms can lead to greater net benefits compared to solutions that don't.

For governments, PPPs can also bring benefits to the challenges that they face as a result of the protection gap. Whilst the actual benefits depend on what the PPP is delivering, some of them include:

- Governments do not have to finance the activity in advance as directly and can leverage private sector capital, as there is an expectation that the private sector is contributing to the development of the solution in return for the cash flow and ultimate profit stream.
- The private sector may be more efficient or effective in terms of delivering the service.
- Potentially greater transparency in the use of funds through the partnership.

- Some complexity in government procurement rules may be avoided. This can be particularly relevant when longer-term relationships are part of the process such as the management of reinsurance coverage and partnerships.
- The application of effective risk management as part of the project is seen as a strong advantage and often delivered by both effective project management and risk transfer by the private sector partner. This usually compares with a situation where the government may have considerable project and delivery related risks that it would otherwise be retaining.

Given these outcomes, the following metrics would seem to cover these benefits and how well they might be achieved:

- **Delivery of the service**. For example, the volume of transactions or the number of users could be an important metric from the point of view of more effectively delivering a service that might not be easily delivered at all. This is a good metric to consider when it comes to more inclusive insurance markets and services, especially where the customers will not be able to secure protection from any source prior to the partnership.

- **Financial sustainability** of the partnership from the point of view of the private sector participant.

- **Financial outcomes** of the partnership from the point of view of the recipient of the service. When it comes to insurance, this may include consideration of value for money from the insurance service as well as access to complementary benefits from the delivery of the risk management.

- Governments will also be interested in the **value for money of service delivery** compared to the alternative of their own direct delivery of services.

But success goes beyond these transactional considerations.

And as with all partnerships – two heads are better than one! **The extent that partners share and value the objectives of other partners is important**. A partnership mindset changes a transaction into a relationship, from one where governments provide an environment consistent with opportunities that the private sector considers, to one where governments and private sector actors work together at a deeper level from earlier in the design phase. Each partner has a shared relationship with mutually beneficial outcomes.

As was illustrated by other examples in this paper, PPPs may take time to achieve these outcomes. Critical to the shared relationship is an understanding of each partner's goals by the other, sufficient transparency between partners, and a good flow of data shared by all. Understanding the sharing of risk and reward across all partners supports trust and continuity.

Insurance related PPPs benefit from longer-term stability in a partnership. It is often cited that the consistency of approach between the partnership organisation and the reinsurance sector enhances reinsurance relationships and creates dependability for all partners, including clients of the PPP. Some organisational separation from government has been helpful in this aspect. Organisations can also bring some stability when political clarity might otherwise create an element of uncertainty.

Taken together:

It is clear that PPPs discussed in this chapter and earlier in the paper have shown significant potential to close the protection gap.

PPPs are particularly useful when considering sovereign risk transfer but also have delivered benefits in terms of increased penetration and addressing risks that are difficult to insure. Partnership structures can help in bringing reinsurance solutions to the risk transfer given their longer-term perspective. Transparency, a focus on data and risk quantification research is also a common benefit. Opportunities for integration of all solution areas should not be overlooked.

Regional PPPs for natural hazards have shown promise, particularly by reducing costs through a pooling benefit. Although the Asian regional PPP, SEADRIF, is at a relatively junior stage compared to its peers elsewhere, it is clear that benefits can flow as the concept achieves greater implementation. For all of these schemes, they have benefited greatly from risk modelling so that their parametric solutions can be tailored as part of product and pricing discussions with client countries and they can respond quickly when events occur.

Partnerships that work best are deep. The objectives of each partner are not only aligned but each partner shares the goal of seeing the other partner achieve their goals. This requires a shared understanding of goals among partners – not just a symbiotic set of steps but a commitment to each other's vision and goals – perhaps considered as moving from a business transaction to a marriage.

The interaction between public and private provision is an important part of the partnership in both health and retirement. Interaction that can be channelled through a single point of contact for the ultimate customer enhances the benefits for the client as well as the delivery efficiency.

Overall Conclusions

Whilst much is being done to address protection gaps, trade-offs and leverage opportunities between initiatives are harder to capture as coordinated development of approaches is less common. As a result, many initiatives are pursued in their own right as good ideas and cost justified. However, some benefits are left unrealized compared to a more complete consideration of solutions at a holistic level and where inter-relationships can create a more virtuous circle of benefits.

Comprehensive National Protection Gap Strategies

The need to bring together and address all three categories of solutions in a coherent tradeoff-based approach would be optimal. A "National Strategy" approach should be used more widely. This can avoid strategies that address the protection gap for one or other risk type and for one or other potential solution area but are certainly likely to be sub-optimal. Policymakers would benefit from tools and data to facilitate balancing tradeoffs and cost benefit considerations of all solutions so that there can be an effective balance between investment in mitigation, risk financing/transfer and efforts to increase insurance penetration in the domestic market.

... with more effective comparative cost benefit decision making

Cost benefit considerations should consider the broad range of interventions and the relative advantages of each. Although benefits are more difficult to quantify, efforts to consider the full range of benefits despite uncertainties, would be beneficial. Options that are more creative as well as those that reflect a more proactive government approach should be considered as part of the assessment.

This would ensure that a range of policy options would be developed and made available to decision makers. "Low hanging fruit" options would be both low-cost and bring about significant secondary benefits such as mitigation that also enhances insurance penetration or the secondary economic contributions of environmental restorative interventions.

Shared experiences and learning can be beneficial.

Governments should be more proactively engaged to increase insurance penetration

Enabling environments are important and need to be put in place, in particular, to facilitate and encourage innovation. However, efforts to get more insurance market participants to invest in innovation probably requires proactive engagement from governments.

Insurance literacy initiatives could be pursued more actively in many countries, leveraging templates and examples that have already been developed.

Overly fragmented markets can constrain insurer resources especially if the most significant product lines need to find a more sustainable financial footing.

Collective investments in data and research as well as bringing international experiences to local markets can be championed leveraging, bilateral and multilateral technical assistance, where relevant.

Ex-ante financing plans and risk financing options should be part of these strategies

Sovereign risk transfer instruments have been used by countries exposed to significant disaster risks, but more can be done, especially to localize and leverage skills and financial resources in Asia.

Instruments for risk transfer have been successfully used in some parts of the world but many countries in Asia have yet to utilize them. In particular, the opportunities to advance these risk transfer options, in partnership with donors where eligible, should be a valuable opportunity to reduce the protection gap.

Regional PPPs are valuable options

The opportunity for greater regional cooperation and coordination on risk transfer solutions offer one vehicle for taking risk financing forward. The pathway of similar schemes in other regions with a longer history provides evidence that expected pooling benefits are substantial and can be captured.

In addition, bilateral donor relationships can be enhanced through regional schemes and these relationships can provide an opportunity to source premium funding.

Data and risk modelling are critical

There is a need to further localize data, risk monitoring, risk modelling and innovation in financial market risk transfer solutions.

Effective partnerships between industry and government will lead to better results

Industry and government can work more closely together. High level discourse is often complemented with action largely from one or other party, but real results have come most effectively from partnerships where both insurance and governments and, in some cases, other parties have been involved in design and delivery at a detailed level. Ultimately, shared visions and a commitment to each other's goals and outcomes turns a cooperative effort into a long-term partnership.

National strategies and PPPs need to extend beyond natural catastrophes to health, mortality, retirement and cyber

Partnerships extend beyond natural catastrophe to health, mortality, and retirement. Examples of improved efficiency and outcomes exist in Asia. Although not always contractual in the same way, these PPPs reflect a consistent policy application at the level of principles and objectives as well as defined interactions that establish the roles of each partner.

The massive protection gap in cyber-risk indicates that all of the aforementioned can be applied for this risk too.

Whilst there are many examples in this paper, the list is not complete and the GAIP database can be an additional useful resource.

This paper has discussed and reviewed the rich experience in Asia and elsewhere. Although there are some clear lessons learned, the next step in this work is to develop more concrete steps, actions, and tools to support the substantial progress that is needed. With that progress, we will ultimately achieve the goal of improved resilience, well-being, sustainability, and equality, with greater collaboration, participation and engagement of governments and the insurance sector.

Annex: Compulsory Insurances by Jurisdiction

Jurisdiction	Bangladesh	Brunei	Cambodia	PR China	China - Hong Kong	India	Indonesia	Japan	Laos	Malaysia
Liability										
Motor Third Party[40]	No	Yes	Yes[41]	Yes	Yes	Yes		Yes	Yes	Yes
Workers Compensation[42]		Yes	Yes	Yes[43]	Yes		Yes	Yes	Yes	Yes
Public transport			Yes	Yes[44]			Yes		Yes	
Hazardous material[45]				Yes		Yes			Yes	
Shipowners[46]		Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Aviation	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes
Drones					Yes		Yes			
Nuclear				Yes				Yes		
Public venues				Yes					Yes	
Boilers and gas explosions				Yes						
Schools				Yes						
Travel Agents				Yes						
Food safety				Yes						
Environmental				Yes						
Hotels					Yes				Yes	
Elevator safety				Yes						
Builders warranty								Yes		
Security guards										
Construction sites									Yes	
Dams (Hydro)									Yes	

[40] Table shows jurisdictions where Motor Third Party insurances are compulsory. Note that the impact on the insurance market can vary in particular due to the scope of coverage (limited to bodily injury or may include third party property), the limits of coverage, any exclusions on vehicle types, and the level of observance of compulsion.
[41] Third party liability for all motor vehicles used for commercial purposes including passenger and good transport.
[42] Some jurisdictions provide a state scheme and others require private sector coverage. Some also require top up in the private sector over base level state coverage.
[43] Additional obligations apply for coal miners and construction workers and some other hazardous industries.
[44] Intercity carriers need liability insurance for passengers and their baggage and goods.
[45] Manufacture, storage, transport of use of hazardous materials: coverage required varies by jurisdiction.
[46] Here the table considers both requirements for pollution insurance only and also broader Marine Liability cover.

Jurisdiction	Bangladesh	Brunei	Cambodia	PR China	China - Hong Kong	India	Indonesia	Japan	Laos	Malaysia
Factories									Yes	
Digital certification agencies										
Professional Indemnity										
Lawyers				Yes						Yes
Insurance Brokers		Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Trustees of retirement funds, mutual funds					Yes	Yes				
Securities dealers					Yes	Yes		Yes		Yes
Architects, engineers, surveyors		Yes[47]	Yes	Yes						
Demolition contractors			Yes							
Medical / dental Pharma				Yes[48]						Yes
Accounting firms				Yes						
Insolvency practitioners				Yes						
Directors & Officers of public listed entities					Yes					
Property valuers										
Foreign workers	Life	Health								Health & Guarantee
Life Insurance for workers	Yes[49]									
Health insurance										
Imports	Yes[50]									
Flood Insurance on loans										
Travel Insurance										Yes

[47] On government projects.
[48] Specific liability is required, in addition to broader coverage, for clinical trials and vaccine production.
[49] Over 100 employees, employees in ship recycling sector.
[50] Required when backed by an LOC from local banks.

Jurisdiction	Bangladesh	Brunei	Cambodia	PR China	China - Hong Kong	India	Indonesia	Japan	Laos	Malaysia
Condominiums and corporate buildings					Yes	Yes[51]				Yes
Mortgage insurance										
Life insurance on loans		Yes								
Crop Insurance										
Personal Accident for mountaineers										
Offshore windfarm pollution damage										

Source: AXCO

[51] Not a national requirement

Jurisdiction	Myanmar[52]	Philippines	Singapore	Sri Lanka	China - Taipei	Thailand	Vietnam
Liability							
Motor Third Party	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Workers Compensation		Yes	Yes		Yes	Yes	Yes
Public transport	Yes	Yes					
Hazardous material					Yes	Yes	
Shipowners	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Aviation		Yes	Yes	Yes	Yes	Yes	Yes
Drones		Yes			Yes	Yes	
Nuclear							
Public venues					Yes	Yes	
Boilers and gas explosions						Yes	Yes
Schools					Yes		
Travel Agents					Yes		
Food safety					Yes		
Environmental	Yes						Yes
Hotels					Yes	Yes	
Elevator safety							
Builders warranty							Yes
Security guards							
Construction sites						Yes	Yes
Dams (Hydro)							
Factories							
Digital / certification agencies				Yes			Yes
Professional Indemnity							
Lawyers			Yes				
Insurance Brokers	Yes	Yes	Yes	Yes	Yes		Yes
Trustees of retirement funds, mutual funds			Yes				Yes
Securities dealers			Yes				Yes
Architects, engineers, surveyors			Yes				Yes
Demolition contractors							
Medical / dental Pharma			Yes	Yes	Yes		Yes
Accounting firms					Yes		Yes
Insolvency practitioners							
Directors & Officers of public listed entities					Yes		
Property valuers							
Foreign workers		Yes	Health			Health	

[52] A general liability obligation is also required for “organisations which could cause damage to state or public life or property” not reflected in the table.

Jurisdiction	Myanmar[52]	Philippines	Singapore	Sri Lanka	China - Taipei	Thailand	Vietnam
Life Insurance for workers	Yes[53]						
Health insurance							
Imports							
Flood Insurance on loans							
Travel Insurance					Yes	Yes	
Condominiums and corporate buildings		Yes					
Mortgage insurance							
Life insurance on loans							
Crop Insurance				Yes			
Personal Accident for mountaineers							
Offshore windfarm pollution damage				Yes			

Source: AXCO

[53] For public sector workers.

Annex: Sector Concentration by Jurisdiction

Fragmented sectors tend to have a Herfindahl index below around 1,100 for non-life insurance and 2,200 for life insurance and can expect consolidation over time. More concentrated sectors (above 1,750 for non-life and 3,000 for life) can expect to see competition increase from current levels.

	Non-life Insurance				Life Insurance		
	Herfindahl[54]	Top 5 market share (%)	Number of Companies[55]	Claims Ratio[56]	Herfindahl	Top 5 market share (%)	Number of Companies
Bangladesh	434	40.02	46	23.61	1,274	63.56	35
Brunei	2,873	100.00	4	n/a	6,210	100.00	3
Cambodia	2,604	89.30		18.07			
PR China	1,693	74.62	85	59.20	878	54.26	81
China – Hong Kong	380	34.63	82	52.05	1,041	64.18	58
India	670	43.38	31	82.57	3,996	85.57	24
Indonesia	451	38.31	70	57.54	650	47.05	48
Japan	1,843	87.32	40	51.60	604	45.41	42
Korea (republic of)							
Laos	2,200	84.04	18	n/a	3,010	88.53	11
Malaysia	676	45.99	21	50.24	1,652	80.68	14
Myanmar				16.73			
Philippines	624	44.00	53	52.57	847	55.20	31
Singapore	414	34.81	58	46.48	1,638	81.67	23
Sri Lanka	1,174	70.47	14	68.16	1,389	79.79	15
China – Taipei	1,129	61.79	19	56.05[57]	1,048	63.85	22
Thailand	650	49.77	45[58]	89.45	1,309	71.75	21
Viet Nam	786	53.93	31	34.54	1,404	79.84	18

Source: AXC

[54] The Herfindahl index is a more robust measure of concentration and fragmentation for analysis. It is calculated by taking the market share of each entity and multiplying it by itself then summing for a total. The index would take a value between 0 (infinite companies in a fragmented market) and 10,000 (a monopoly). The measure has the advantage of capturing all market shares.

[55] Note that numbers of companies from this source can reflect varying definitions in different markets especially the treatment of captives.

[56] For this table, latest available Claims Ratios in the source data set were used and may not be the same year as the values used for other parts of the table.

[57] The estimated claims ratio excludes miscellaneous and personal accident lines as figures are distorted.

[58] Note some other companies are identified in aggregate but have negative premium income.

References

AHA Centre. (2022), "ASEAN Risk Monitor and Disaster Management Review (ARMOR)", 3rd edition. Jakarta: ASEAN Coordinating Centre for Humanitarian Assistance on disaster management (AHA Centre) available at https://ahacentre.org/publication/armor/

Ajwang, N.W.O. (2022), "Rethinking Public Health Insurance Coverage in Kenya in the Wake of a Global Pandemic", Open Access Library Journal, 9: e9603. https://doi.org/10.4236/oalib.1109603

Aktion Deutschland Hilft (2016), "Cost-Benefit Analysis of Disaster Risk Reduction: A Synthesis For Informed Decision Making", available for download at https://www.aktion-deutschland-hilft.de/fileadmin/fm-dam/pdf/publikationen/aktion-deutschland-hilft-studie-zur-katastrophenvorsorge-englische-version-english-version.pdf

AM Best (2023), "Hot Cyber Market is Cooing; Solutions to Address Systemic Risks Needed", Best's Commentary March 16, 2023.

Artemis (2023), "AXIS sponsoring the first 144a cyber cat bond, $75m Long Walk Re", article published 18 October 2023 and available at https://www.artemis.bm/news/axis-sponsoring-the-first-144a-cyber-cat-bond-75m-long-walk-re/

Asian Development Bank (2019), "Asian Development Outlook 2019: Strengthening Disaster Resilience", available at https://www.adb.org/publications/asian-development-outlook-2019-strengthening-disaster-resilience#:~:text=Excluding%20the%20newly%20industrialized%20economies,continue%20in%20the%20advanced%20economies.

Asian Development Bank (2013), "Investing in Resilience: ensuring a disaster-resistant future", available at https://www.adb.org/publications/investing-resilience-ensuring-disaster-resistant-future

Autoriti Monetari Brunei Darussalam, Fintech and sandbox information available at https://www.bdcb.gov.bn/development/fintech

Bank Negara Malaysia, Regulatory Sandbox, website accessed at https://www.bnm.gov.my/sandbox

Beck MW, Heck N, et al (2022), "Return on investment for mangrove and reef flood protection", Ecosystem Services Journal, Volume 56 available at https://doi.org/10.1016/j.ecoser.2022.101440

CCRIF, 2022. "Annual Report", Caribbean Catastrophic Risk Insurance Facility, Cayman Islands available at https://www.ccrif.org/sites/default/files/publications/annualreports/CCRIFSPC_Annual_Report_2021_22.pdf

CCRIF, 2010. "Enhancing the climate risk and adaptation fact base for the Caribbean", Caribbean Catastrophic Risk Insurance Facility, Cayman Islands available at https://www.ccrif.org/sites/default/files/publications/ECABrochureFinalAugust182010.pdf

Commonwealth of Dominica (2017), "Executive Summary: Post-Disaster Needs Assessment Hurricane Maria." Dominica: CARICOM, September 18, 2017." available at https://resilientcaribbean.caricom.org/wp-content/uploads/2017/11/DOMINICA-EXECUTIVE-SUMMARY.pdf

Cummins, JD., and Mahul, O., (2009), "Catastrophe Risk Financing in Developing Countries: Principles for Public Intervention", The World Bank, Washington DC.

FSC – Korea (2020), "Press Release: Overview of Financial Regulatory Sandbox", available at https://www.fsc.go.kr/eng/pr010101/22394

GAIP, (2023), "About the Protection Gap: Understanding and motivating change, improving and sustaining resilience and well-being in Asia", GAIP, April 3, 2023, available at https://www.gaip.global/publications/about-the-protection-gap/

IAIS (2023a), "Issues Paper on Insurance Sector Operational Resilience", dated 23 May 2023 available for download at https://www.iaisweb.org/activities-topics/cyber-risk/

IAIS (2023b), "GIMAR 2023 special topic edition on cyber", dated 21 April 2023 available for download at https://www.iaisweb.org/activities-topics/cyber-risk/

Insurance Authority of Hong Kong SAR, sandbox information at https://www.ia.org.hk/en/aboutus/insurtech_corner.html#1

Insurance Commission of the Philippines, (2021), "Circular Letter 2021-64 Guidelines on the Adoption of a Regulatory Sandbox Framework For Innovations in the Insurance, Health Maintenance Organizations (HMO), and Pre-Need Industries" available at https://www.insurance.gov.ph/circular-letter-2021-64-guidelines-on-the-adoption-of-a-regulatory-sandbox-framework-for-innovations-in-the-insurance-health-maintenance-organizations-hmo-and-pre-need-industries/

International Monetary Fund, (2018), "How to manage the fiscal costs of natural disasters", available at https://www.imf.org/en/Publications/Fiscal-Affairs-Department-How-To-Notes/Issues/2018/06/11/How-to-Manage-the-Fiscal-Costs-of-Natural-Disasters-45941

Klapper et al, (2016), "Financial Literacy Around the World: Insights from the Standard & Poor's Rating Services Global Financial Literacy Survey", available at https://gflec.org/wp-content/uploads/2015/11/3313-Finlit_Report_FINAL-5.11.16.pdf

Melecky, M., and C. Raddatz. (2011). "How Do Governments Respond after Catastrophes? Natural-Disaster Shocks and the Fiscal Stance." World Bank Policy Research Working Paper 5564, World Bank, Washington, DC. Available at https://documents1.worldbank.org/curated/en/202541468026361854/pdf/WPS5564.pdf

Monetary Authority of Singapore (2016), "Fintech Regulatory Sandbox Guidelines", available at https://www.mas.gov.sg/-/media/MAS/Smart-Financial-Centre/Sandbox/FinTech-Regulatory-Sandbox-Guidelines.pdf

Mugo, M., (2023), "The impact of health insurance enrollment on health outcomes in Kenya", Health Econ Rev, available at https://healtheconomicsreview.biomedcentral.com/articles/10.1186/s13561-023-00454-7

OECD (2020), “OECD/INFE 2020 International Survey of Adult Financial Literacy”, available at www.oecd.org/financial/education/launchoftheoecdinfeglobalfinancialliteracysurveyreport.htm

OECD (2015), “Disaster Risk Financing: A global survey of practices and challenges”, OECD Publishing, Paris. http://dx.doi.org/10.1787/9789264234246-en

OIC – Thailand (2023), “Webpage: Insurance Regulatory Sandbox”, available at https://cit.oic.or.th/sandbox.html

OJK : Otoritas Jasa Keuangan (2018), “Digital Finance Innovation in the Financial Services Sector”, available at https://www.ojk.go.id/iru/BE/uploads/regulation/files/file_35a2beef-e4c8-4ca8-8f42-4cfc0f180246-07092022161630.pdf

PCRIC (2023), “Pacific Catastrophe Risk Insurance Company Quarterly Report January – March 2023”, available at https://pcric.org/wp-content/uploads/2023/05/PCRIC-Quarterly-Report-Jan-Mar-2023.pdf

PCRIC (2022), “Pacific Catastrophe Risk Insurance Company Annual Report 2021”, available at https://pcric.org/wp-content/uploads/2022/08/PCRIC-Annual-Report-4-August-Online-compressed.pdf

PCRIC (2021), “Pacific Catastrophe Risk Insurance Company Strategic Plan 2021-25”, available at https://pcric.org/wp-content/uploads/2022/02/StrategicPlan_PCRIC_2021-25Print.pdf

Reinsurance News (2023), “Architecture in place, but progress on closing protection gap frustratingly slow: Swiss Re CEO”, article dated 19 September 2023 and available at https://www.reinsurancene.ws/architecture-in-place-but-progress-on-closing-protection-gap-frustratingly-slow-swiss-re-ceo/

Shyam KC. (2013), “Cost Benefit Studies on Disaster Risk Reduction in Developing Countries. EAP DRM Knowledge Notes Working Paper Series; No. 27. World Bank, Washington, DC.

Surminski, S., Panda, A., and Lambert, PJ., (2019), “Disaster Insurance in Developing Asia: An Analysis of Market-Based Schemes”, Asian Development Bank Economics Working Paper Series No 590, available at https://www.adb.org/publications/disaster-insurance-developing-asia

Swiss Re (2023), “Natural Catastrophes and inflation in 2022: a perfect storm”, available at https://www.swissre.com/institute/research/sigma-research/sigma-2023-01.html

Swiss Re (2023), “World Insurance: stirred, and not shaken”, available at https://www.swissre.com/institute/research/sigma-research/sigma-2023-03.html

Thorburn, C, (2020), “Developing Insurance Markets : Does Fragmentation and a Reliance on Compulsion Hinder Innovation, Growth and Development”. Washington, D.C. : World Bank Group. http://documents.worldbank.org/curated/en/810771577710977236/Developing-Insurance-Markets-Does-Fragmentation-and-a-Reliance-on-Compulsion-Hinder-Innovation-Growth-and-Development

Thorburn, C., (2008), “Insurers: Too Many, Too Few, or ‘Just Right’: Initial Observations On A Cross-Country Dataset Of Concentration And Competition Measures”, World Bank Policy Research Working Paper available at https://documents1.worldbank.org/curated/en/566861468137732315/pdf/wps4578.pdf

Thorburn, C, and Ghimire, K. (2020), "Developing Insurance Markets : Why Risk-Based Capital Reform Works Better Than Nominal Capital Increases?", Washington, D.C. : World Bank Group. https://documents1.worldbank.org/curated/en/191201596604449695/pdf/Developing-Insurance-Markets-Why-Risk-Based-Capital-Reform-Works-Better-than-Nominal-Capital-Increases.pdf

Tokyo Fintech (2018), "The Japan FSA Regulatory Sandbox " available at https://medium.com/tokyo-fintech/the-japan-fsa-regulatory-sandbox-b7e9f38e962e