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PUBLIC-PRIVATE COLLABORATION

For Sustainable Integration of Insurance and Risk Reduction in Response to Rising Disaster Risk

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Disclosure statement

This report is commissioned by AG Insurance and conducted by researchers at the University of Queensland. While the report is endorsed by AG Insurance, all insights are drawn from independent work conducted by the authors and are not influenced by AG Insurance.

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Challenges of an insurable future against rising disaster risk

Climate change is driving a marked increase in the frequency and severity of extreme weather events and natural hazard-related disasters worldwide. This escalating risk is creating profound and enduring impacts for the economy and society. In 2024 alone, 393 natural hazard-related disasters were recorded globally by the International Disaster Database (EM-DAT), resulting in estimated economic loss of US$242 billion.[1] Beyond casualties, such events also impose widespread disruption on socio-economic systems,[2] often exacerbating vulnerabilities and inequalities within affected communities.[3]

Disaster insurance plays an important role in reducing vulnerability to natural hazards and strengthening the resilience of individuals and communities. Insurance is typically associated with increased financial resilience, enabling pre-disaster financing as well as providing post-disaster funds for reconstruction.[4] More importantly, a sustainable and inclusive insurance system delivers benefits far beyond the private financial interests of individual policyholders, underpinning stable housing markets,[5] post-disaster community recovery,[6] and collective confidence in the face of increasing disaster risk.

Yet the global insurance market is facing challenges as climate change intensifies the risk of windstorms, floods, and wildfires. Global insured losses continued to pass the US$100 billion mark in 2025,[7] forcing insurers to recalibrate their risk pricing and underwriting models. In particular, the use of risk-reflective pricing, based on sound actuarial techniques and responding to solvency requirements for insurers, has driven sharp increases in premiums for those at high risk.[8] In some countries, such as Australia, the United Kingdom, and the USA, this has led to the withdrawal of coverage for high-risk regions or perils, reducing insurance affordability and availability while widening the insurance protection gap.

The implications of an unsustainable insurance market extend well beyond the private insurance sector. As insurance coverage diminishes, a greater share of disaster-related losses is transferred to households and, subsequently, the public sector, since governments are ‘insurers of last resort’ providing for disaster-affected citizens.[9] This shift places increasing pressure on public finances, while exacerbating inequalities in post-disaster recovery as non-insurance is prevalent among disadvantaged communities who are often located in disaster-prone regions.[10]

Beyond these social effects, using the government as the default insurer of last resort for losses that go beyond the private sector is inefficient, as it relegates the government to a reactionary role in supplying ever-increasing amounts of post-disaster funding.[11] By contrast, proactive public-sector planning to meet the challenges of an insurable future can draw on the capabilities of insurance markets – such as assessing and pricing risk, managing claims post-disaster, and leveraging private-sector capital – and integrate these capabilities within the wider disaster risk reduction strategies.[12] [13]

Given the urgency of the insurance challenges, the limited capacity of the market to self-correct, and the need to move from reactive post-disaster relief that strains the public purse to pre-disaster planning for a sustainable insurance market, public-private collaboration is essential. Such collaboration must address the immediate challenges related to maintaining insurance affordability and availability despite rising risk, while also embedding mechanisms that support longer-term risk reduction. In particular, sustainable insurance solutions will require increased investment in climate adaptation measures for properties and communities to reduce the underlying exposure and vulnerability.

A call for public-private collaboration to address the insurance protection gap

Why collaboration is necessary

There is no single or straightforward solution to guarantee affordable and available disaster insurance in the future. The sources of this problem are complex and compounding, including the increasing frequency and severity of extreme weather events, a large stock of existing properties that were not built to withstand

current or future climate conditions, and ongoing urbanisation that drives housing into high-risk areas.[14] In such conditions, effective responses must involve multiple parties working together to balance potentially competing interests of affordability, market viability, risk reduction, and social equity.

Addressing these challenges exceeds the capacity of any single stakeholder. The public and private sectors each possess distinct but complementary roles: governments are responsible for land-use planning, building standards, infrastructure investment, and societal protection, while the insurance industry brings expertise in risk assessment and pricing, capital financing, and loss management. The costs of an unsustainable insurance market are detrimental to both sectors. Therefore, despite differing objectives such as profitability in the private sector and broader social outcomes in the public sector, collaboration is essential to develop sustainable, long-term solutions that narrow the insurance protection gap and strengthen resilience to disaster risk.[15]

Public-private collaboration in risk sharing and insurance provision

To avoid the problem of disaster insurance becoming too expensive or unavailable for a growing proportion of society, which generates a widening insurance protection gap, public-private arrangements can be established. There are several examples of how such public-private collaboration can take place. Specifically, many countries have developed 'Protection Gap Entities' (PGEs), which are government-legislated, usually not-for-profit, entities to provide insurance that would otherwise not be affordable or available in the private insurance market[16] (see Appendix). As they take diverse forms, PGEs are a useful way to consider the different mechanisms and trade-offs involved in balancing public-private interests in collaboration.

There are two common approaches for government intervention through PGEs. First, a government-legislated Insurer PGE can provide 'natural disaster'[17] insurance policies directly to consumers. This approach allows strong control over insurance availability and can help ensure broad access for the society, but it may face difficulties in keeping premiums affordable due to continued reliance on costly reinsurance. Second, the government can support the private market by becoming a Reinsurer PGE and providing reinsurance to the primary insurance market. This enables private insurers to continue offering policies at lower premiums, although it provides the government with less direct control over policy availability.

In both cases of Insurer and Reinsurer PGE, the government-backed scheme is an active participant in the insurance market by taking on part of the risk and using premiums to help cover losses. Risk is shared between the public and private sectors, with the threshold for this sharing a key area for consideration. Greater risk retention in the private sector incentivises the industry to remain engaged, fosters innovation in managing risk, and ensures private-sector capital remains available for post-disaster reconstruction. Meanwhile, stronger public-sector involvement allows more control over insurance affordability and availability, and ensures greater financial and social inclusion across all parts of society.

A key decision in risk sharing between the two sectors are the layers of risk financing, in terms of how much is held on private or public sector's balance sheets. Such decisions are not simple, as they are grounded in the purpose of the risk-sharing arrangement. For example, in New Zealand, a first capped layer of applicable natural hazard risk on a home is held by the Insurer PGE, Toka Tu Ake Natural Hazards Commission, funded by a proportion of premiums from all homeowners. This first layer of loss is compulsory, and the homeowners can purchase anything above this layer in the private sector. Thus, everyone has some basic cover for their home from the public sector, ensuring a base level of financial resilience, while homeowners with more financial capacity or those with higher-value assets have their additional losses covered by the private sector. The government uses the first layer of premiums to establish a dedicated Natural Hazard Fund above which there is a layered risk financing structure for the government, including international reinsurance purchase and a catastrophe bond, accompanied by an uncapped government guarantee. By contrast, in Spain, the first layer of risk is held by the private-sector insurers, funded by compulsory premiums from homeowners, who pass all natural hazards losses and a proportion of homeowner premiums above a specified threshold to the PGE Consorcio de Compensación de Seguros (Consorcio). Thus, higher-exposure losses are covered in the public sector, which has developed a fund over several decades that allows it to manage claims without recourse to private-sector reinsurance capital.

If the government provides a capped or uncapped guarantee for catastrophic losses, this financing can be managed in different ways. One typical way, is for private sector insurers to take the first layer of risk, transferring the specified catastrophe risk to a not-for-profit PGE reinsurer that is financed through this purchase of reinsurance and manages its own reserving and investment. The PGE can also transfer higher layers of exposure by buying retrocession and/or catastrophe bonds in the private market, as well as remunerating the government for any guarantee, as seen with Caisse Centrale de Réassurance (CCR) in France.

Hence, risk layering, the thresholds for each layer, and the financing of each layer are important decisions in any collaboration.[14] [15] [16] Such decisions might be governed by whether the aim of the collaboration is to ensure all parts of the population have some basic individual cover, as in New Zealand, and/or to ensure national cover for particularly volatile or high levels of loss, as with France. Decisions should consider how best to deploy a mix of homeowner premiums, private-sector capital from domestic and global insurers and reinsurers, government-owned insurers or reinsurers, and any additional government guarantees, while clearly defining the thresholds and purposes of each layer of risk financing.

Public-private collaboration in risk reduction

It is important to realise that insurance, whether through the private sector or a PGE collaboration, transfers financial risk but does not reduce the underlying risk itself. Treating disaster insurance purely as a financial product focuses on who pays for losses, rather than on reducing exposure to increasing climate-related hazards.[18] In a time of escalating disaster risk, long-term insurance sustainability depends on lowering physical damage through effective risk reduction.

Traditionally, risk reduction has largely been divided between the government – through land planning, building laws, and infrastructure works – and individuals, who are expected to protect their own properties. However, government measures are often broad or not applied to existing buildings, while individuals may lack the resources or knowledge to implement effective protection, leaving a gap between these responsibilities. To bridge this gap, the insurance sector could evolve beyond providing post-disaster financial compensation to become a lever for physical risk mitigation by supporting government and individuals' risk reduction measures.

Government-backed insurance schemes can encourage risk reduction by funding resilience improvements to privately owned properties.[19] This approach helps reduce future losses and thus allows the PGEs to continue offering affordable policies over time. Risk reduction can also be supported through collaboration between governments and private insurers. For example, government grants can be delivered through insurance claims processes to help households rebuild in more resilient ways.[20] Private insurers can further encourage risk reduction by offering lower premiums to property owners who adopt approved resilience measures.[21] Many of these initiatives are under way in different public-private insurance partnerships, albeit that most are still limited in scale. Nonetheless, they demonstrate the potential for collaboration to extend insurance systems beyond their traditional financial remits and contribute more broadly to risk reduction and long-term resilience. In doing so, they can build a more sustainable insurance sector that is equipped to address the challenges of increasing risk and the need for climate adaptation.

Embedding collaboration in a legislative framework

Collaboration on risk sharing at different layers, and the relationship between risk sharing and risk reduction, constitutes legal responsibilities that need to be embedded within a clear legal framework specifying the accountabilities of each party. Hence, existing collaborations typically comprise part of the legislation of their respective countries, such as the Terrorism and Cyclone Insurance Act in Australia, or the National Flood Insurance Act in the USA. This legislation is typically focused on financial provision, specifying the requirements of each party. Legislation often involves regular reviews, usually every three to five years, to ensure the risk-sharing threshold and layers can change over time as the partnership and the risk landscape evolve. In addition, where risk reduction is linked to insurance provision, the amounts to be spent by each party, on what aspects of risk reduction, and over what time period can be specified in the legislation. This

ensures that risk reduction also becomes part of the legislative review process, so that risk financing and risk reduction can evolve together to address a changing risk landscape.

Appendix – Case studies of public-private insurance collaboration

The appendix of this report provides three short case studies of public-private insurance collaboration: Flood Re (UK), Caisse Centrale de Réassurance (CCR, France), and Kantonale Gebäudeversicherungen (KGV, Switzerland). Each case addresses the financial aspects of insurance affordability and availability, risk-reflective pricing, and disaster risk reduction in different ways, with different implications for longer-term sustainability of the insurance sector. These cases are not intended to indicate best practice but rather to provide stakeholders with opportunities for discussion and reflection on ways forward for their own context.

Flood Re (UK)

Flood Re is a government-legislated, not-for-profit Reinsurer PGE that was established in the UK in 2016 in response to the problem of increasingly unaffordable homeowner flood insurance for those properties at most risk of repeated flood. The general strategy was to move away from risk-reflective pricing on homes with high flood risk. Insurers can offer insurance to all properties, including those at high risk of flood, and cede the flood proportion of the premium and risk of loss to Flood Re. Flood Re enables these properties to remain insured at an affordable rate through a subsidisation model. Based on government legislation, insurers charge **all** insured homeowners a £10.50 levy (roughly €12) which is remitted to Flood Re to support reduction of premiums for high-risk properties.[22] These reductions are stratified based on council tax bands, so that higher-value homes attract a higher, but still subsidised, premium than lower-value homes.[23] Flood Re receives no government guarantee but is expected to manage potential claims through the levy, the reinsurance premiums it charges insurers, and by buying retrocession in the private market as appropriate to its portfolio. The scheme was successful with policies ceded to Flood Re more than doubling to 265,826 properties and claims totalling £282 million (€326 million) within the first seven years of its existence.[24]

The establishment of Flood Re was contentious as insurers did not want government intervention in the private market and were concerned that moving away from risk-reflective pricing would suppress the risk signal. Hence, Flood Re was set up with a 25-year sunset clause, with the private market returning to risk-reflective pricing on its closure. This transition was to be made possible through a change in risk profile, as the Department for Environment Food and Rural Affairs (DEFRA) would invest up to £2.5 billion (€2.9 billion) in flood mitigation to substantially reduce loss. However, there was little clarity over which and how specified projects would be associated with risk reduction to the properties that Flood Re would insure. Without this clarity, while Flood Re increasingly took on highly flood-affected properties, so fixing the insurance availability and affordability problem, risk reduction works were of insufficient scale and scope to reduce flood losses to properties. The design was unsustainable – Flood Re could not exit the market in 25 years and leave affordable risk-reflective pricing, because properties remained equally or more at risk of flood as climate and built environment effects exacerbated flood damage and loss.[25]

At their first government review, Flood Re managers raised this problem that, without significant risk reduction, they would not be able to exit by 2039 and leave a private market with affordable and available flood insurance. They worked with government and industry stakeholders to expand their mission to be achieving ‘affordable risk-reflective pricing’ at the 25-year exit. To support this, as a not-for-profit they could use some of their surplus budget to invest in a Build Back Better scheme, in which homeowners could receive grants of £10,000 (€11,500) to undertake specific risk reduction measures for their homes.[26] While this has been a positive step in moving towards risk reduction, it remains insufficient for the magnitude of the problem at hand, either in adapting individual properties at sufficient scale, or having influence over other key issues of risk reduction including building codes, planning approvals, and investment in resilient infrastructure such as flood defences. In 2023, the outgoing Chair of the Flood Re Board, Mark Hoban clarified that the government would need to “go further and faster” on UK flood defences to combat the problem of legacy assets and worsening climate. Private insurers echoed this sentiment, noting that without a change in flood defences, Flood Re would need to continue.[27] Yet, even Flood Re cannot fix the insurability problem if it is only able to work with a premium subsidisation model, and modest investments on

resilience on some individual houses.[28] Systemic linkages between flood insurance and flood risk mitigation will be necessary for a sustainably insurable future.[29]

Caisse Centrale de Réassurance (France)

Caisse Centrale de Réassurance (CCR) was established as a public-sector Reinsurer PGE in 1946 to provide the government with assurance of universal insurance cover for French residents. While disaster insurance was not a driving feature of the original PGE, in 1982 compulsory cover for natural disasters, known as Catastrophes Naturelles (CATNAT)[i], was included in all insurance contracts.[30] The CATNAT is an uncapped guarantee for natural disasters that are declared a catastrophe by the government. The scheme is multi-peril across disasters such as flood, drought, avalanche, and seismic activity, and covers residential and some commercial property and motor lines.

This guarantee is funded through a uniform legislated surcharge of 20% on property and 9% on eligible motor lines. The uniform surcharge enables subsidisation across perils and risk exposure, meaning that risk-reflective pricing is not used. Private-sector insurers collect the surcharge directly as part of their wider insurance provision and also handle all claims. They can then cede their CATNAT risk to CCR through a quota share and a stoploss protection, or cede to the private reinsurance market from which they purchase any cover not offered buy CCR, such as non-catastrophe cover.[31] As CCR is backed by an unlimited government guarantee, it can provide a very high level of catastrophe reinsurance capacity at a competitive rate meaning that, in practice, most insurers cede their natural disaster risk to CCR.[32] CCR then purchases the uncapped guarantee from the French government, albeit on favourable terms that have allowed it to build strong reserves over time to pay for losses on its own balance sheet.

To counter the potential for subsidised, rather than risk-reflective, pricing to disincentivise risk reduction, such as approving housing development in flood plains, since 2001 CCR has included compulsory deductibles that operate at the local government level (communes).[33] Compensation and prevention have been linked to a sliding scale of deductibles applying to communes that do not have risk prevention plans, to encourage them to introduce such plans. This approach of tying risk reduction into insurance at the local community, rather than individual property-owner level, has been considered effective, with reports that the subsequent land-use planning has saved €11 in damages for each invested euro.[15]

Alongside risk reduction, a key feature of CCR has been the development of extensive national risk modelling. Based on their ownership of much of the risk and associated claims from natural disasters, nationally over decades CCR has built up a large database about catastrophe risk in the French market that it uses to develop catastrophe models. It uses this information to position itself as a risk manager for government,[34] including projections of risk based on climate modelling that is used by both insurers[35] and public-sector organisations, such as the zoning done by local communities as part of their risk reduction strategy.

This modelling has been considered effective in supporting risk reduction and also in projecting national exposure, to establish the adequacy of the existing CCR reserving system and potential impacts on the uncapped government guarantee. In a 2024 report, CCR estimated that the costs of natural disasters covered by the scheme, including both weather effects and the evolution of insured assets, could increase by 60% by 2050.[36] Based on these projections, the CATNAT surcharge was increased to the above reported levels in 2025 to address rising costs of natural disasters. This increase, from a 12% to a 20% property and 6% to 9% motor surcharge, was the first increase in 25 years, and was intended to increase the base of risk sharing from property owners into the insurance system, through increased premiums. An espoused aim of this increase is to ensure that the CCR will be able, within the medium term, to withstand catastrophic shocks without resorting to the government guarantee. Alongside this increase in the capital base, CCR is currently reconfiguring its system to align with the National Climate Change Adaptation Plan. This includes propositions to further incentivise insurers to remain partners in high-risk territories, and to align climate risk, insurability, and risk reduction measures.

[i] CCR also provides the mechanism for terrorism cover in France through Gestion de l'Assurance et de la Réassurance des Risques Attentats et actes de Terrorisme (GAREAT). As this is not part of the CATNAT provision, it is not considered here.

CCR is thus an example of a multi-layered, multi-peril, public-private collaboration that does not resort to risk-reflective pricing, is able to maintain affordability and availability, and provides both knowledge and incentives for risk reduction. In addition, it uses the national system to project increasing loss costs and climate effects. This modelling is then used to modify legislation and reconfigure pricing to better meet the challenges of rising risk, with the aim of ensuring the long-term sustainability of the system.

Kantonale Gebäudeversicherungen (Switzerland)

The cantonal-level public-sector building insurance system, Kantonale Gebäudeversicherungen (KGV), initially started in the 1800s as a fire insurance system and became a system for insuring natural disasters in the first half of the 1900s.[37] Of the 26 Swiss cantons, 19 rely on canton-legislated and publicly owned disaster insurance monopolies. These public-sector insurers are independent organisations, not government funded, and are required to be financially self-sustaining, including purchasing their own reinsurance in the private market. The remaining cantons operate under a highly regulated private-sector system, enshrined in law in 1993,[38] which ensures reasonably comparable insurance protection to their public-sector counterparts, although the private system lacks the risk mitigation features of the public system. As the public-sector system is the dominant system and integrates risk mitigation as part of its core activities, this case refers to that system, hereafter the Swiss System.

The Swiss System provides affordable disaster insurance for all buildings (except federally owned ones), on nine perils including flood, hail, wind, and avalanches, with only earthquake as the only significant exclusion. Insurance penetration is virtually complete since insurance is compulsory and based on highly accurate land and property registries.[39] The cover is comprehensive, providing full reconstruction costs without any payment limit. This ensures that properties can be rebuilt regardless of the owner's financial situation. This provision delivers a high level of financial resilience in the face of disasters.

In addition, the system provides physical resilience through a set of initiatives that aim to prevent or mitigate future losses via direct investment in property improvements and disaster response activities, alongside participation in the wider, mainly public sector, system that delivers infrastructure, planning, and building standards. These three features, prevention (through risk mitigation), intervention (through disaster response), and insurance (compulsory, affordable cover on multiple perils) comprise the 'triple protection' logo and mission of the Swiss System and are key to the sustainability of affordable insurance.[19]

The defining characteristics through which this system manages to provide sustainably affordable insurance are a combination of double solidarity, self-regulation, and integration in the wider disaster resilience ecosystem.[40]

Double solidarity: First, there is solidarity between the inhabitants of a canton. Spreading disaster risk across all citizens through compulsory insurance, on multiple perils, in a sufficiently large and diversified portfolio enabled by the monopoly, supports diversification and enables lower prices without recourse to risk-reflective pricing. Rather, everyone is charged the same way (a percentage of insured value – independently of risk) within a canton. Second, there is solidarity between the cantonal public insurers. While each insurer is a monopoly operating independently within its canton, with no government backstop, should a single cantonal insurer's losses be excessive, an inter-cantonal fund jointly financed by all the public-sector insurers with a total capacity of CHF 1.2 billion (€1.3 billion) offers relief, in addition to any reinsurance cover each canton purchases. These two layers of solidarity create a normative system of reciprocity and obligation. Reciprocity, because each individual gets affordable cover by being part of a compulsory system to which all individuals contribute, and each insurer both contributes to and can rely on the others for an excessive loss. Obligation, because the flip side of reciprocity is that no party should 'free ride' by failing to contain their potential for excess losses.

Self-regulation: The normative aspects of this system, alongside the transparency of pricing in the public-sector monopolies, supports self-regulation to keep prices low. First, as any individual and any canton can see the prices of premiums in other cantons, there is an incentive for each canton to ensure its pricing is not out of proportion to its comparators. Hence, while monopolistic, there are indirect elements of competition enabled by the transparency of the system.

Second, the only sustainable way to maintain low pricing in the context of liability for full reconstruction costs on all properties in a canton, is to mitigate potential loss costs. Each cantonal insurer directly funds two types of mitigation activities. They fund interventions to contain disasters as they occur (approximately US$260 million per year – €217 million), through supervising and financing the training and equipment of the fire brigade as disaster first responders. First-responder interventions such as mobile flood defences can significantly reduce loss costs. Cantonal insurers also have oversight of all planning and construction and can require resilient building codes, as well as partially financing resilient reconstruction costs on individual properties to an amount of some CHF 78 million per year (€85 million). For example, in 2023, the Aargau cantonal insurer assessed disaster risks in 2,257 buildings. In 115 cases where adaptations were needed, they provided financial contributions for these measures, totalling CHF 0.64 million (€0.70 billion).[41] Where recommended resilient measures are not taken, they have the right to refuse insurance, which constitutes a significant deterrent in a compulsory and affordable system.

Integration in the disaster resilience ecosystem: The Swiss System insurers are connected informally into the wider disaster resilience ecosystem. First, they are integrated within building permits and planning, providing input into construction codes and advising on resilience measures at the stage of planning for new developments, to ensure that potential future losses are accounted for and mitigated against prior to any approvals. Second, they collaborate on the design of hazard maps, which are developed by the cantons. As the insurers have a comprehensive database of all losses, due to their comprehensive compulsory cover of those losses, they contribute this knowledge to the regular updating of hazards maps on multiple types of perils. Such updated hazard maps then contribute to cantonal planning in terms of zoning of high-risk areas for specific construction measures or even banning of new construction in some areas. Third, they are involved in the design of major infrastructure work, helping to model and quantify the potential damages that could be incurred by different magnitude events as part of infrastructure planning. This integration is supported by interlocking board memberships among the different stakeholders in the disaster resilience ecosystem and is situated within an integrated national risk management framework established in the late 1980s, to ensure a more cohesive response to weather-based disasters.

Taken together, these three characteristics of the Swiss System, double solidarity, self-regulation, and integration into the wider disaster resilience ecosystem, enable it to maintain a comprehensive and sustainable disaster insurance system based on disaster intervention, loss prevention through mitigation activities, and compulsory affordable insurance. Nonetheless, Switzerland, like other countries, faces climate pressures that mean it will need to keep leveraging the system's positive features to adapt to increasingly severe weather.

[1] Centre for Research on the Epidemiology of Disasters. (2025). *2024 Disasters in numbers: A hot and stormy year*. https://files.emdat.be/reports/2024_EMDAT_report.pdf

[2] Mata-Lima, H., Alvino-Borba, A., Pinheiro, A., Mata-Lima, A., & Almeida, J. A. (2013). Impacts of natural disasters on environmental and socio-economic systems: What makes the difference? *Ambiente & Sociedade, 16*(3), 45–64. https://doi.org/10.1590/S1414-753X2013000300004

[3] Reanos, M. A. T. (2021). Floods, flood policies and changes in welfare and inequality: Evidence from Germany. *Ecological Economics, 180,* Article 106879. https://doi.org/10.1016/j.ecolecon.2020.106879

[4] Eriksen, C., McKinnon, S., & de Vet, E. (2020). Why insurance matters: Insights from research post-disaster. *Australian Journal of Emergency Management, 35*(4), 42–47. https://knowledge.aidr.org.au/media/8219/ajem_15_2020-10.pdf

[5] Grace, E. (2025). *Housing in Australia: Financial journeys through affordability, retirement and climate challenges*. Actuaries Institute. https://content.actuaries.asn.au/resources/resource-ce6yyqn64sx3-2093352434-60163

[6] Hofmann, S. Z. (2022). Build back better and long-term housing recovery: Assessing community housing resilience and the role of insurance post disaster. *Sustainability, 14*(9), Article 5623. https://doi.org/10.3390/su14095623

[7] Munich RE. (2026). *Climate change presses on: Devastating wildfires and intense thunderstorms exacerbate losses for insurers.* https://www.munichre.com/en/company/media-relations/media-information-and-corporate-news/media-information/2026/natural-disaster-figures-2025.html#2126964707

[8] Jarzabkowski, P., Meissner, K., & Mason, M. (2025). Insurance options in a climate changed future: The way forward for urban climate policy and practice. *Journal of City Climate Policy and Economy*, *4*(1), 15–35. https://doi.org/10.3138/jccpe-2024-0029

[9] McAneney, J., McAneney, D., Musulin, R., Walker, G., & Crompton, R. (2016). Government-sponsored natural disaster insurance pools: A view from down-under. *International Journal of Disaster Risk Reduction, 15,* 1–9. https://doi.org/10.1016/j.ijdrr.2015.11.004

[10] Booth, K. (2018). Profiteering from disaster: Why planners need to be paying more attention to insurance. *Planning, Practice & Research, 33*(2), 211–227. https://doi.org/10.1080/02697459.2018.1430458

[11] Cummins, J. D. (2006). Should the government provide insurance for catastrophes? *Federal Reserve Bank of St. Louis Review*, *88*(4), 337–379. https://www.proquest.com/docview/227756049

[12] Ji, H., & Lee, D. (2021). Disaster risk reduction, community resilience, and policy effectiveness: The case of the Hazard Mitigation Grant Program in the United States. *Disasters*, *45*(2), 378–402. https://doi.org/10.1111/disa.12424

[13] Shreve, C. M., & Kelman, I. (2014). Does mitigation save? Reviewing cost-benefit analyses of disaster risk reduction. *International Journal of Disaster Risk Reduction*, *10*, 213–235. https://doi.org/10.1016/j.ijdrr.2014.08.004

[14] Jarzabkowski, P., Chalkias, K., Cacciatori, E., & Bednarek, R. (2023). *Disaster insurance reimagined: Protection in a time of increasing risk*. Oxford University Press. https://doi.org/10.1093/oso/9780192865168.001.0001

[15] Schernberg, H. (2026). *Addressing growing protection gaps through better public-private insurance programmes.* Geneva Association. https://www.genevaassociation.org/sites/default/files/2026-02/ppip_summary_0302_final.pdf

[16] Jarzabkowski, P., Chalkias, K., Cacciatori, E., & Bednarek, R. (2018). *Between state and market: Protection Gap Entities and catastrophic risk*. Cass Business School, City, University of London. https://www.wfcatprogrammes.com/documents/20142/34131/Between_State_and_Market_PGE.pdf/befe4338-b5ab-dfb7-961e-c2f7af88a92c

[17] Jarzabkowski, P., Meissner, K., Riordan, T., & Gallagher, R. (2025). What's 'natural' about disasters? Practice theory as an emancipatory lens for reconceptualising the social construction of disasters. *The Journal of Practice Theory*, *1,* 97–104. https://doi.org/10.71936/xz4v-vp76

[18] Birss, M., Casey, A., Esposito, M., Graetz, N., Knuth, S., Ponder, C. S., & Taylor, Z. J. (2024). *Shared fates: A housing resilience policy vision for the home insurance crisis*. Climate & Community Institute. https://climateandcommunity.org/wp-content/uploads/2024/09/Shared-Fates_10-09-24_3.pdf

[19] Jarzabkowski, P., Cacciatori, E., Chalkias, K., & Gallagher-Rodgers, R. (2022). *Disaster insurance in Switzerland: The cantonal public sector insurance system*. Bayes Business School, City, University of London. https://paulajarzabkowski.com/wp-content/uploads/2024/11/Report-2022-DISASTER_INSURANCE_IN_SWITZERLAND_THE_CANTONAL_PUBLIC_SECTOR_INSURER_SYSTEM-EN.pdf

[20] Queensland Government. (2024). *Insurance and the Resilient Homes Fund.* https://www.qld.gov.au/housing/buying-owning-home/homeowners-financial-help/resilience-to-floodsand-cyclones/resilient-homes-fund/other-assistance/insurance-and-the-resilient-homesfund#insurance-repairs

[21] Kousky, C. (2019). The role of natural disaster insurance in recovery and risk reduction. *Annual Review of Resource Economics, 11*(1), 399–418. https://doi.org/10.1146/annurev-resource-100518-094028

[22] Flood Re. (2023a). *How Flood Re Works?* https://www.floodre.co.uk/how-flood-re-works/

[23] Flood Re. (2023b). *How are the premiums set for ceded policies to the scheme?* https://www.floodre.co.uk/faq/how-are-the-premiums-set-for-ceded-policies-to-the-scheme/

[24] Jarzabkowski, P., Meissner, K., & Mason, M. (2024). *Insurance status review and recommendations for Lismore*. https://espace.library.uq.edu.au/view/UQ:3e42ee4

[25] Blanc, A. (2020). *Independent review of flood insurance in Doncaster*. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/932523/review-flood-insurance-doncaster.pdf

[26] Flood Re. (2023c). *Build Back Better*. https://www.floodre.co.uk/faq_categories/build-back-better/

[27] Smith, I. (2023, July 13). UK must increase flood defence spending, insurance scheme chair urges. *Financial Times*. https://www.ft.com/content/acc5c9f4-eadc-4e2d-9f68-d83303f85b70

[28] Lucas, C. H., & Booth, K. I. (2020). Privatizing climate adaptation: How insurance weakens solidaristic and collective disaster recovery. *Climate Change*, *11*(6), Article e676. https://doi.org/10.1002/wcc.676

[29] Flood Re, & ABI. (2021). *Modelling the impact of spending on defence maintenance on flood losses*. https://www.abi.org.uk/globalassets/files/publications/public/flooding/modelling-the-impact-of-spending-on-defence-maintenance.pdf

[30] Bidan, P. (2001). Catastrophe insurance in France: The Natural Disaster Compensation Scheme. *Nordisk Forsikringstidskrift*, 4, 324–336. https://nft.nu/sites/default/files/2001403.pdf

[31] Froot, K. A. (Ed.). (2007). *The financing of catastrophe risk*. University of Chicago Press.

[32] Atreya, A., Hanger, S., Kunreuther, H., Linnerooth-Bayer, J., & Michel-Kerjan, E. (2015). *A comparison of residential flood insurance markets in 25 countries*. Wharton Risk Management and Decision Processes Center, University of Pennsylvania. https://www.casact.org/sites/default/files/2023-05/6I_Atreya_Comparison_of_Residential_Flood_Insurance_Markets.pdf

[33] Vallet, S. (2004). Insuring the uninsurable: the French natural catastrophe insurance system. In E. N. Gurenko (Ed.), *Catastrophe risk and reinsurance: A country risk management perspective* (pp. 199–216). Risk Books.

[34] CCR. (2024). *Rapport scientifique*. https://www.ccr.fr/wp-content/uploads/2025/07/CCR-RS-2024-web-07102024_Poids-leger-2-1.pdf

[35] Guillier, F. (2017). French insurance and flood risk: Assessing the impact of prevention through the rating of action programs for flood prevention. *International Journal of Disaster Risk Science, 8,* 284–295. https://doi.org/10.1007/s13753-017-0140-y

[36] CCR. (2024). *Rapport au Ministre de l'Économie, des Finances et de la Souveraineté Industrielle et Numérique*. https://www.ccr.fr/rapport-annuel-au-ministre-de-l-économie-des-finances-et-de-la-souveraineté-industrielle-et-numérique-2024/

[37] Wanner, C. (2002). *Vorbeugen – Schützen – Entschädigen: Die entstehung der elementarschadenversicherung in der Schweiz*. Historisches Institut, Universität Bern.

[38] FINMA. (2022). *Elementarschadenversicherung in der Schweiz (ES-Versicherung) – Historie und Anwendungsbereich*. https://www.finma.ch/de/~/media/finma/dokumente/dokumentencenter/myfinma/2ueberwachung/elementarschaden-historie-anwendungsbereich.pdf?sc_lang=de&hash=F0056C466B15946352F587064A985575

[39] Schwarze, R., Holthausen, N., Locher, P., Quinto, C., & Wagner, G. G. (2015). *The Swiss model: Economic and legal aspects of integrated local public insurances*. Foundation for Prevention of the Association of Cantonal Building Insurers ((Vereinigung Kantonaler Gebäudeversicherungen).

[40] Cacciatori, E., Jarzabkowski, P., Bednarek, R., & Chalkias, K. (2026). From steering to rowing: Public sector solutions for the grand challenge of climate adaptation. *Academy of Management Discoveries*. Forthcoming.

[41] Aargauische Gebäudeversicherung. (2024). *Geschäftsberichte 2023*. https://die-agv.ch/agv/agvcontent/*geschaftsberichte/*